OAKLAND UNIVERSITY
SCHOOL OF ENGINEERING AND COMPUTER SCIENCE

FACULTY RESEARCH PROFILES 2020

OU

WELCOME FROM THE DEAN

As Dean of the School of Engineering and Computer Science (SECS), I am committed to supporting the advancement of our faculty's research, which is not only disseminated to their colleagues worldwide, but also integrated into our curriculum for our students' benefit. Our applied research spans across a wide range of fields, including those related to Bioengineering, Cybersecurity and Data Analytics, Connectivity and Autonomous Systems, Advanced Manufacturing, Power and Energy. You are invited to explore this booklet as you investigate how our School of Engineering and Computer Science faculty can serve your research needs.

Louay Chamra

Louay Chamra, Professor and Dean

ABOUT | SCHOOL OF ENGINEERING AND COMPUTER SCIENCE (SECS)

SECS IS COMPRISED OF FIVE DEPARTMENTS:

Bioengineering
Computer Science and Engineering
Electrical and Computer Engineering
Industrial and Systems Engineering
Mechanical Engineering

Oakland University's SECS offers instruction leading to degrees at the bachelor's, master's and doctoral levels. The SECS, with about 2,800 undergraduate and 850 graduate students, features an outstanding faculty dedicated to preparing learners for the 21st-century workplace and society as well as for research in their fields of specialization. The school offers close student/faculty interaction, small classes and individualized attention.

The goal of the SECS is to provide students, faculty, and staff with the best educational and working experience in a highly supportive, yet stimulating, environment. Faculty provide the highest quality of education, which is enhanced by cutting edge research sponsored by federal agencies and industrial partners. In addition, the SECS will continue to be actively involved in outreach and economic development initiatives.

DEAN'S OFFICE

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DEPARTMENT OFFICE ASSISTANTS

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Industrial and Systems Engineering	Maureen Callaghan	(248) 370-2989
Mechanical Engineering	Brenda Bond	(248) 370-2210
Undergraduate Advising	Marlene McKean	(248) 370-2201

UNDERGRADUATE ADVISERS

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Carmen Etienne, Director • Sarah Konrad • Kacie Cadotte
Derek Moreno • Kurtis Kirkpatrick • Eman Shammo

OUTREACH

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Bianca Bryant, Program Manager	(248) 370-3004
Christina Bolden, Administrative Assistant	(248) 370-2654

oakland.edu/secs

LABS AND CENTERS

Oakland University's School of Engineering and Computer Science offers unique academic research opportunities. SECS can boast a number of well-equipped research and development laboratories, where state-of-the-art research in various areas of engineering and computer science are being pursued.

APPLIED ELECTROMAGNETICS AND WIRELESS LAB (AEWL)
oakland.edu/aewl

The AEWL addresses the needs created by the increasing evolution of wireless connectivity systems into our everyday world. The global proliferation of wireless technologies onto dynamic platforms has generated challenging engineering issues such as antenna design, antenna placement, signal propagation modeling, interference and overall wireless system performance. The AEWL possesses extensive antenna measurement capability that directly addresses the needs of the automotive industry. The AEWL has expertise and capabilities to conduct sponsored research and to provide undergraduate and graduate level curriculum in these areas.

Contact: Daniel Aloi, Ph.D. • aloi@oakland.edu • (248) 370-2185

AUTOMOTIVE TRIBOLOGY CENTER
oakland.edu/secs/labs-and-centers/automotive-tribology-center

The Automotive Tribology Center (ATC) is an academic research unit within the Mechanical Engineering department at Oakland University. It is dedicated to automotive tribology research and is uniquely positioned to advance the reliability, mobility and efficiency of automotive components.

Contact: Gary Barber, Ph.D. • barber@oakland.edu • (248) 370-2184

CENTER OF ADVANCED MANUFACTURING AND MATERIALS
oakland.edu/secs/labs-and-centers/camm

Center of Advanced Manufacturing and Materials (CAMM) specializes in sheet metal stamping and joining with substantial emphasis on tool wear, and mechanics of material fracture in stamping and joining operations, and analysis of performance of sheared edges of stamped panels.

Contact: Sergey F. Golovashchenko, Ph.D. • golovash@oakland.edu • (248) 370-4051

CENTER OF CYBER SECURITY
oakland.edu/research/centers/cyber-security

The Oakland University Center of Cyber Security (The Center) promotes the interdisciplinary collaborative research in the area of cyber security, leveraging the partnerships and resources of the university. The Center has a strong research and scholarly direction, provides opportunities for student research and internships, and will be a strong nexus in engaging the community.

Contact: Huirong Fu, Ph.D. • fu@oakland.edu • (248) 370-4456

CLEAN ENERGY RESEARCH CENTER
oakland.edu/energy/clean--research/cerc

The Clean Energy Research Center, or CERC, is the home of multiple, clean energy research, development, and educational activities. The CERC fosters commercial partnerships, provides an educational platform for student research and hands-on clean energy demonstrations, while providing an entrepreneurial atmosphere within the OU R&D community.

Contact: Chris Kobus, Ph.D. • cjkobus@oakland.edu • (248) 370-2489
Jonathan Maisonneuve, Ph.D. • maisonneuve@oakland.edu • (248) 370-2657

CLIC-FORM
oakland.edu/secs/labs-and-centers/clicform

CLIC-form provides training for selected students in sheet metal forming technology and equipment, project management, and problem solving to prepare them for future work in manufacturing environment.

Contact: Sergey F. Golovashchenko, Ph.D. • golovash@oakland.edu • (248) 370-4051

FASTENING AND JOINING RESEARCH INSTITUTE
oakland.edu/secs/labs-and-centers/fastening-and-joining-research-institute

The congressionally approved Fastening and Joining Research Institute (FAJRI) at Oakland University is the only known facility of its kind in the world: an academic, nonprofit research facility dedicated solely to the fastening and joining of materials. This one-of-a-kind facility pursues fundamental and applied research to develop and disseminate new technologies for the fastening and joining of metals, composites and polymers.

Contact: Sayed Nassar, Ph.D. • nassar@oakland.edu • (248) 370-3781

HUMAN-CENTERED ENGINEERING

The Human-Centered Engineering Laboratory is an academic research unit within the Industrial and Systems Engineering Department. It integrates research and education to make technology work for people. With various equipment, such as wearable smart glasses and a driving simulator, students and researchers are exploring new methods to better understand and design human interaction with such emerging technologies as augmented reality and intelligent transportation systems.

Contact: Hy Kim, Ph.D. • hyungilkim@oakland.edu • (248) 370-4896

Fabia Ursula Battistuzzi, Ph.D.
Pennsylvania State University

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Bioengineering; Biological Sciences

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Teaching
Functional Genomics and Bioinformatics;
Evolution; Evolutionary Medicine

Research
Comparative Genomics of Microbial life;
Evolution of Early Life; Genome Complexity in
Pathogens; Development of Bioinformatics
Computational Pipelines.

Selected Publications
Powell, C. and F. U. Battistuzzi. (2020).
Quantifying the error of secondary versus
distant-primary calibrations in a simulated
environment. *Frontiers in Genetics* 11: 252.
DOI: 10.3389/fgene.2020.00252/full.

Sitto, F. and F.U. Battistuzzi. (2019). Estimating
pangenomes with Roary. *Molecular Biology and
Evolution*: 37(3): 933–939. DOI:10.1093/
molbev/msz284.

Superson, A.A, D. Phelan, A. Dekovich and
F.U. Battistuzzi. (2019). Choice of species
affects phylogenetic stability of deep nodes:
an empirical example in Terrabacteria.
Bioinformatics 35(19): 3608-3616.
DOI: 10.1093/bioinformatics/btz121.

Battistuzzi, F.U., Q. Tao, L. Jones, K. Tamura
and S. Kumar. (2018). RelTime relaxes the
strict molecular clock throughout the phylogeny.
Genome Biology and Evolution 10: 1631-1636.
DOI: 10.1093/gbe/evy118.

Chaudhry, S., N. Lwin, D. Phelan,
A.A. Escalante and F.U. Battistuzzi. (2018).
Comparative analysis of low complexity regions
in *Plasmodia. Scientific Reports* 8: 335.
DOI:10.1038/s41598-017-18695-y.

Sara Blumer-Schuette, Ph.D.
Michigan State University
North Carolina State University, Postdoctoral Research Associate

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Teaching
General Microbiology; Microbial Biotechnology;
Ethics in Science; Biology I

Research
Microbial Physiology; Enzymology;
Prokaryotic Functional Genomics;
Biophysical Analysis of Proteins

Selected Publications
Blumer-Schuette, S. E., "Insights into
Thermophilic Plant Biomass Hydrolysis from
Caldicellulosiruptor Systems Biology,"
Microorganisms, vol. 8, no. 3, Art. no. 3,
Mar. 2020

Khan, A. M. A. M., Hauk, V. J., Ibrahim, M.,
Raffel, T. R., & Blumer-Schuette,
S. E., "*Caldicellulosiruptor bescii* Adheres to
Polysaccharides via a Type IV Pilin-Dependent
Mechanism," *Appl. Environ. Microbiol.*, vol. 86,
no. 9, pp. e00200-20, Apr. 2020

Khan, A. M. A. M., Mendoza, C., Hauk, V. J.,
& Blumer-Schuette, S. E., "Genomic and
Physiological Analyses Reveal that Extremely
Thermophilic *Caldicellulosiruptor changbaiensis*
Deploys Uncommon Cellulose Attachment
Mechanisms," *Journal of Industrial Microbiology
and Biotechnology*, vol. 46, no. 9–10, pp.
1251–1263, Aug. 2019

Mendoza, C., & Blumer-Schuette, S. E.,
"Complete Genome Sequence of
Caldicellulosiruptor changbaiensis CBS-Z, an
Extremely Thermophilic, Cellulolytic Bacterium
Isolated from a Hot Spring in China,"
Microbiology Resource Announcements, vol. 8,
no. 9, pp. e00021-19, Feb. 2019

Lee, L. L., Blumer-Schuette, S. E., Izquierdo,
J. A., Zurawski, J. V., Loder, A. J., Conway,
J. M., Elkins, J. G., Podar, M., Clum, A., Jones,
P. C., Piatek, M. J., Weighill, D. A., Jacobson,
D. A., Adams, M. W. W., & Kelly, R. M.,
"Genus-Wide Assessment of Lignocellulose
Utilization in the Extremely Thermophilic
Caldicellulosiruptor by Genomic, Pan-Genomic
and Metagenomic Analysis," *Applied and
Environmental. Microbiology.*, vol. 84, no.9,
p. e02694-17, May. 2018

Blumer-Schuette, S. E., Zurawski, J. V.,
Conway, J. M., Khatibi, P., Lewis, D. L.,
Li, Q., Chiang, V. L., & Kelly, R. M.,
"*Caldicellulosiruptor* saccharolyticus
transcriptomes reveal consequences of
chemical pretreatment and genetic modification
of lignocellulose," *Microbial Biotechnology*,
vol. 10, no. 6, pp. 1546–1557, Nov. 2017

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University of Nebraska
University of Illinois, Urbana-Champaign and University of Florida,
    Postdoctoral Research Associate

Professor and Chair, Bioengineering

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Teaching
Functional Genomics and Bioinformatics; Human Microbiology; BE Senior Design (Capstone); Biology I

Research
Transposon Impact of Genome Evolution and Expression; Maize Model to Interrogate Biological Role of U12 Splicing; In vivo Gene Editing

Selected Publications
Siebert AE, Corll J, Gronevelt P, Levine L, Hobbs LM, Kenney C, Davenport R, Settles AM, Barbazuk WB, Westrick RJ, Madlambayan GM, Lal S (2020) Evolutionary Conservation and Essential Function of Human and Maize RNA Binding Motif Protein 48 (RBM48) in U12-Type Intron Splicing. bioRxiv: https://www.biorxiv.org/content/10.1101/2020.07.18.209528v1

Bai F, Corll J, Shodja DN, Davenport R, Feng G, Mudunkothge J, Brigolin CJ, Martin F, Spielbauer G, Tseung CW, Siebert AE, Barbazuk WB, Lal S, Settles AM (2019) RNA Binding Motif Protein 48 Is Required for U12 Splicing and Maize Endosperm Differentiation. Plant Cell:31 (3):715-733.

Lynch BT, Patrick TL, Moreno JJ, Siebert AE, Klusman KM, Shodja DN, Hannah LC, Lal S (2015) Differential pre-mRNA Splicing Alters the Transcript Diversity of *Helitrons* Between the Maize Inbred Lines. Genes | Genomes | Genetics:12 (8):1703-11.

Rauch HB, Patrick TL, Klusman KM, Battistuzzi FU, Mei W, Brendel VP, Lal S (2014) Discovery and expression analysis of alternative splicing events conserved among plant SR proteins. Mol Biol Evol:31 (3):605-13.

Barbaglia AM, Klusman KM, Higgins J, Shaw JR, Hannah LC, Lal S (2012) Gene capture by *Helitron* transposons reshuffles the transcriptome of maize. Genetics:190 (3):965-75.

Gerard J. Madlambayan, Ph.D.
University of Toronto

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Bioengineering; Biological Sciences

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Teaching
Bioprocess Engineering; Introduction to Engineering Biology; Bioengineering Capstone Design; Introduction to Biology; Cell Biology of Cancer; Biology Capstone

Research
Cancer Biology; Stem Cell Biology; Role of Tumor Microenvironments in Cancer Treatment; Drug Discovery and Development; Mathematical Modelling Cancer Response to Therapy; Testing of Novel Radiation Therapies

Selected Publications
Vijay V., Miller, R., Vue G.S., Pezeshkian B., *Maywood, M., Ast A.M., Drusbosky L.M., Pompeu Y., Salgado A.D., Lipten S.D., Geddes T., Blenc A.M., Ge Y., Ostrov D.A., Cogle C.R., Madlambayan G.J. *Interleukin-8 Blockade Prevents Activated Endothelial Cell Mediated Proliferation and Chemoresistance of Acute Myeloid Leukemia*, Leukemia Research. 84:106180, 2019

Kane, J.L., Krueger, S., Hanna, A., Raffel, T., Wilson, G.D., Madlambayan, G.J., Marples, B. *The effect of irradiation on tumor microenvironment and bone marrow cell migration in a pre-clinical tumor model,* International Journal of Radiation Oncology Biology Physics. 96:170-178, 2016

Thapa, R., Gorski, J., Bogedin, A., Maywood, M., Clement, C., Kandel, S.M., Nasr, S.H., Hanna, D., Huang, X., Roth, B.J., Madlambayan, G.J., Wilson, G.D. *Targeted elimination of CD44 expressing head and neck squamous cell carcinoma cells using*

hyaluronan-mediated ferric oxide nanoparticles, International Journal of Cancer Therapy and Oncology. 4:424-431, 2016

Tan, L., Lin, P., Pezeshkian, B., Rehman, A., Madlambayan, G.J. and Zeng, X. *Real time monitoring of cell mechanical changes induced by endothelial cell activation and their subsequent binding with leukemic cells,* Biosens Bioelectron, 56:151-158, 2014

Kane, J., Krueger, S.A., Dilworth, J.T., Torma, J.T., Wilson, G.D., Marples, B., Madlambayan, G.J. *Hematopoietic stem and progenitor cell migration after hypofractionated radiotherapy in a murine model*, International Journal of Radiation Oncology Biology Physics, 87:1162-1170, 2013

Pezeshkian, B., Donnelly, C., Tamburo, K., Timothy Geddes, T. and Madlambayan, G.J. *Leukemia mediated endothelial cell activation modulates leukemia cell susceptibility to chemotherapy through a positive feedback loop mechanism*, PLoS ONE, 8(4):e60823, 2013

Madlambayan, G.J., Meachem, A., Hosaka, K., Saad, A., Jorgensen, M., Scott, E.W., Siemann, D.W. and Cogle, C.R. *Leukemia Regression by Vascular Disruption and Anti-Angiogenic Therapy,* Blood, 116:1539-1547, 2010

Madlambayan, G.J., Butler, J., Hosaka, K., Jorgensen, M., Fu, D., Guthrie, S.M., Shenoy, A.K., Brank, A., Russel, K.J., Otero, J., Siemann, D.W., Scott, E.W. and Cogle, C.R. *Bone marrow stem and progenitor cell contribution to neovasculogenesis is dependent on model system with SDF-1 as a permissive trigger*, Blood, 114:4310-4319, 2009

Luis G. Villa-Diaz, Ph.D.
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Biological Sciences; Bioengineering

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Teaching
Comparative Physiology; Tissue Engineering

Research
"My research focus is in identifying and elucidating novel molecular mechanisms directed by the microenvironment and involved in self-renewal of stem cells. We use synthetic substrates engineered to modify the response of stem cells, for example, to enhance self-renewal and the cell cycle or to increase stem cell differentiation."

Selected Publications
Qiryaqoz, Z., Timilsina, S., Czarnowski, D, Krebsbach, P.H., Villa-Diaz, L.G. Identification of biomarkers indicative of functional skeletal stem cells. Orthodontics & Craniofacial Research 2019 2 (Suppl. 1):192-198. DOI:10.111/ocr.12260

Villa-Diaz, L.G., Kim, J.K., Laperle, A. Palecek, S.P., Krebsbach, P.H. Inhibition of Focal adhesion kinase signaling by integrin a6b1 supports human pluripotent stem cell self-renewal. *Stem Cells* 2016, 34:1753-1764. PMID: 26930028.

Villa-Diaz, L.G., Kim, J.K. Lahann, J., Krebsbach, P.H. Derivation of xenogeneic-free and transgene-free human iPSCs on synthetic substrates. S*tem Cells Translational Medicine 2014*. 3:1410-1417. PMID: 25313201.

Qian, X., Villa-Diaz, L.G., Kumar, R., Lahann, J., Krebsbach, P.H. Enhancement of the propagation of human embryonic stem cells by modifications in the gel architecture of PMEDSAH polymer coatings. *Biomaterials* 2014, 35:9581-9590. PMID: 25189518.

Sun, Y., Yong, K.M.A, Villa-Diaz, L.G., Zhang, X., Chen, W., Philson, R., Weng, S., Xu, H., Krebsbach, P.H., Fu., J. Hippo/YAP-mediated rigidity-dependent motor neuron differentiation of human pluripotent stem cells. *Nature Materials* 2014, 13:599-604. PMID: 24728461.

Villa-Diaz, L.G.*, Nandivada H.*, Ding, J., Naiara C. Nogueira-de-Souza, Krebsbach, P.H., O'Shea, K.S., Lahann, J., Smith, G.D. Synthetic polymer coatings for long-term growth of human embryonic stem cells. *Nature Biotechnology* 2010, 28: 581-583. PMID: 20512122. *Equal authorship.

Nandivada, H.*, Villa-Diaz, L.G.*, O'Shea, K.S., Smith, G.D., Krebsbach, P.H., Lahann, J. Fabrication of synthetic polymer coatings and their use in feeder-free culture of human embryonic stem cells. *Nature Protocols* 2011, 6:1037-1043. PMID: 21720316. *Equal authorship.

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Bioengineering
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Full bio available on page 48.

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Teaching
Programming Languages; Software Security;
Theory of Computation; Data Structures

Research
Making engineering of correct software easier
using Software Engineering and Programming
Languages techniques.

Selected Publications
Ahmed, S. and Bagherzadeh, M. "What Do
Concurrency Developers Ask About? A
Large-scale Study Using Stack Overflow."
*In Proceedings of 12th International Symposium
on Empirical Software Engineering and
Measurement (ESEM 2018).*

Bagherzadeh, M. and Rajan, H. "Order Types:
Static Reasoning About Message Races in
Asynchronous Message Passing Concurrency."
*In Proceedings of the 7th ACM SIGPLAN
International Workshop on Programming Based
on Actors, Agents, and Decentralized Control
(AGERE 2017).* ACM, New York, NY, USA,
21-30, 2017.

Mehdi Bagherzadeh and Raffi Khatchadourian.
"Going big: A large-scale study on what big
data developers ask". In Proceedings of the
2019 27th ACM Joint Meeting on European
Software Engineering Conference and
Symposium on the Foundations of Software
Engineering, *ESEC/FSE 2019*, pages 432–442,
New York, NY, USA, 2019. ACM

Raffi Khatchadourian, Yiming Tang, Mehdi
Bagherzadeh, and Syed Ahmed. "Safe
automated refactoring for intelligent
parallelization of Java 8 streams". In
*Proceedings of the 41st International Conference
on Software Engineering*, ICSE '19,
pages 619–630, Piscataway, NJ, USA, 2019.
IEEE Press

Kate Bowers, Ph.D. Candidate
Oakland University

Special Instructor
Computer Science and Engineering

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Teaching
Introduction to C and UNIX; Introduction
to Programming with Python System
Administration: Advanced System Administration

Research
Search-Based Software Engineering;
Cyber-Physical Systems; Uncertainty Analysis;
Evolutionary Computation; Embedded
Cybersecurity; Big Data Analytics

Selected Publications
Bowers, K. M., Fredericks, E. M., Hariri, R. H.,
& Cheng, B. H. "Providentia: Using
search-based heuristics to optimize
satisficement and competing concerns between
functional and non-functional objectives in
self-adaptive systems." *Journal of Systems and
Software* 162 (2020): 110497.

Bowers, K. M., Fredericks, E. M., & Cheng, B. H.
"Automated optimization of weighted
non-functional objectives in self-adaptive
systems," in the p*roceedings of the 10th
symposium on search-based software
engineering*, 2018.

Fredericks, E. M., Bowers, K. M., Price, K. A.,
& Hariri, R. H. "CAL: A smart home
environment for monitoring cognitive decline."
*2018 IEEE 38th International Conference on
Distributed Computing Systems (ICDCS*).
IEEE, 2018.

Bowers, K. M., Hariri, R. H., & Price, K. A.
"3CAP: categorizing the cognitive capabilities
of Alzheimer's patients in a smart home
environment." *Proceedings of the 4th ACM
SIGSOFT International Workshop on NLP for
Software Engineering*. 2018.

Hariri, Reihaneh H., Erik M. Fredericks, and Kate
M. Bowers. "Uncertainty in big data analytics:
survey, opportunities, and challenges." *Journal
of Big Data* 6.1 (2019): 44.

Jingshu Chen, Ph.D.
Michigan State University

Assistant Professor
Computer Science and Engineering

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Teaching
Software Engineering and Practice

Research
Software Reliability; Program Verification
and Automatic Repair; Formal Methods;
Distributed System

Selected Publications
"Ensuring Average Recovery with Adversarial
Scheduler." Chen, J., Roohitavaf, M., and
Kulkarni, S. *The International Conference on
Principles of Distributed Systems (OPODIS),*
2015.

"Refinement of Probabilistic Stabilizing
Programs Using Generic Algorithms." Zhu, L.,
Chen, J., and Kulkarni, S. *The International
Symposium on Stabilization, Safety and Security
of Distributed System (SSS),* 2015.

"The Complexity of Adding Multitolerance."
Chen, J., Ebnenasir, A., and Kulkarni, S. ACM
*Transactions on Autonomous and Adaptive
Systems (TAAS),* 2014.

Debatosh Debnath, Ph.D.
Kyushu Institute of Technology (Japan)

Associate Professor
Computer Science and Engineering

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Teaching
Computer Architecture; Microprocessor-Based
Systems; Logic Synthesis for Digital Systems;
Computer Networks

Research
Design and Optimization of Digital Circuits;
CAD for Field-Programmable Devices; Decision
Diagrams and Their Applications in VLSI CAD;
Innovative Applications of FPGAs

Selected Publications
"Embedded Software Implementation of a
Key Agreement Protocol Using 160-bit Elliptic
Curve," *International Journal of Computers
and Their Applications*, 2010

"Synthesis of Easily Testable AND-EXOR
Networks," *International Journal of Computers
and Their Applications,* 2011

Laura Dinsmoor, M.S.
Oakland University

Special Instructor
Computer Science and Engineering

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Teaching
Introduction to Computer Programming
with Visual Basic Introduction to Unix and
Computer Programming with C Introduction
to Object Oriented Programming

Research
Software Reliability; Program Verification
and Automatic Repair; Formal Methods;
Distributed System

Outreach
Recruitment and retention of a diversified
population of students in Computer Science
and Information Technology

Continual improvement of pedagogical
methods for teaching programming to first and
second-year students, including students
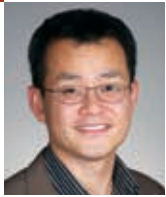on the autism spectrum.

*"I offer a workshop for middle school and high
school teachers to give the techniques and
information to help them recruit a diverse set
of students in their computer science classes
and clubs."*

Huirong Fu, Ph.D.
Nanyang Technological University (Singapore)
Postdoctoral Fellow, Rice University

Professor
Computer Science and Engineering, Outstanding Service Award

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Teaching
Introduction to Computer Networks; Advanced
Computer Communication; Information Security
Practice; Information Security

Research
Information Assurance and Security;
Wireless and Mobile Networks; Sensor
Networks; Networks / Protocols / Applications;
Multimedia Communication Systems; Resource
Management and Quality of Service (QoS)

Selected Publications
Zhu, Y., Vikram, A., Fu, H., and Guan, Y., "On
Non-Cooperative Multiple-Target Tracking with
Wireless Sensor Networks," *IEEE Transactions
on Wireless Communications,* vol. 13, no.11,
pp. 6496-6510, 2014.

Zhu, Y., Vikram, A., and Fu, H., "On Topology
of Sensor Networks Deployed for Multi-Target
Tracking," *IEEE Transactions on Intelligent
Transportation Systems,* vol. 15, no. 4, pp.
1489-1498, 2014.

Wang, Q., Leng, S., Fu, H., and Zhang, Y.,
"An IEEE 802.11p-based Multi-channel MAC
Scheme with Channel Coordination for
Vehicular Ad Hoc Networks," *IEEE Trans. on
Intelligent Transportation Systems,* vol. 13, no.2,
pp. 449-458, 2012.

Leng, S., Zhang, L., Fu, H., and Yang, J.,
"A Novel Location Service Protocol Based on
K-Hop Clustering for Mobile Ad Hoc Networks,"
IEEE Transactions on Vehicular Technology,
vol. 56, no. 2, pp. 810-817, 2007.

Dae-Kyoo Kim, Ph.D.
Colorado State University

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Computer Science and Engineering

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Teaching
Object-Oriented Programming; Software Engineering and Practice; Fundamentals of Software Modeling; Software Prototyping and Validation; Software Engineering; Software Verification and Testing

Research
Software Design and Specification; Pattern-Based Software Development; Aspect-Oriented Design; Access Control Modeling; Smart Grid Data Modeling; Internet of Things.

"My research focuses on developing reliable, maintainable, and secure software systems."

Selected Publications
"Model Transformation between OPC UA and UML," *Computer Standards & Interfaces,* 2016

"Unifying Data Types of IEC 61850 and CIM," *IEEE Transactions on Power Systems,* 2014

"Building Hybrid Access Control by Configuring RBAC and MAC features," *Journal of Information and Software Technology*, 56(7), 2014

"Required Behavior of Sequence Diagrams Semantics and Refinement," *ACM Transactions on Software Engineering and Methodology,* 23(2), 2014.

"A UML-Based Pattern Specification Technique," *IEEE Transactions on Software Engineering* 30(3), 2004

Patent, "Apparatus and method for recommending software process improvement," 2015

Anyi Liu, Ph.D.
George Mason University

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Computer Science and Engineering

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Teaching
Introduction to Computer Programming; Computer Architecture; Programming Languages; Operating Systems; Network and System Security

Research
Network and System Security; Intrusion Detection and Prevention, Malware Analysis and Defense; Steganography; Digital Forensics; Privacy

Selected Publications
Liu, A., Chen, J., and Wechsler, H. "Real-time Timing Channel Detection in a Software-Defined Networking Virtual Environment." *Intelligent Information Management,* Vol.7, No.6, pages 283-302, 2015.

Liu, A., Liu, J., and Uehara, T. "Streaming Forensic Data Transmission for Trusted Cloud." *The Second International Workshop on Security and Forensics in Communication Systems in conjunction with the 9th ACM Symposium on Information, Computer and Communications Security (AISACCS-SFCS 2014).* Kyoto, Japan, June 3-6, 2014.

Liu, A., Chen, J.X., and Wechsler, H. "Detecting Covert Timing Channels in a Networked Virtual Environment." *The Ninth IFIP WG 11.9 International Conference on Digital Forensics (ICDF 2013).* Orlando, Florida, USA, January 28-30, 2013.

Liu, A., Wijesekera, D., and Stavrou, A. "SQLProb, a Proxy-based Architecture Towards Preventing SQL Injection Attacks." *The 24th Annual ACM Symposium on Applied Computing (SAC 2009).* Honolulu, Hawaii, USA, March 9-12, 2009.

Wang, L., Liu, A., and Jajodia, S. "Using Attack Graphs for Correlating, Hypothesizing, and Predicting Network Intrusion Alerts." *Computer Communications,* Vol.29, No.15, pages 2917-2933, 2006.

Lunjin Lu, Ph.D.
University of Birmingham (UK)

Professor and Chair
Computer Science and Engineering

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Teaching
Programming Languages; Theory of Computation; Object Oriented Programming; Data Structures; Algorithms; Parallel and Concurrent Programming

Research
Static Program Analysis; Abstract Interpretation; Logic Programming; Web Application Security; Software Security; Software Verification

Selected Publications
Lu, L., "A Polymorphic Type Dependency Analysis for Logic Programs," *New Generation Computing,* 29(4): 409-444, 2011.

King and Lu, L., "A Backwards Analysis of Constraint Logic Programs," *TPLP 2* (4-5): 517-547, 2002.

Lu, L., and King, A., "Determinacy Analysis of Logic Programs," *ESOP,* 108-123, 2015.

Younang, A., Lu, L., "Improving Precision of Java Script Program Analysis with an Extended Domain of Intervals." *COMPSAC Workshops 2015*: 441-446, 2015.

Kim, S., Kim, D-K., Lu, L. and Park, S. "Quality Driven Architecture Development Using Architectural Tactics," *Journal of Systems and Software,* 82 (8): 1211-1231, 2009.

Lu, L., and Kim, D-K. "Required Behavior of UML Sequence Diagrams: Semantics and Conformance," *ACM TOSEM,* 23 (2): 15:1 – 15:28, 2014.

Tianle Ma, Ph.D.
University at Buffalo

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Teaching
Artificial Intelligence; Database Systems

Research
Robust and Interpretable AI; Deep Learning; Bioinformatics

Selected Publications
Tianle Ma, and Aidong Zhang. "Integrate Multi-omics Data with Biological Interaction Networks Using Multi-view Factorization AutoEncoder (MAE)." *BMC Genomics* (2019).

Tianle Ma, and Aidong Zhang. "AffinityNet: Semi-supervised Few-shot Learning for Disease Type Prediction." *The Thirty-Third AAAI Conference on Artificial Intelligence* (2019).

Tianle Ma, and Aidong Zhang. "Affinity Network Fusion and Semi-supervised Learning for Cancer Patient Clustering." *Methods* 145 (2018).

Tianle Ma, and Aidong Zhang. "Integrate Multi-omic Data Using Affinity Network Fusion (ANF) for Cancer Patient Clustering." *IEEE International Conference on Bioinformatics and Biomedicine* (2017).

Tianle Ma, and Aidong Zhang. "Omics Informatics: From Scattered Individual Software Tools to Integrated Workflow Management Systems." *IEEE/ACM Transactions on Computational Biology and Bioinformatics* (2017).

Tianle Ma, and Aidong Zhang. "Reconstructing Context-specific Gene Regulatory Network and Identifying Modules and Network Rewiring through Data Integration." *Methods* 124 (2017).

Khalid M. Malik, Ph.D.
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Teaching
Information Security Practices (CSI4480/5480); Advanced Web Design and Applications (CSI 5510); Introduction to Computer Networks (CSI 2470); Interactive Web Systems (CSI 2520);

Research
Cybersecurity; Artificial Intelligence; Clinical Informatics; Multimedia Forensics; Automated Knowledge Graph Curation

Selected Publications
Malik, Khalid Mahmood, Ali Javed, Hafiz Malik, and Aun Irtaza. "A light-weight replay detection framework for voice controlled IoT devices." *IEEE Journal of Selected Topics in Signal Processing* 14, no. 5 (2020): 982-996.

Mansour, Ahmad, Khalid M. Malik, Ahmed Alkaff, and Hisham Kanaan. "ALMS: Asymmetric Lightweight Centralized Group Key Management Protocol for VANETs." *IEEE Transactions on Intelligent Transportation Systems* (2020).

Malik, Khalid Mahmood, Madan Krishnamurthy, Mazen Alobaidi, Maqbool Hussain, Fakhare Alam, and Ghaus Malik. "Automated domain-specific healthcare knowledge graph curation framework: Subarachnoid hemorrhage as phenotype." *Expert Systems with Applications* 145 (2020): 113120.

Malik, Khalid Mahmood et al. "ISADAQ: A Framework for Intracranial Saccular Aneurysm Detection and Quantification using Morphological Analysis of Cerebral Angiograms." IEEE Access, 2018.

Sabra S., Malik, Khalid Mahmood., Mazen, A., "Prediction of Venous Thromboembolism Using Semantic and Sentiment Analyses of Clinical Narratives," Computers in Biology and Medicine, Elsevier, 2018.

Mazen, A., Malik, Khalid Mahmood., Hussain, M. "Automated Ontology Generation Framework Powered by Linked Biomedical Ontologies for Disease-Drug Domain," Computer Methods and Programs in Biomedicine, Elsevier, 2018.

Muhammad Afzal, Fakhare Alam, Khalid Mahmood Malik, Ghaus Malik "A Clinical Context-aware Biomedical Text Summarization using Deep Neural Network: Model Development and Validation" Journal of Medical Internet Research, 2020

Hua Ming, Ph.D.
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Teaching
Programming Languages; Theory of Computation; Software Verification/Test; Software Engineering and Practice

Research
Programming Languages and Language-based Security; Software Verification and Formal Methods, Situation-aware and Context-aware Software Systems

Selected Publications
Alghamdi, K., Alqazzaz, A., Liu, A., and Ming, H. "LoTVerif: An Automated Tool to Verify SSL/TLS Certificate Validation in Android MQTT Client Applications." *The 8th ACM Conference on Data and Application Security and Privacy (CODASPY),* 2018.

Feng, Y., Chang, C.K., Ming, H. "Recognizing Activities of Daily Living to Improve Well-being." *Journal of IT Professional,* Volume 19, Issue 3, 2017.

Alghamdi, K., Almashfi, N., Ming, H. "A Software Tool for Floating Point Interval Analysis with Improved Precision for Javascript-based Medical Applications." *In Proceedings of the 40th IEEE International Computer Software and Applications Conference (COMPSAC),* 2016.

Ming, H., Chang, C.K., Yang, J. "Dimensional Situation Analytics: From Data to Wisdom." *In Proceedings of 39th IEEE International Computer Software and Applications Conference (COMPSAC),* 2015.

Atiqul Mollah, Ph.D.
Florida State University

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mollah@oakland.edu

Teaching
CSI 1420 - Introduction to C Programming
and Unix; Web Programming and Design;
Object Oriented Programming

Research
High Performance Computing; Parallel and
Distributed Systems; Interconnection Networks;
Topology and Routing Design; Cloud
Computing; Network Flow Optimization;
Network Performance Modeling; Software-
defined Networking

Selected Publications
Mollah, M.A., Yuan, X., Pakin, S., and Lang, M.
"Rapid Calculation of Max-Min Fair Rates for
Multi-commodity Flows in Fat-tree Networks,"
*IEEE Transactions on Parallel and Distributed
Systems (TPDS),* vol. 29, no. 1, pp. 156-168,
2018.

Faizian, P., Mollah, M.A., Tong, Z., Yuan, X.,
and Lang, M. "A comparative study of SDN and
adaptive routing on dragonfly networks," SC17:
*ACM/IEEE International Conference for High
Performance Computing, Networking, Storage
and Analysis,* Denver, CO, USA, 2017.

Mollah, M.A., Faizian, P., Rahman, M.S., Yuan,
X., "A Comparative Study of Topology Design
Approaches for HPC Interconnects," submitted
to the *18th IEEE/ACM International Symposium
on Cluster, Cloud and Grid Computing (CCGrid),*
Washington, DC, USA, 2018.

Faizian, P., Mollah, M.A., Yuan, A., Alzaid, Z.,
Pakin, S., and Lang, M. "Random Regular
Graph and Generalized De Bruijn Graph with
k-shortest Path Routing," *EEE Transactions on
Parallel and Distributed Systems (TPDS),*
vol. 29, no. 1, pp. 144-155, 2018.

Nilesh Patel, Ph.D.
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Teaching
Software Engineering; Mobile Computing;
Smart Phone Application Development;
Pattern Recognition and Data Mining

Research
Data Mining and Knowledge Discovery; Pattern
Recognition; Image processing; Multimedia
Information Systems; Distributed and Multicore
Computing; Embedded Software Engineering;
Mobile Computing; Bioinformatics; Telematics
and Automotive Computing

Selected Publications
"From Centralized to Distributed Decision
Tree Induction using CHAID and Fisher's Linear
Discriminate Function Algorithms," *Journal
of Intelligent Decision Technologies,* 2011.

"Multi-label Classification Method for
Multimedia Tagging," *International Journal of
Multimedia Data Engineering Management,*
2010.

"Minimum Steiner Tree for Automatic SQL
Query Generation Applied on a Medical Record
Database," *IEEE International Workshop on
Web Services in Healthcare,* 2010.

"Multi Camera Multi Object Tracking using
Block Search over Epipolar Geometry,"
NUiCone, 2010.

Guangzhi Qu, Ph.D.
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Teaching
Artificial Intelligence; Machine Learning; Operating Systems

Research
Machine Learning; Data Mining; Artificial Intelligence; Healthcare Computing; Embedded Software Analysis; Multicore Computing; Parallelization; Discrete Event Simulation

Selected Publications
X. Lei, R. Guo, F. Zhang, L. Wang, R. Xu and G. Qu, "Optimizing FHEW With Heterogeneous High-Performance Computing," in *IEEE Transactions on Industrial Informatics*, vol. 16, no. 8, pp. 5335-5344, Aug. 2020, doi: 10.1109/TII.2019.2957182.

Guo, R., Xue, E., Zhang, F. et al. Optimizing the confidence bound of count-min sketches to estimate the streaming big data query results more precisely. *Computing* 102, 1419–1445 (2020). https://doi.org/10.1007/s00607-018-00695-z

Lauren, P., Qu, G., Yang, J. et al. Generating Word Embeddings from an Extreme Learning Machine for Sentiment Analysis and Sequence Labeling Tasks. *Cogn Comput* 10, 625–638 (2018). https://doi.org/10.1007/s12559-018-9548-y

P. Lauren, G. Qu, F. Zhang, A. Lendasse Discriminant document embeddings with an extreme learning machine for classifying clinical narratives. Neurocomputing, 277 (2018), pp. 129-138 https://doi.org/10.1016/j.neucom.2017.01.117

Feng Zhang, Ti Gong, Victor E. Lee, Gansen Zhao, Chunming Rong, Guangzhi Qu, "Fast algorithms to evaluate collaborative filtering recommender systems", *Knowledge-Based Systems*, vol 96, March 15th, 2016.

Sunny Raj, Ph.D.
University of Central Florida

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Teaching
Programming Languages

Research
Machine Learning; Robustness of Machine Learning; Emerging Architecture

Selected Publications
S. Jha, S. Raj, S. L. Fernandes, S. K. Jha, S. Jha, B. Jalaian, G. Verma, and A. Swami, "Attribution-based confidence metric for deep neural network," in Advances in Neural Information Processing Systems (NIPS), 2019.

S. Raj, L. Pullum, A. Ramanathan, and S. K. Jha, "SATYA: Defending against adversarial attacks using statistical hypothesis testing," in Foundations and Practice of Security, pp. 277–292, Springer International Publishing, 2018.

S. Raj, J. S. Pannu, S. L. Fernandes, A. Ramanathan, L. L. Pullum, and S. K. Jha, "Attacking NIST biometric image software using nonlinear optimization," Pattern Recognition Letters, vol. 131, pp. 79 – 84, 2020.

S. Raj, S. K. Jha, A. Ramanathan, and L. L. Pullum, "Work-in-progress: testing autonomous cyber-physical systems using fuzzing features from convolutional neural networks," in 2017 International Conference on Embedded Software (EMSOFT), pp. 1–2, Oct 2017.

Julian Rrushi, Ph.D.
University of Milan, Italy
Postdoctorate in Computer Science, University of New Brunswick, Canada

Assistant Professor, Computer Science and Engineering

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(248) 370-4067

Teaching
Computer science courses including operating systems, computer networks, algorithms and data structures. Specialized courses in cyber security, including industrial control systems security, cryptography and computer security.

Research
Defensive cyber deception, cyber-physical system security, anti-malware, cyber security applications of machine learning and artificial intelligence.

Selected Publications
Rrushi, J., Klein, R., Barkley, T., Clizbe, W., and Bateman, J. "Model-driven Timing Consistency for Active Malware Redirection." In Proceedings of the *13th IEEE International Conference on Malicious and Unwanted Software,* Nantucket, Massachusetts, USA, 2018.

Rrushi, J., Simms, S., Maxwell, M., and Johnson, S. "Keylogger Detection Using a Decoy Keyboard." *In Proceedings of the IFIP WG 11.3 Conference on Data and Applications Security and Privacy,* Philadelphia, PA, USA, 2017.

Rrushi, J."Defending Electrical Substations against 0-day Malware." *In Proceedings of the 15th IEEE International Conference on Dependable, Autonomic and Secure Computing,* Orlando, Florida, USA, 2017.

Rrushi, J."Phantom I/O Projector: Entrapping Malware on Machines in Production," *In Proceedings of the 12th IEEE International Conference on Malicious and Unwanted Software,* Fajardo, Puerto Rico, USA, 2017.

Rrushi, J."Timing Performance Profiling of Substation Control Code for IED Malware Detection," *ACSAC Industrial Control System Security Workshop,* Orlando, Florida, USA, 2017.

Amartya Sen, Ph.D.
Missouri University of Science and Technology

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Computer Science and Engineering

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(248) 370-4260

Teaching
Database Design and Implementation

Research
Cybersecurity risk assessment in broad domains of Sensor Cloud, Autonomous Vehicles, and Internet of Things. Secure and dynamic service recommendations for IoT based applications using the concept of variable network security.

Selected Publications
Sen, A., Fletcher, K.K., and Madria, S., "A secure user-centric framework for dynamic service provisioning in IoT environments." In *Proceedings of 18th IEEE International Conference on Trust Security and Privacy in Computing and Communications*, TRUSTCOM'19, 2019.

Kumar, V., Sen, A., and S. Madria, S., "Secure sensor cloud." *Synthesis Lectures on Algorithms and Software in Engineering*, 9(2):1–140, Dec. 2018.

Sen, A., and Madria, A., "Risk Assessment in a Sensor Cloud Framework Using Attack Graphs," *IEEE Transactions on Services Computing*, 10(6):942–955, 2017.

Ishwar Sethi, Ph.D.
Indian Institute of Technology (Kharagpur)

Professor
Computer Science and Engineering

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Teaching
Intro Computing With Excel; Computer Vision; Data Mining; Deep Learning; Machine Learning; Pattern Recognition; Research Methods

Research
Data Mining; Text, Image and Video Databases; Neural Networks Design & Applications; Motion Analysis & Object Tracking; Deep Learning; Pattern Recognition; Machine Learning

Selected Publications
"From Centralized to Distributed Decision Tree Induction using CHAID and Fisher's Linear Discriminate Function Algorithms," J*ournal of Intelligent Decision Technologies,* 2011.

"Multilabel Classification Method for Multimedia Tagging," *International Journal of Multimedia Data Engineering Management,* 2010.

"Confidence-based Active Learning," *IEEE Trans. Pattern Analysis and Machine Intelligence,* 2006.

"Convolution-Based Edge Detection for Image/ Video in Block DCT Domain," *Journal of Visual Communication and Image Representation,* 1996.

"Entropy Net: From Decision Trees to Neural Nets," *Proceedings of the IEEE,* 1991.

"Finding Trajectories of Feature Points in a Monocular Image Sequence," *IEEE Trans. Pattern Analysis and Machine Intelligence,* 1987.

Mohammad-Reza Siadat, Ph.D.
Wayne State University

Associate Professor
Computer Science and Engineering; Bioengineering

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Teaching
Visual Computing; Advanced Visual Computing; Pattern Recognition and Machine Learning; Computer Problem Solving; Design and Analysis of Algorithms

Research
Medical Signal and Image Processing; Computational Anatomy and Physiology; Medical Informatics. The goals are utilization of the wealth of available medical data to the fullest for data-driven and patient-specific diagnosis, treatment planning and prognosis.

Selected Publications
"Unstructured Medical Image Query using Big Data – An Epilepsy Case Study," J*ournal of Biomedical Informatics,* Vol. 59, pp. 218–226, 2016.

"Analysis of Incomplete and Inconsistent Clinical Survey Data," *Journal of Knowledge and Information Systems,* Vol. 46, Issue 3, pp. 731-750, 2016.

"Validation of Brain Connectivity Analysis using fMRI Simulation," *Int. J. of Engin. Sys. Modelling and Simulation,* Vol. 7, No. 4, pp. 279–293, 2015.

"Conversion of a Surface Model … into a Volume Model for Medical Image Retrieval," *Applied Medical Informatics,* Vol. 36, No. 2, pp. 9-30, 2015.

"Continence Index: a New Screening Quest. to Predict Probability of Incont. …," *Int. Urology and Nephrology,* Vol. 47, No. 7, pp. 1091-1097, 2015.

"Stratification of Clinical Survey Data Using Contingency Tables," *Int. J. of Data Mining and Knowledge Management Process,* Vol.4, No.4, July 2014.

"A Simulation … Feature Selection Methods Utilizing Gene Ontology for Gene Expr. Classif.," *J. of Biomed. Info.,* Vol. 46, No. 6, pp. 1044-59, 2013.

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Teaching
Senior Design and Implementation;
Bioinformatics; Computer Forensics;
Senior Design

Research
Data Mining and Innovative Discovery;
Intellectual Property and Creativity Informatics,
Bioinformatics; Cyber Laws, Forensics and
Computer Crimes; Parallel Computing
and Algorithms

Selected Publications
*Foundations of Computational Biology and
Bioinformatics.* Springer, 2015.

"Protecting Innovative Business Methods,
Software and Databases," *Global Journal of
Business Information Systems, Enriched
Publications.* v. 1(1), pp. 1-10, 2013-2013.

"Learning Information Patterns in Biological
Databases – Stochastic Data Mining," *Data
Mining and Knowledge Discovery Handbook,*
2010.

"Modified SACO Algorithm for Productive
Emergence," *International Journal of Computers
and Their Applications,* 2010.

"Using Hidden Markov Models In Vehicle Crash
Detection," *IEEE Transactions on Vehicular
Technology,* 2009.

"Component-Based Approach for Educating
Students in Bioinformatics," *IEEE Transactions
on Education,* 2009.

"Mathematical model to predict regions of
chromatin attachment to the nuclear matric,"
Nucleic Acid Research, 1997.

Douglas Zytko, Ph.D.
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Teaching
Human Computer Interaction; Undergraduate
Research; Game Design

Research
Human computer interaction; user experience
(UX) design; sexual violence; virtual reality;
online dating; social matching; qualitative methods

"My research produces software prototypes
with a user-centered design process to
address significant social and health problems.
My work involves real users in software
design and evaluation in order to achieve
real world impact."

Selected Publications
D. Zytko, V. Regalado, N. Furlo, S.A. Grandhi,
and Q. Jones. "Supporting Women in Online
Dating with a Messaging Interface that
Improves their Face-to-Face Meeting
Decisions." Proceedings of the ACM on
Human-Computer Interaction (PACM HCI),
Vol. 4, CSCW2, Article 137 (October 2020).
30 pages.

D. Zytko and L. Devreugd. "Designing a
Social Matching System to Connect Academic
Researchers with Local Community
Collaborators." Proceedings of the ACM on
Human-Computer Interaction (PACM HCI),
Vol. 3, GROUP, Article 236 (December 2019).
15 pages.

M. Jonas, S. Said, D. Yu, C. Aiello, N. Furlo,
and D. Zytko. "Towards a Taxonomy of Social
VR Application Design." In Extended Abstracts
of the Annual Symposium on Computer-Human
Interaction in Play (CHI PLAY '19). ACM,
437-444.

D. Zytko, S.A. Grandhi, and Q. Jones. "The
(Un)enjoyable User Experience of Online Dating
Systems." Funology 2: From Usability to
Enjoyment, Mark Blythe and Andrew Monk
(eds.). New York, NY: Springer, 2018.

D. Zytko, G. Freeman, S.A. Grandhi, S.C.
Herring, and Q.G. Jones. "Enhancing Evaluation
of Potential Dates Online Through Paired
Collaborative Activities." Proceedings of the
18th ACM Conference on Computer Supported
Cooperative Work & Social Computing,
1849–1859, 2015.

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Teaching
Electronic Materials and Devices; Electronic Circuit Design; Integrated Circuits and Devices

Research
Director of the Microelectronics & Bio-Inspired Systems Design Lab; Biotechnology with Intelligent Signal Processing on Integrated Chips for Medical; Wireless Accurate Classification Applications on Sub-micro-electronics

Selected Publications
"Chemical Absorbate Detection on Graphene by Applying Electronic Structure Calculations to Energy Minimized Molecular Models," *Symposium on Graphene Nanomaterials and Neural Interfaces,* 2011.

"Cognitive Information Processing Using H/W Spiking Neural Networks," *45th Conference of the Institute for Statistical Studies and Research (ISSR),* 2010.

"Sampling Spiking Neural Network Electronic Nose on a Tiny Chi," *Proceedings of the IEEE MWSCAS,* 2010.

"Hyper-Fuzzy Modeling and Control for Bio-Inspired Radar Processing," *Proceedings from the IEEE National Aerospace & Electronics Conference, NAECON,* 2010.

"Spiking Neural Network E-NOSE Classifier Chip," *Proceedings of the IEEE National Aerospace & Electronics Conference, NAECON,* 2010.

"A Renewable Energy Primer: Myths, Reality, Business and Social Perception," *Europe's Premier Wind Energy Conference,* 2010.

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Teaching
GPU Accelerated Computing; Microprocessor-Based System Design; Digital Logic Design Microprocessors; Senior Design

Research
General-Purpose Computing on Graphics Processing Units (GPGPU); High Performance Computing; Embedded System Design with GPUs; Autonomous Driving; Software Optimization; Numerical Simulation and Modeling; Machine Learning; Internet of Things (IoT); Software Design Analysis

Selected Publications
"Intelligent Wearable Heart Rate Sensor Implementation for In-Vehicle Infotainment and Assistance" Giribabu Sinnapolu and Shadi Alawneh, The Internet of Things: Engineering Cyber Physical Human Systems, August 2020.

"Predicting Pedestrian Intention to Cross The Road" Karam Abughalieh and Shadi Alawneh, The IEEE Access Journal, Volume 8, Pages 72558-72569, April 2020.

"A Survey of Parallel Implementations for Model Predictive Control" Karam Abughalieh and Shadi Alawneh, The IEEE Access Journal, Volume 7, Pages 34348-34360, March 2019.

"A Survey of GPU Implementations for Hyperspectral Image Classification in Remote Sensing", Ayomide Yusuf and Shadi Alawneh, The Canadian Journal of Remote Sensing, Volume 44, 2018, Issue 5, Pages 532-550, February 2019.

"Integrating Wearables with Cloud-Based Communication for Health Monitoring and Emergency Assistance" Giribabu Sinnapolu and Shadi Alawneh, The Internet of Things: Engineering Cyber Physical Human Systems, Volumes 1–2, Pages 40-54, August 2018.

"GPU Implementation of Sales Forecasting with Linear Regression", Ayomide Yusuf and Shadi Alawneh, International Journal of Innovative Research in Computer Science & Technology (IJIRCST), vol 6, No. 4, July 2018.

"Hyper-Real-Time Ice Simulation and Modeling Using GPGPU", Shadi Alawneh, Roelof Draget, Dennis Peters, Claude Daley and Stephen Bruneau, IEEE Transactions On Computers, vol 64, No. 12, December 2015, pp. 3475-3487.

"GPU Implementation for Automatic Lane Tracking in Self-Driving Cars" Ayomide Yusuf and Shadi Alawneh, SAE Technical Paper in the WCX SAE World Congress Experience (WCX 2019), April 2019, Detroit, Michigan, USA.

"Real Time 2D Pose Estimation for Pedestrian Path Estimation using GPU Computing"Karam Abughalieh and Shadi Alawneh, SAE Technical Paper in the WCX SAE World Congress Experience (WCX 2019), April 2019, Detroit, Michigan, USA.

Daniel N. Aloi, Ph.D.
Ohio University

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Director of Research, Applied EMAG and Wireless Lab

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Teaching
Antennas; Electromagnetics; Communications
& Global Navigation Satellite Systems

Research
Director of the Applied EMAG & Wireless
Lab (AEWL); Applied Electromagnetics;
Antenna Design; Antenna Measurements;
Antenna Modeling

Selected Publications
He, X., Aloi, D.N. "Probabilistic Multi-Sensor
Fusion Based Indoor Positioning System on
Mobile Device," *Sensors Journal,* Manuscript
ID: sensors-101368, 2015.

Aloi, D.N., and Alkhateeb, A. "An Investigation
via Simulation and Measurements to Assess
Vehicle Impact on Personal Privacy Device
Antenna Radiation Patterns," NAVIGATION,
Journal of the Institute of Navigation, Volume
62, pp. 151-160, 2015.

Ghafari, E., and Aloi, D.N., "Single-Pin,
Single-Layer, Dual-band Patch Antenna for
Global Positioning System and Satellite Digital
Audio Radio System Automotive Applications,"
Microwaves, Antennas & Propagation,
IET 8.13: 1066-1074, 2014.

Aloi, D.N., Ghafari, E., Sharawi M.S., and
Steffes, A. "A Detailed Experimental Study on
the Benefits of Electrically Grounding Interior
Glass Mounted GPS Antennas to the Vehicle
Roof," *Microwaves, Antennas & Propagation,*
IET 8.10, 782-793, 2014.

S. Ali Arefifar, Ph.D.
University of Alberta (Canada)

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Teaching
Electrical Energy Systems; Electrical Machines;
Power Electronics

Research
Power Systems Engineering; Including
Smart-Grids; Microgrids; Renewable Energy;
Energy Storage; Computational and Experimen-
tal Methods; Power System Protection;
Electric Power Transmission and Distribution

Selected Publications
Arefifar, S.A., Mohamed, Y.A.R.I., Ordonez, M.,
"Voltage and Current Controllability in
Multi-Microgrid Smart Distribution Systems,"
IEEE Transactions on Smart Grid, 2016.

Arefifar, S.A., Ordonez, M., Mohamed, Y.A.R.I.
"Energy Management in Multi-Microgrid
Systems— Development and Assessment,"
IEEE Transactions on Power Systems, 2016.

Arefifar, S.A., Ordonez, M., Mohamed, Y.A.R.I.
"V-I Controllability-Based Optimal Allocation
of Renewable Resources in Smart Grids,"
IEEE Transactions on Smart Grid, vol.62, no.2,
pp.711,723, 2015.

Arefifar, S.A., Mohamed, Y.A.R.I., EL-Fouly,
T.H.M. "Optimized Multiple Microgrid-Based
Clustering of Active Distribution Systems
Considering Communication and Control
Requirements," *IEEE Transactions on Industrial
Electronics,* vol.7, no.3, pp.1378-1388, 2016.

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Teaching
Automotive Mechatronics; Microcomputer-based Control Systems; Electric Hybrid Drive; Adaptive Control; Intelligent Control, Robotics Systems & Autonomous Vehicles, Annual Intelligent Ground Vehicle Competition

Research
Theory and application of control, estimation, computer vision, computational intelligence including fuzzy logic, neural networks, machine learning, deep learning and global optimization. Practical realization and experience in autonomous mobile robots, local positioning, omnidirectional vehicles, mine-detection robots, self-driving technologies and automated IR cancer detection.

"My academic research strives in grasping deep insights of the subjects and extend their potentials into useful tools. I work with professionals and entrepreneurs to bring these ideas to meaningful real world applications."

Selected Publications
"Co-Active Neuro-Fuzzy Inference System Modeling with Clustering Methods," *Int'l Journal of Computers and Their Applications*, Vol 26, No 3, Sept 2019, pp 120-128

"Smooth Trajectory Planning for Autonomous Leader-Follower Robots," *International Conference on Computers and Their Applications* (CATA 2019), Honolulu, HA, USA, 18-20 March 2019.

"Lane Keeping System and Lane Centering System", ***US Patent Pub No: US 2016/0059856 A1***. Mar 3, 2016.

"Eye-Hand Tracking Simulator for Training AI Learning Systems." *2018 Int'l Conf on Computers and Their Applications,* Las Vegas, 2018.

"Development of a Two Step Self-Triggered Adapting Control System." *2017 IEEE 5th Inter'l Symp on Robotics & Intelligent Systems,* Montreal, CA, 2017.

Multimode Surround View for ADAS Vehicles." *2016 IEEE 4th International Symposium on Robotics and Intelligent Systems,* Tokyo, Japan, 2016.

"LMA Tuned Gradient Descent-based Model Reference Adaptive Control Scheme." *2016 Comp Appl in Industry & Engr (CAINE),* Denver, CO, 2016.

"Simultaneous Multi-veh Control & Obstacle Avoidance with Supervised Optimal Planning," *2014 IEEE Int. Conf. Tech Pract Robot Appl,* Philadelphia, 2014.

"Omni-Directional Autonom Guided Veh w Wireless Navigation," *2013 Grnd Veh Syst Engr & Tech Symp – Autonom Robotics,* Troy, MI, 2013

Jun Chen, Ph.D.
Iowa State University

Assistant Professor
Electrical and Computer Engineering

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(248) 370- 4797

Teaching
Automatic Control Systems; Control and Estimation; Intelligent Control Systems

Research
Model Predictive Control (MPC); Real-time Optimization and Estimation with Application in Automotive Propulsion Systems; Automated Driving; Renewable Energy Integration.

"My research is in the area of model predictive control (MPC) with applications in automotive systems and energy systems. The real-time optimization capability offered by MPC is a key to achieve higher energy efficiency and better comfort in our transportation and energy sectors."

Selected Publications
J. Chen, R. Long and Y. Hu, "Method for Increasing Control Performance of Model Predictive Control Cost Functions," US Patent pending.

J. Chen, D. Edwards, Y. Hu, M. Sun, Adam Heinzen and Michael Smith, "Method and System for Determining Thermal State," US Patent pending.

J. Chen, et. al, "Guest editorial: advances in control and decision for power and energy systems," Journal of Control and Decision, (2018): 115-116.

J. Chen and H. Garcia, "Economic Optimization of Operations for Hybrid Energy Systems under Variable Markets," Applied Energy, 177 (2016): 11-24.

J. Chen and R. Kumar, "Fault Detection of Discrete-Time Stochastic Systems Subject to Temporal Logic Correctness Requirement," IEEE Transactions on Automation Science and Engineering, 12, no. 4 (2015): 1369-1379.

J. Chen and R. Kumar, "Stochastic Failure Prognosability of Discrete Event Systems," IEEE Transactions on Automatic Control, 60, no. 6 (2015): 1570-1581.

Manohar Das, Ph.D.
Colorado State University

Professor
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Teaching
Digital Signal Processing; Communication Systems; Power Electronics; Signals and Systems; System Optimization

Research
Fast safe charging and management of Li-ion batteries; Adaptive control and signal processing; Modeling, System modeling and identification; Digital signal and image processing; Data compression; Pattern recognition; Optimization.

Selected Publications
Das. M., Jarid, S., Xu, M., Wang, X., "A Fast and Safe Quasi-Optimal Charging Strategy for Li-ion Batteries", Proceedings of 2019 Ground Vehicle Systems Engineering and Technology Symposium (GVSETS), Detroit, August 2019.

Loh, R.N.K., and Das, M.K. "Nonlinear Unknown Input Observer Based Systems for Secure Communication," *Advances in Underwater Acoustics,* Dr. Andrzej Zak (Ed.), pub. InTech, pp. 45-73. DOI: 10.5772/intechopen.69239, 2017.

Mostafa, A., Das, M. "A Study of Recursive Techniques for Robust Identification of Time-Varying Electrical Equivalent Circuit Models of Li-ion Batteries," *International Journal of Handheld Computing Research (IJHCR),* Volume 8, Issue 3, pp. 55-74, 2017.

Chaudhry, S.I., and Das, M. "Design of Optimum Reference Temperature Profiles for Energy Saving Control of Indoor Temperature in a Building," *AIMS Energy,* Vol. 4, Issue 6, pp. 906-920, 2016.

Kas, Z., Das, M. "An Electrothermal Model Based Adaptive Control of Resistance Spot Welding Process," *Intelligent Control and Automation,* pp. 134-146, 2015.

Patents
US Patent issued, US 9421634 B2 (Issued on August 23, 2016). Title: System and method for performing resistance spot welding. Inventors: Manohar Das, Vernon Fernandez, John Paille, Douglas P Gouin. Original Assignee: FCA, USA.

US Patent No. US8445809 B2 (Issued on May 21, 2013). Title: Method and apparatus for resistance spot welding. Inventors: Vernon Fernandez, Manohar Das, Gerald Grzadzinski. Original Assignee: FCA, USA.

US Patent No. US7244905 B2 (Issued on July 17, 2007). Title: Method For Estimating Nugget Diameter And Weld Parameters. Inventors: Manohar Das, Vernon Fernandez, James Strausbaugh, and Gerald Grzadzinski. Original Assignee: FCA, USA.

US Patent No. US6130956 B2 (Issued on October 10, 2000). Title: Continuous Microbiotal Recognition Method. Inventors: Francis M. Butterworth and Manohar Das.

Brian K. Dean, Ph.D.
University of Wyoming

Associate Professor and Academic Programs Coordinator
Electrical and Computer Engineering; Bioengineering

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(248) 370-2822

Teaching
Instrumentation and Measurement; Bioinstrumentation and Signal Processing; Circuits

Research
Sensors; Signal Conditioning and Signal Processing; Biomimicry; Electric Motors; Embedded Systems

Selected Publications
Agrawal, S; Dean B.K., "Edge Detection Algorithm for Musca-Domestica Inspired Vision System," *IEEE Sensors Journal*, vol 19, issue 22, pp. 10591-10599, Nov. 2019.

Agrawal, S and Dean B.K., "Digitization of Biomimetic Vision Sensor based on the Common Housefly (Musca Domestica), *Proc. of Bioinspiration, Biomimetic, and Bioreplication IX*, vol. 109650R, March 2019.

Agrawal, S and Dean B.K., "Multiple Cartridges Improve Edge Detection Algorithm for Fly Inspired Vision System," *Proc. of IEEE Sensors 2018*, Oct. 2018.

Adabonyan, A.N; Llamocca, D.; and Dean, B.K., "Fly-Inspired Edge Detection: Architecture and Reconfigurable Embedded Implementation," *61st IEEE International Midwest Symposium on Circuits and Systems*, August 2018.

Dean, B.K; Rawashdeh, O.A., "An Interdisciplinary Undergraduate Research Program in Electrical and Computer Engineering – Lessons Learned through 6 Years of Program Operations," *American Society for Engineering Education Annual Conference & Exposition (ASEE Annual)*, April 2017.

Agrawal, S.; Dean, B.K.; Carpenter, K. (HS teacher); Grimm, W. (HS teacher); Motzny, M. (HS teacher), "Removal of Signal Artifacts from Biomimetic Vision Sensor Based on the Common Housefly," *Medical Measurements and Applications (MeMeA)*, April 2017.

Llamocca, D.; Dean, B.K., "A Scalable Pipelined Architecture for Biomimetic Vision Sensors," International Conference on Field-programmable Logic and Applications (FPL), 2015, pp. 1-6, 2015.

Subraminiam Ganesan, Ph.D.
Indian Institute of Science (Bangalore)

Professor, Electrical and Computer Engineering
Associate Director Center for Robotics, Unmanned and Intelligent Systems

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Teaching
Real Time Systems; FPGA-based Embedded Systems; Microprocessor-based Embedded Systems; DSP in Embedded Systems; Validation and Verification of Embedded Systems; Parallel Computer Architecture and Multi-Core Embedded System Programming; Developing Embedded Systems for Real Time Tracking and Internet of Things

Research
Divisible Load Scheduling in Multi-Core and Multi-Processor Systems; Condition-based Maintenance; Real Time DSP/Multiprocessor Systems for Specific Applications; Model Based Systems Design; Multicore Controller for Low Cost and High Performance; Real-Time Tracking, Connected Vehicles and Internet of Things security.

Selected Publications
Lakshmi Nambiar, Vinod Kumar Gopal, Ashwin D, Subramaniam Ganesan "Optimization of Solar Energy Utilization, System Reliability and Utility Savings using a New Framework" International Journal of Recent Technology and Engineering (IJRTE) (http://www.ijrte.org/) ISSN: 2277-3878, Volume-8 Issue-6, March 2020

Manimurugan Shanmuganathan ; Saad Almutairi ; Majed Mohammed Aborokbah ; Subramaniam Ganesan ; Varatharajan R, "Review of advanced computational approaches on multiple sclerosis segmentation and classification", IET Signal Processing, https://digital-library.theiet.org/ search?val-ue1=&option1=all&value2 =manimurugan+shanmuganathan&option2=author, 2020

Priyank Srivastava, Dinesh Khanduja, Subramaniam Ganesan "Fuzzy methodology application for risk analysis of mechanical system in process industry" Int J Syst Assur Eng Manag https://doi.org/10.1007/s13198-019-00857-y; Springer, 20 September 2019, 16 pages.

U Shukla, A Mishra, G Jasmine, V Vaidehi, Subramaniam Ganesan, "A deep neural network for roadside analysis and lane detection" Proceedings of Computer Science, Elsevier, Science Direct, 165 (2019) pp 252-258. www.science direct.com – open access article.

Kahlon, M., and Ganesan, S. "Real Time Driver Drowsiness Detection." IEEE EIT Conference, 2018.

Doan, T.P., and Ganesan, S. "CAN Crypto Chipo to Secure Data Transmitted Through CAN Bus

Using AES 128 and SHA-1 Algorithms with\ Asymmetric Key." SAE World Congress,

Paper number: 2017-01-1612, 2017.

Patents
Steve Oberc, Hare Patnaik and Subra Ganesan, Application No.: 62/169,194, Filed: June 1, 2015; For: Systems and Methods for Obtaining Sports-Related Data.

Edward Y. Gu, Ph.D.
Purdue University

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Teaching
Robotic Systems and Control; Analysis of Nonlinear Control Systems; Elec-tromechanical Energy Conversion; Automatic Control Systems

Research
Kinematics, Task-Planning, Dynamic Modeling and Control of Robotic Sys- tems; Nonlinear Systems Modeling, Analysis, Adaptive Control and Computer Simulations, Human Biomechanical and Biodynamic Modeling and Digital Simulations; Learning and Intelligent Control of Human-Machine Interactive Systems

"The major research interests are in the areas of robotic kinematics, dynamics and control, nonlinear control systems, and digital human modeling and applications. Robotics research and technology development have been helpful in industrial applications for decades, and are now at the cutting-edge of making another big leap to create a robot that imitates the entire human capability and intelligence. The impact will be tremendous on society and economics in the near future."

Selected Publications
"A Journey from Robot to Digital Human," *Springer,* Berlin Heidelberg,

ISBN 978-3-642-39046-3, 2013.

"Backstepping Control Design for Vehicle Active Restraint Systems," *ASME Transactions: Journal of Dynamic Systems, Measurement and Control,* Vol. 135, No. 1, paper number 011012, pp. 1-9, 2013.

"Modeling of Human-Vehicle Dynamic Interactions and Control of Vehicle Active Systems," *International Journal on Vehicle Autonomous Systems,* Vol.10, No. 4, pp. 297-314, 2012.

"Trust-Based Coalition Formation in Multi-Agent Systems," *Journal of Defense Modeling and Simulation: Applications, Methodology, Technology,* SAGE Publications, 2013.

Darrin M. Hanna, Ph.D.
Oakland University

Professor, Electrical and Computer Engineering; Bioengineering
Outstanding Teaching Award

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(248) 370-2170

Teaching
Embedded Systems; Computer Problem Solving; Digital Logic and Micro- processors; Information Networks

Research
Using mixed-mode microprocessorless systems such as FPGAs, ASICs, and MEMS with Artificial Intelligence for embedded systems

Selected Publications
Jason Gorski and Darrin Hanna, "The FPOA, a Medium-grained Reconfigurable Architecture for High-level Synthesis," ACM Trans. Reconfigurable Technol. Syst. 12, 4, Article 18, November 2019.

Bryant Jones and Darrin Hanna, "Automatic cache partitioning method for high-level synthesis," Microprocessors and Microsystems - Embedded Hardware Design, 67, 71-81, 2019.

Darrin Hanna, Michael Lohrer, David Stern, Alexander Postlmayr, Adam Kollin, Shuo Wang, and Gang-yu Liu, "An online Algorithm for Detecting Anomalies using Fuzzy Clustering," Proceedings of the International Conference on Artificial Intelligence, in Las Vegas, NV, July 30 – August 2, 2018.

Michael F. Lohrer, Darrin M. Hanna, Yang Liu, Kang-Hsin Wang, Fu-Tong Liu, Ted A. Laurence, Gang-Yu Liu, "Applying Pattern Recognition to High-Resolution Images to Determine Cellular Signaling Status", IEEE Transactions on Nanobioscience, September 2017, 16(6):438-446.

Ranjeeta Thapa, Jason Gorski, Anthony Bogedin, Michael Maywood, Christopher Clement, Seyedmehdi Hossaini Nasr, Darrin Hanna, Xuefei Huang, Bradley J Roth, Gerard Madlambayan, George D Wilson, "Hyaluronan-mediated ferric oxide nanoparticles causes apoptosis of CD44 expressing head and neck squamous cell carcinoma cells," Intl. Journal of Cancer Therapy and Oncology vol 4(2), April-June 2016.

Amanpreet Kaur, Ph.D.
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Teaching
Electronic Devices and Circuits-II; High Frequency Electronics

Research
Microwave, and Millimeter-wave circuits, Wireless Communications, Nanomaterials based RF circuits, flexible electronics, RF bio/chemical sensors, Additive Manufacturing (3D Printing).

Selected Publications
Ghazali, L., Karuppuswami, S., Kaur, A., Chahal, P., "Embedded Activities Using Additive Manufacturing for High Density RF Circuits and System. In T*ransactions on Components, Packaging and Manufacturing Technology*, IEEE, 2019

Kaur, A., and Chahal, P., "RF Characterization of NiO and TiO2 Based Metal-Insulator-Metal (MIM) Diodes on Flexible Substrates. *IEEE Access*, 6, 2018, pp.55653-55660.

Ghazali, I., Karuppuswami, S., Kaur, A., Chahal, P., "3-D Printed Air Substrates for the Design and Fabrication of RF Components," *IEEE Transactions on Components, Packaging and Manufacturing Technology*, 2017

Kaur, A., Chahal, P., and Hogan, T., "Selective Fabrication of SiC/Si Diodes by Excimer Laser under Ambient Conditions," *Electron Device Letters, IEEE*, vol.37, pp. 142-145, 2016.

Kaur, A., Yang, X., and Chahal, P., "CNT and Graphene based Diodes for Microwave and Millimeterwave Circuits on Flexible Substrates", In *Transactions on Components, Packaging and Manufacturing Technology, IEEE*, 2016, pp.1766-1775

Jia Li, Ph.D.
University of Michigan

Professor,
Electrical and Computer Engineering; Bioengineering

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(248) 370-2661

Teaching
Advanced Digital Signal Processing; Signal Detection and Estimation Theory; Random Signals and Processes; Digital Image Processing; Communication Systems; Principles of Digital Communications; Signals and Systems

Research
Statistical learning and signal processing with applications in radar, sensor fusion, communications and biomedical imaging.

"(My) research is in the area of statistical signal processing with applications in biomedicine and communications. The extraction, modeling and analysis of signals or parameters from noisy measurements have broad range of practices in science and engineering, and in the industries of defense, finance, health care and telecommunications."

Selected Publications
J. Liu, H. Mu, A. Vakil, R. Ewing, X. Shen, E. Blasch, J. Li, "Human Occupancy Detection via Passive Cognitive Radio," Sensors, vol. 20, no. 15, 4248, Jul. 2020.

Litvinenko, V. Lurchuk, P. Sethi, S. Louis, V. Tyberkevych, J. Li, A. Jenkins, R. Ferreira, B. Dieny, A. Slavin, U. Ebels, "Ultrafast sweep-tuned spectrum analyzer with temporal resolution based on a spin-torque nano-oscillator," Nano Letters, vol. 20, no. 8, pp. 6104-6111, Jul. 2020.

Vakil, J. Liu, P. Zulch, E. Blasch, R. Ewing, J. Li, "A Survey of Multimodal Sensor Fusion for Passive RF and EO Information Integration," accepted to IEEE Trans. on Aerospace and Electronic Systems, 2020.

J. Andrews, M. Kowsika, A. Vakil, J. Li, "A Motion Induced Passive Infrared (PIR) Sensor for Stationary Human Occupancy Detection," 2020 IEEE/ION Position, Location and Navigation Symposium (PLANS), pp. 1295-1304, 2020.

Vakil, J. Liu, P. Zulch, E. Blasch, R. Ewing, J. Li, "Feature Level Sensor Fusion for Passive RF and EO Information Integration," IEEE Aerospace Conference 2020, Mar. 2020.

Daniel Llamocca, Ph.D.
University of New Mexico

Assistant Professor
Electrical and Computer Engineering

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(248) 370-4042

Teaching
Reconfigurable Computing; Computer Architecture; Digital Logic; Microprocessors; Embedded Systems; Hardware Implementation of Digital Signal and Image Processing applications

Research
Run-time Reconfigurable Architectures; Embedded Systems; High Performance architectures for computer arithmetic, signal and image processing, and video communications.

"Research in run-time automatic adaptation of hardware resources to time-varying constraints with the purpose of delivering the optimal hardware solution at any given time."

Selected Publications
Llamocca, D., "Self-Reconfigurable Architectures for HEVC Forward and Inverse Transform," *Journal of Parallel and Distributed Computing,* vol. 109, pp. 178-192, 2017.

Carranza, C., Llamocca, D., Pattichis, M., "Fast 2D Convolutions and Cross-Correlations using Scalable Architectures," *IEEE Transactions on Image Processing,* vol. 26, no. 5, pp. 2230-2245, 2017.

Carranza, C., Llamocca, D., Pattichis, M., "Fast and Scalable Computation of the Forward and Inverse Discrete Periodic Radon Transform," *IEEE Transactions on Image Processing,* vol. 25, no. 1, pp 119-133, 2016.

Llamocca, D., Pattichis, M., "Dynamic Energy, Performance, and Accuracy Optimization and Management using automatically generated constraints for separable 2-D FIR filtering for digital video processing," *ACM Transactions on Reconfigurable Technology and Systems (TRETS),* vol. 7, no. 4, Article 31, 2015.

Wing-Yue Geoffrey Louie, Ph.D.
University of Toronto

Assistant Professor
Electrical and Computer Engineering

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(248) 370-2860

Teaching
EGR2800 - Design and Analysis of Electromechanical Systems
ECE5900 – Introduction to Unmanned Ground Vehicles

Research
Robotics; Sensing & Controls; Human-Robot Interactions; Machine Learning & Artificial Intelligence; Computer Vision; User Research

"The core theme of my research is on the development of robot technology that can be easily utilized by non-experts for real-world application scenarios such as unmanned vehicles, manufacturing, healthcare, service, space, social and personal robotics."

Selected Publications
Louie, W-Y. G., and Nejat, G. "A Persuasive Learning From Demonstration System Architecture For Social Group Recreational Activities," *IEEE/RSJ International Conference on Intelligent Robots and Systems,* pp. 808–814, 2016.

Zhang, T., Louie, W-Y. G., Nejat, G., Benhabib, B. "Robot Imitation Learning of Social Gestures With Self-Collision Avoidance Using a 3D Sensor," *Sensors,* Vol. 18, No. 7, 2018.

Louie, W-Y. G., Vaquero, T., Nejat, G., and Beck J.C., "An Autonomous Assistive Robot For Planning, Scheduling and Facilitating Multi-user Activities," *IEEE International Conference on Robotics and Automation,* pp. 5292–5298, 2014.

McColl, D., Louie, W-Y. G., and Nejat, G., "Brian 2.1: A Socially Assistive Robot For The Elderly and Cognitively Impaired," *IEEE Robotics and Automation Magazine,* vol. 20, no. 1, pp. 74–83, 2013.

Louie, W-Y. G., McColl, D., and Nejat, G. "Acceptance and Attitudes Toward a Human-like Socially Assistive Robot by Older Adults," *Assistive Technology,* vol. 26, no. 3, pp. 140–150, 2014.

Khalid Mirza, Ph.D.
The Ohio State University

Special Instructor
Director, OU-FCA Robotics Lab
Electrical and Computer Engineering

mirza@oakland.edu
(248) 370-4629

Teaching
Industrial Robotics Elective; Robotic Systems and Control; Machine Vision; Electric Circuits; Introduction to Electrical and Computer Engineering.

Research
Industrial Robots (machine vision, sensor integration, teaching interfaces); Industrial Mobile Robots (autonomous navigation, scalable indoor/outdoor platforms, safety standards); Cloud Robotics (machine learning, augmented reality, IOT, Industry 4.0).

"Intelligent robots and flexible automation is the future of advanced manufacturing. My research is focused on developing ideas and engage in multidisciplinary fields to enable this future."

Selected Publications
"Intuitive 3D-Vision Based Wand for Robot Tool Path Teaching," Proceedings of the 2014 International Conference on Advanced and Agile Manufacturing Systems.

"General formulation for force distribution in power grasp," IEEE International Conference on Robotics and Automation.

"Dynamic simulation of enveloping power grasps," IEEE International Conference on Robotics and Automation.

"Force control of planar power grasp in the DIGITS System," Fourth International Symposium on Robotics and Manufacturing.

"Power grasp force distribution control using artificial neural network," Journal of Robotic Systems.

Hongwei Qu, Ph.D.
University of Florida

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Teaching
ECE 3100: Electronic Circuits and Devices; ECE 3105: Advanced Electronics Design; ECE 5134: Fundamentals of MEMS; ECE 5130: Integrated Devices and Circuits

Research
Micro-Electro-Mechanical Systems (MEMS), Solid-State Sensors, CMOS-MEMS Technology, Applications of MEMS in Biomedicine and Security, Nanotechnology and Devices, MEMS/NEMS Modeling, Electronic Materials Characterization

Selected Publications
Xiong, Y.; Li, Y.; Bidthanapally, R.; Sklenar, J.; Hammami, M.; Hall, S.; et al., "Detecting phase-resolved magnetization dynamics by magneto-optic effects at 1550-nm wavelength." IEEE Transactions on Magnetics, 1-1, (2020).

Xiong, Y.; Li, Y.; Hammami, M., Bidthanapally, R., Sklenar, J.; Zhang, X.; Qu, H., Srinivasan, G.; et al., "Probing magnon-magnon coupling in exchange coupled Y3Fe5O12/Permalloy bilayers with magneto?optical effects", Scientific Report, 10 (2020), 12548.

Xu, M.; Li, M.; Khanal, P.; Habiboglu, A.; Insana, B.; Xiong, Y.; et al., "Voltage-Controlled Antiferromagnetism in Magnetic Tunnel Junctions", Physical Review Letters, 124, 187701 (2020).

Zhang, J. T.; Zhu, W.; Chen, D.; Qu, H.; Zhou, P.; Popov, M.; Jiang, L.; Cao, L.; Srinivasan, G., "Magnetoelectric effects and power conversion efficiencies in gyrators with compositionally-graded ferrites and piezoelectrics." Journal of Magnetism and Magnetic Materials, 473: 131-135. (2019).

P. Qu; G. Sreenivasulu; R. Bidthanapally; V. Petrov; G. Srinivasan and H. Qu, "Fabrication and characterization of a MEMS nano-Tesla ferromagnetic-piezoelectric magnetic sensor array", Applied Physics Letters, 108, 242412 (2016).

Patents
US 8445234, "Method of wafer-level fabrication of MEMS devices", 2013.
US 8324519, "MEMS Switch with Latch Mechanism", 2012.

Osamah A. Rawashdeh, Ph.D., P.E.
University of Kentucky

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rawashd2@oakland.edu
(248) 370-2866

Teaching
Embedded Systems Design; Mechatronics; Fault-Tolerant Computing

Research
Unmanned systems development; multicore computing for automotive power- train control; embedded controls

"Microprocessors are increasingly embedded into all kinds of products and systems to make them more intelligent and able. My research is focused on the efficient implementation of such computer-controlled devices with special focus on enhancing their reliability, performance, and power consumption."

Selected Publications
Alzu'bi, H., Mansour, I., and Rawashdeh, O. "Loon Copter: Implementation of a Hybrid Unmanned Aquatic–Aerial Quadcopter with Active Buoyancy Control," *Journal of Field Robotics,* vol. 35, no. 5, 2018.

Sadeh, W., Rawashdeh, O., Burkard, D., Dobbins, K., Lockwood, T., and Bulmus, A. "Development of a Fork-Join Dynamic Scheduling Middle-Layer for Automotive Powertrain Control Software," *SAE Int. J. Passeng. Cars – Electron*. Electr. Syst., vol. 10, no. 2, 2017.

Rawashdeh, N.A., Rawashdeh, O.A., and Sababha, B.H. "Vision-based Sensing of UAV Attitude and Altitude from Downward In-flight Images," *Journal of Vibration and Control,* Manuscript ID JVC-14-0719.R1, 2015.

Al-Refai and O. Rawashdeh, "An Experimental Survey of Li-Ion Battery Charging Methods," *SAE International Journal of Alternative Powertrains,* Manuscript ID 15JAP-0011, 2015.

Jing Tang, Ph.D.
University of Illinois, Urbana

Distinguished Associate Professor
Electrical and Computer Engineering
Bioengineering

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Teaching
Biomedical Imaging; Digital Image Processing; Digital Signal Processing

Research
Image reconstruction, processing, and analysis in emission computed tomography

"To develop and advance medical imaging techniques to improve clinical diagnosis and disease treatment."

Selected Publications
-X. Wang, B. Yang, J. B. Moody, and J. Tang, "Improved myocardial perfusion PET imaging using artificial neural networks", Phys. Med. Biol., 65, 145010, 2020.

J. Tang, B. Yang, M. P. Adams, N. N. Shenkov, I. S. Klyuzhin, S. Fatouhi, E. Davoodi-Bojd, L. Lu, H. Soltanian-Zadeh, V. Sossi, and A. Rahmim, "Artificial neural network-based prediction of outcome in Parkinson's disease patients using DaTscan SPECT imaging features", Mol. Imaging Biol., DOI: 10.1007/s11307-019-01334-5, 2019.

X. Wang, B. Yang, M. P. Adams, X. Gao, N. A. Karakatsanis, and J. Tang, "Improved myocardial perfusion PET imaging with MRI assisted reconstruction incorporating multi-resolution joint entropy", Phys. Med. Biol., 63, 175017, 2018.

B. Yang, L. Ying, and J. Tang, "Artificial neural network enhanced Bayesian PET image reconstruction", IEEE Trans. Med. Imaging, 37 (6), 1297-309, 2018.

X. Wang, A. Rahmim, and J. Tang, "MRI assisted dual motion correction for myocardial perfusion defect detection in PET imaging", Med. Phys., 44 (9), 4536–47, 2017.

Mohamed A. Zohdy, Ph.D.
University of Waterloo (Canada)

Professor
Electrical and Computer Engineering

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(248) 370-2234

Teaching
Signal and Linear Systems Analysis; Optimal Control Theory; Automatic Control Systems; Optimal Estimation; Digital control

Research
Advanced Control and Estimation; Intelligent Pattern Information Processing; Neural, Fuzzy, Evolutionary Systems; Chaos Control; Smart Simulation; Hybrid Systems. Research contracts with government, industry; Recent seed funds on Fuel Cell modeling and control for transportation; Hold considerable promise for improving vehicle energy supply, as well as FCA Powertrain controls, Lear Power Electronics, Kia motors, NSF, USAID.

Selected Publications
"Application of Hyper-Fuzzy Modeling and Control for Bioinspired Systems," *ICCAE,* 2011.

"Unscented Kalman Filters for Continuous Phase FSK Equalizations," *ICII,* 2011.

"Modeling Nonlinear Systems using Multiple Piecewise Linear Equations," *Nonlinear Analysis and Modeling and Control,* 2010.

"An accurate Model of Polyglutamine," *Proteins Structure Function and Bioinformatics,* 2010.

"Robust Motion Control of Biped Walking Robot," *WSEA Trans Systems and Control,* 2010.

William Edwards, Ph.D.
Oakland University

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Industrial and Systems Engineering

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Teaching
Engineering Project Management;
Statistical Quality Analysis; Flexible and
Lean Manufacturing; Ergonomics; Engineering
Economics & Statistical Analysis; Human
Factors Engineering; Production Systems
and Work Flow Analysis; PLM Ergonomics;
PLM Robotics

Research
Move It Forward Theory (MIFT) Production
Management; Rare Event Downtime Analysis;
Rare Event Prediction

Selected Publications
"Move It Forwards Theory (MIFT)." *IEOM
Conference,* Lawrence Technical University,
2016.

"Move It Forward Theory (MIFT)." *Oakland
University Graduation Research Symposium,*
2016.

"Move It Forward Theory (MIFT)." *INFORMS
Symposium,* Wayne State University, 2013.

"Engineering and Its Future." *AISES Conference
Presentation,* Phoenix, AZ, 2007.

"Vehicle Dynamics." *Vehicle Dynamics
Conference,* New Orleans, LA, 2003.

Hyungil Kim, Ph.D.
Virginia Tech

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Teaching
Human Factors Engineering; Ergonomics and
Work Design; Virtual and Augmented Reality;
Usability Engineering; Human Factors in
Transportation

Research
Human-Technology Interaction at Future
Workplaces; Augmented Reality; Intelligent
Transportation Systems; Human Behavioral
Data Analytics

*"In the Human-Centered Engineering laboratory
at Oakland University, we keep our eyes on the
most important thing behind the technology, the
human. To make technology work for people,
we are developing new methods that help us
better understand human interaction with
emerging technologies such as augmented
reality and intelligent transportation systems.
We aim to transform our understanding of
human-technology interaction into the design
and evaluation of new systems at various
workplaces for better human use."*

Selected Publications
Kim, H., & Gabbard, J. L. (2020). Assessing
distraction potential of augmented reality
head-up displays for vehicle drivers. Human
Factors, 0018720819844845, Online First.

Kim, H., Martin, S., Tawari, A., Misu, T., &
Gabbard, J. L. (2020). Toward Real-Time
Estimation of Driver Situation Awareness:
An Eye Tracking Approach based on Moving
Objects of Interest. In 2020 IEEE Intelligent
Vehicles Symposium (IV).

Lisle, L., Merenda, C., Tanous, K., Kim, H.,
Gabbard, J. L., & Bowman, D. A. (2019).
Effects of Volumetric Augmented Reality
Displays on Human Depth Judgments.
International Journal of Mobile Human
Computer Interaction (IJMHCI), 11(2), 1-18.

Kim, H., Gabbard, J. L., Anon, A. M., & Misu, T.
(2018). Driver Behavior and Performance with
Augmented Reality Pedestrian Collision
Warning: An Outdoor User Study. IEEE
Transactions on Visualization and Computer
Graphics, 24(4), 1515-1524.

Merenda, C., Kim, H., Tanous, K., Gabbard, J.
L., Feichtl, B., Misu, T. & Suga, C. (2018).
Augmented Reality Interface Design
Approaches for Goal-directed and Stimu-
lus-driven Driving Tasks. IEEE Transactions on
Visualization and Computer Graphics, 24(11),
2875-2885., Presented at the IEEE ISMAR
2018, Best Paper Award Honorable Mention

Kim, H., Isleib, J. D., & Gabbard, J. L. (2016).
Virtual Shadow: Making Cross Traffic Dynamics
Visible through Augmented Reality Head Up
Display. In Proceedings of the Human Factors
and Ergonomics Society Annual Meeting (Vol.
60, No. 1, pp. 2093-2097). Dieter W. Jahns
Student Practitioner Award

Gabbard, J. L., Fitch, G. M., & Kim, H. (2014).
Behind the Glass: Driver Challenges and
Opportunities for AR Automotive Applications.
Proceedings of the IEEE, 102(2), 124-136.

Nasim Nezamoddini, Ph.D.
New York State University at Binghamton

Assistant Professor
Industrial and Systems Engineering

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Teaching
Data Analytics; Engineering Operations Research-Deterministic Models; Engineering Operations Research-Stochastic Models

Research
Big-Data Analytics, Data-Driven Optimization, Internet of Things, Self-Organizing Systems, Network Systems Modeling and Optimization

Selected Publications
Nezamoddini, N., Aqlan, F., Gholami, A., (2019) "Risk Based Optimization of Electronics Manufacturing Supply Chains" *Optimization in Large Scale Problems: Industry 4.0 and Society 5.0 Application*, Springer.

Matovski, S., Nezamoddini, N., (2018), "Bridging a Relational Database to a Semantic Model", In *Proceedings of Industrial & Systems Engineering Research Conference*, Orlando, FL.

Nezamoddini, N., Wang, Y. "Real-Time Electricity Pricing for Industrial Customers: Survey and Case Studies in the United States," *Applied Energy,* 195, 1023-1037, 2017.

Nezamoddini, N., Mousavian, A., Erol-Kantarci, M. "A Risk Optimization Model for Enhanced Power Grid Resilience Against Physical Attacks," *Electric Power Systems Research,* 143, 329–338, 2017.

Nezamoddini, N., Wang, Y. "Risk Management and Participation Planning of Electric Vehicles in Smart Grids for Demand Response," *Energy,* 116, 836-850, 2016.

Barbara Oakley, Ph.D.
Oakland University

Professor
Industrial and Systems Engineering

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Teaching
Probability and statistics; neuroscience; bioengineering; electrical circuits; thermodynamics and electromagnetics. Specialize in collaborative learning approaches and online learning. Teaches the world's largest *MOOC, Learning How to Learn,* through Coursera-UCSD, with a million registered students in its first year.

Research
Pathological altruism and altruism bias; Translational research that provides simple ways to understand how to learn math, science, engineering and technology more easily using insights from neuroscience and cognitive psychology.

Selected Publications
Oakley, B. "Concepts and Implications of Altruism Bias and Pathological Altruism," *Proceedings of the National Academy of Sciences,* 110 (2): 10408-10415, 2013. (Cited as "revolutionary" in the Wall Street Journal.)

Oakley, B. *A Mind for Numbers: How to Excel at Math and Science,* Penguin-Random House, 2014. (A New York Times best-selling science book.)

Oakley, B., and Finelli, C.J. "A Practical Approach to Understanding — and Applying! — the Scholarship of Application." *IEEE Transactions on Engineering Education,* Vol. 57, No. 2, 69-74, 2014.

Oakley, B., Felder, R.B., and Elhajj, I. "Turning Student Groups Into Effective Teams," *Journal of Student Centered Learning,* 2 (1), 9-34, 2014.

Richard Olawoyin, Ph.D., CSP
Penn. State University

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Teaching
Statistical Methods in Engineering, Engineering Risk Analysis, Safety Engineering, Occupational Biomechanics, Statistics and Probability Theories in Intro to ISE. Optimization, Reliability and Usability Engineering.

Research
Intelligent Automation (IA), Industrial Internet of Things, Applications of Deep Learning for Optimizing Energy Resources and Digital Supply Networks (DSN), Cognitive Computing, Robotic Process Automation (RPA), Data & Decision Analytics, Blockchain and Digital thread technologies, and Stochastic Trend Modeling. Expert Systems in Safety Engineering – F unctional Safety, Ergonomics, Biomechanics and Industrial/Environmental Hygiene Evaluations.

Selected Publications
Salih S, Olawoyin R (2020). Electric Power Steering System Architecture and Compliance with ISO 26262. Society of Automotive Engineers International. 2020.xxx

Salih S, Olawoyin R (2020). Twin Scroll Turbocharger Simulation and Engine Power Optimization. 2020 Institute of Industrial and Systems Engineering IISE Annual Conference, May 30 – June 2, 2020, New Orleans, Louisiana

Alqahtani N, Zohdy M, Olawoyin R, Ganesan S. (2020). Overvoltage Mitigation in Distributed Networks Connected to DG Systems. IEEE 2020 International Conference on Computing and Information Technology. ICCIT-1441.

Alshaikh M, Zohdy M, Olawoyin R, Debnath D, Gwarzo Z, Alowibdi J (2020). Social Network Analysis and Mining: Privacy and Security on Twitter. IEEE 2020 10th Annual Computing and Communication Workshop and Conference (CCWC). Nevada, Las Vegas, USA from 6th to 8th January 2020

Alhumud, H, Zohdy M. Debnath D., Olawoyin R, Arefifar, S.A. (2019). Cooperative Spectrum Sensing for Cognitive Radio-Wireless Sensors Network Based on OR Rule Decision to Enhance Energy Consumption in Greenhouses. Wireless Sensor Network, 2019, 11, 1-11.

Olawoyin R. (2018). Nanotechnology: The future of fire safety. Safety Science. 110 (Part A), 214-221

Olawoyin R, Schweitzer L, Zhang K., Okareh O, Slates K. (2018). Index analysis and human health risk model application for evaluating ambient air-heavy metal contamination in Chemical Valley Sarnia. Ecotoxicol. Environ. Saf., 148 (2018) 72-81. doi: 10.1016/j.ecoenv.2017.09.069

Olawoyin R. (2018). Safety and automation of collaborative robot system in work environment. Robotics & Automation Engineering Journal, 33:18

Olawoyin R. (2017). Risk and Reliability Evaluation of Gas Connector Systems Using Fuzzy Theory and Expert Elicitation. Cogent Engineering, 54: 1372731.

Vijitashwa Pandey, Ph.D.
University of Illinois at Urbana-Champaign, Urbana IL.

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Teaching
Engineering Decision Analysis; Mathematical Optimization; Systems Engineering; Probability Theory; Reliability Engineering; Product Development; Genetic Algorithms

Research
Engineering Design; Decision Based Design; Mathematical Optimization; Reliability Engineering; Systems Engineering; Decision Analysis and Sustainability

Selected Publications
Slon, C. and Pandey, V., 2020. "Enabling Autonomous Decision-Making in Manufacturing Systems through Preference Fusion". SAE International Journal of Materials and Manufacturing, 13(05-13-02-0008).

Slon, C. and Pandey, V., 2020. "An Optimization Framework for Fixture Layout Design for Nonrigid Parts: An Automotive Perspective". *SAE International Journal of Materials and Manufacturing*, 13(05-13-01-0001).

Slon, C., Pandey, V. and Kassoumeh, S., 2019. "Mixture Distributions in Autonomous Decision-Making for Industry 4.0". *SAE International Journal of Materials and Manufacturing*, 12(2), pp.135-148.

Pandey, V., 2019, "Quantum Mechanical Perspectives in Reliability Engineering and System Design". *ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, Anaheim CA.

Fritz, K, Deschenes, L., and Pandey, V., 2018, "Effective Design Team Composition Using Individual and Group Cognitive Attributes." *ASME 2018 International Mechanical Engineering Congress and Exposition IMECE 2018,* Pittsburgh, PA, USA, 2018.

Kassoumeh, S. and Pandey, V., "A Decision Analytic Approach to Incorporating Value of Information in Autonomous Systems." *SAE World Congress,* Detroit MI, 2018.

Pandey, V. "Flaws Lurking in Engineering Design-Decision Making: The Attribute Set Dissociation Problem." *ASME International Design Engineering Technical Conferences,* Charlotte, NC, 2016.

Pandey, V. and Mourelatos, Z., "A New Method for Design-Decision Making: Decision Topologies." *ASME Journal of Mechanical Design,* Vol. 137(3), 031401, 8 pages, 2015.

Pandey, V. *Decision Based Design,* Taylor and Francis, 1st Edition, 2013.

Nikolaidis, E., Mourelatos, Z. and Pandey, V. *Design Decisions under Uncertainty with Limited Information,* Taylor and Francis, 1st Edition, 2011.

Sankar Sengupta, Ph.D.
Clemson University

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Industrial and Systems Engineering

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(248) 370-2218

Teaching
Production Systems and Work Flow Analysis; Computer Simulations Discrete Events; Manufacturing Processes; Quality

Research
Application of OR methods to Manufacturing Systems Design and Control; Quality Control; Design Methodologies for Product Design; CIM

Selected Publications
Sengupta, S., and Davis, R.P. "Heuristic Procedure for Resolving a Production Planning Model of an FMS," *Computers & Industrial Engineering,* Volume 30, Issue 2, Pages 161–170, 1996.

Sengupta, S., Davis, R.P., Ferrell, W.G. "Production planning and control in a JIT environment," *Applied Mathematical Modelling,* Volume 17, Issue 1, Pages 41-46, 1993.

Robert P. Van Til, Ph.D.
Northwestern University

Pawley Professor of Lean Studies
Chair, Industrial and Systems Engineering

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Teaching
Flexible and Lean Manufacturing Systems; Robotic Systems; Lean Principles and Application; Senior Design; Introduction to Industrial and Systems Engineering

Research
Analytical and Simulation Modeling of Manufacturing Systems; Application of Lean to Manufacturing and Healthcare; Product Lifecycle Management

Selected Publications
Deneweth, M., Sengupta, S., and Van Til, R. "Operational Concerns When Modeling a Global Supply Chain," *Proc. of the Winter Simulation Conf.,* 2016.

Choudhury, N.R., Sengupta, S., and Van Til, R.P., "A Novel Method To Reduce Inspection Process Cycle Time While Using A Coordinate Measurement Machine," *Proc. of the AMSE DSC Conf.,* 2015.

Khiste, A., Hillberg, P., and Van Til, R. "Developing an IT Infrastructure for Educational Institutions Teaching Product Lifecycle Management," *Proc. of the ASEE NCS Conf.,* 2014.

Sengupta, S., White, T., Das, K., and Van Til, R., "Analysis of a New Signal for Bottleneck Identification and Loss Allocation to Individual Machines," *International Journal of Industrial and Systems Engineering,* Vol. 13, pp. 175-196, 2013.

White, T., Sengupta, S., and Van Til, R. "Analysis of a New Signal for Bottleneck Detection using Higher Order Statistics based on Inter-Departure Time Data," *Proc. of the Industrial & Systems Engineering Research Conf.,* 2012.

Gary Barber, Ph.D.
University of Michigan

Professor
Mechanical Engineering

barber@oakland.edu
(248) 370-2184

Teaching
Properties of Materials; Material Properties and Processes; Lubrication, Friction and Wear; Machine Design

Research
Director, Automotive Tribology Center; Tribology of Engine Cylinder Kits; Engine Valve Wear, Effect of Tool Wear on the Surface Topography of Machined Surfaces

Selected Publications
"Scuffing Behavior of Gray Iron and 1080 steel in Reciprocating and Rotational Sliding," *Journal of Wear of Materials Conference,* 2011.

"Effect of Material Microstructure on Scuffing Behavior of Ferrous Alloys," *SAE Congress,* 2011.

"Investigation of Scuffing Resistance of Heat Treated 8625 Alloy Steel Under Lubricated Conditions," *SAE Congress,* 2011.

"Numerical Investigation of Temperature Distribution in a Bolted Joint for Different Bolt and Workpiece Material Combinations," *STLE Annual Meeting,* 2011.

"Evaluation of the Convective Heat Transfer Coefficient for Minimum Quantity Lubrication," *Journal of Industrial Lubrication and Tribology,* 2012.

Stephen Bazinski, Ph.D.
Oakland University

Special Instructor
Mechanical Engineering

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(248) 370-3877

Teaching
Introduction to Thermal Engineering (EGR-2500); Design/Analysis of Electromechanical Systems (EGR-2800)

Research
Thermal Behavior of Lithium-Ion Cells; Infrared Thermography; Lumped Capacitance Method

Selected Publications
Bazinski S. J., Wang, X., Sangeorzan, B., and Guessous, L. "Measuring and Assessing the Effective In-Plane Thermal Conductivity of Lithium-Ion Phosphate Pouch Cells." *Energy,* Volume/Issue 114C, Pages 1085-1092, 2016.

Bazinski S. J. and Wang, X.. "Predicting Heat Generation in a Lithium-Ion Pouch Cell Through Thermography and the Lumped Capacitance Model." J*ournal of Power Sources,* Volume 305, Pages 97-105, 2016.

Yin-ping (Daniel) Chang, Ph.D.
Pennsylvania State University

Associate Professor
Mechanical Engineering

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(248) 370-2209

Teaching
Statics; Dynamics; CAD/CAM/CAE; Kinematics and Mechanisms; Vibrations; Controls; Vehicle Dynamics; Tire/Terrain Mechanics; Vehicle System Design

Research
Vehicle Dynamics; Tire/Terrain Mechanics; NVH; Vibrations; Controls; Kinematics and Mechanisms; Machine Design; Solid Mechanics; Finite Element Analysis; Multi-Body Contact-Impact modeling; Optimization.

"Machine Design, Vehicle Dynamics and Tire/Terrain Mechanics research will improve vehicle's riding comfortability and increase its safety and stability."

Selected Publications
Chen, J., Qin, M., Jiang, Y., Jin, L., and Chang, Y.P. "Modeling, Analysis and Optimization of the Twist Beam Suspension System," *SAE International Journal of Commercial Vehicle,* Vol. 8, No. 1, 2015.

Wu, D., and Chang, Y.P. "Dynamic Analysis and Simulation of a Double Transition Shift Automatic Continuous Variable Transmission," *International Journal of Vehicle Performance,* Vol. 1, No. 2, pp. 119–136, 2013.

Chang, Y.P., and Her, I. "A Virtual Cam Method for Locating Instant Centers of Kinematically Indeterminate Linkages," *ASME Journal of Mechanical Design,* Volume 130, Issue 6, 062304, 2008.

Iqbal, J., Chang, Y.P., and Qatu, M.S. "Optimization of Frequencies of A Two-Span Shaft System Joined With A Hinge," *International Journal of Vehicle Noise and Vibration,* Vol. 4, No. 4, pp.317–338, 2008.

Chang, Y.P. "Tyre Vertical Transmissibility Transient Response Analysis," *International Journal of Vehicle Noise and Vibration,* Vol. 2, No. 3, pp.191–208, 2006.

Christopher G. Cooley, Ph.D.
Ohio State University

Assistant Professor
Mechanical Engineering

cooley@oakland.edu

Teaching
Dynamics; Vibration; Mechanical Stability; Control Systems; Machine Component Design

Research
Dynamics, vibration, and stability of high-speed mechanical systems, gear dynamics and vibration, condition monitoring of power transmissions, vibration energy harvesting.

"My research aims to (i) use advanced analytical and computational tools to improve and design condition monitoring systems that can detect gear damage prior to failure in power transmission systems, and (ii) engineer high-performance devices that can convert the unwanted vibrations from rotating systems into useable electrical power."

Selected Publications
Cooley, C. G., Tran, T. Q., and Chai, T., "Comparison of Viscous and Structural Damping Models for Piezoelectric Vibration Energy Harvesters" *Mechanical Systems and Signal Processing,* 110, pp. 130-138, 2018.

Lu, H., Chai, T., and Cooley, C. G., "Vibration Properties of a Rotating Piezoelectric Energy Harvesting Device That Experiences Gyroscopic Effects", Journal of Sound and Vibration, 416, pp. 258-278, 2018.

Cooley, C. G. and Chai, T., "Energy Harvesting from the Vibrations of Rotating Systems," *ASME Journal of Vibration and Acoustics,* 140, p. 021010, 2018.

Cooley, C. G., Liu, C., Dai, X., and Parker, R. G., "Gear Tooth Mesh Stiffness: A Comparison of Two Approaches," *Mechanism and Machine Theory,* 105, pp. 540-553, 2016.

Cooley, C. G. and Parker, R. G., "A Review of Planetary Gear Dynamics and Vibrations Research," *Applied Mechanics Reviews,* 66(4), p. 040804, 2014.

Cooley, C. G. and Parker, R. G., "Unusual Gyroscopic System Eigenvalue Behavior in High-Speed Planetary Gears," *Journal of Sound and Vibration,* 332(7), pp. 1820-1828, 2013.

Dan DelVescovo, Ph.D.
University of Wisconsin-Madison

Assistant Professor
Mechanical Engineering

delvescovo@oakland.edu
(248) 370-4590

Teaching
Thermodynamics; Fluid Mechanics; Heat Transfer; Combustion; Internal Combustion Engines

Research
Internal Combustion Engines; Advanced Combustion Strategies; Alternative Fuel Sources; Engine and Combustion Modeling; Chemical Kinetics

"Future engines will have to operate under various combustion modes, using a variety of fuel sources. Understanding how to minimize emissions and maximize efficiency under these uncertainties will help pave a way towards better fuel economy and decreased pollution."

Selected Publications
DelVescovo, D. A., Kokjohn, S. L., Reitz, R. D., "A Methodology for Studying the Relationship Between Heat Release Profile and Fuel Stratification in Advanced Compression Ignition Engines", Front. Mech. Eng., 6:28, 2020

DelVescovo, D. A., Splitter, D. A., Szybist, J.P., Jatana, G. S., "Modeling Pre-Spark Heat Release and Low Temperature Chemistry of Iso-Octane in a Boosted Spark-Ignition Engine", Combustion and Flame, 212:39-52, 2020

Barazzoni, L., Sangeorzan, B., DelVescovo, D., "Modelling of a Discrete Variable Compression Ratio (VCR) System for Fuel Consumption Evaluation – Part 1 and 2", SAE Technical Paper 2019-01-0467 and 2019-01-0472, 2019

Salih, S., DelVescovo, D., Kolodziej, C.P., Rockstroh, T., Hoth, A., "Defining the Boundary Conditions of the CFR Engine Under RON Conditions for Knock Prediction and Robust Chemical Mechanism Validation", ASME ICEF Technical Conference, 2018

Chuahy, F.D.F., Olk, J., DelVescovo, D.A., Kokjohn, S.L., "An Engine Size Scaling Method for Kinetically Controlled Combustion Strategies", International Journal of Engine Research, 2018

Salih, S., DelVescovo, D., "Design and Validation of a GT Power Model of the CFR Engine towards the Development of a Boosted Octane Number," SAE Technical Paper 2018-01-0214, 2018

Tao, M., Zhao, P., DelVescovo, D., Ge, H., "Manifestation of octane rating, fuel sensitivity, and composition effects for gasoline surrogates under advanced compression ignition conditions", Combustion and Flame, 192: 238-249, 2018

Tao, M., Wu, T., Ge, H., DelVescovo, D., Zhao, P., "A kinetic modeling study on octane rating and fuel sensitivity in advanced compression ignition engines", Combustion and Flame, 185: 234-244, 2017

Sergey Golovashchenko, Ph.D.
Bauman Moscow State Technical University

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Mechanical Engineering

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(248) 370-4051

Teaching
Fundamentals of Metal Forming, Mechanics of Metal Forming, Metal Forming Processes, Mechanics of Materials. Leading CLIC Form program preparing engineers to work in manufacturing of sheet metal components.

Research
Innovative technologies of metal forming, stamping die materials, coatings and lubricants enabling substantial weight savings of parts for automotive industry.

"My research interests are in the area of metal fracture during plastic deformation, development of manufacturing methods expanding formability limits and technologies of solid state welding of dissimilar high strength alloys."

Selected Publications
Golovashchenko, S.F., Wang, N., and Le, Q. "Sheared Edge Stretching Performance of 6xxx Aluminum Alloys," *Journal of Materials Processing Technology*, V264, 2019, pp. 64-75.

Golovashchenko, S.F., Reinberg, N.A., Hassannejadasl, A., and Green, D.E. "Hardening of A6111-T4 Aluminum Alloy at Large Strains and Its Effect on Sheet Forming Operations," J*ournal of Materials Engineering and Performance*, Volume 28, 2019, pp. 2465–2476.

Nasheralahkami, S., Zhou, W., Golovashchenko, S.F. "Study of Sheared Edge Formability of Ultra High Strength DP980 Sheet Metal Blanks" *Journal of Manufacturing Science and Engineering*, 2019, 141(9): 091009

Mamutov, A.V., Golovashchenko, S.F., Mamutov, V.S., "Experimental-analytical method of analyzing performance of coils for electromagnetic forming and joining operations" *Journal of Materials Processing Technology*. Volume 255, 2018, pp.86-95.

Patents
Recent US Patents 10,239,108, 10,322,890, 9,943,900, 9,770,780; 9,676,054; 9,527,125; 9,522,419; 9,500,304; 9,421,636; 9,375,775; 9,327,331; 9,296,037; 9,266,190; 9,174,259; 9,168,581.

Randy J. Gu, Ph.D.
State University of New York, Buffalo

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Mechanical Engineering

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Teaching
Computer-Aided Design; Mechanical Computer-Aided Engineering; Engineering Mechanics; Mechanics of Materials; Finite Element Method

Research
Finite Element Applications; Mechanical Computer-Aided Engineering; Experimental/ Theoretical Studies of Contact Problems; Material Behavior Modeling; Inverse Problems.

"Mathematically formulating engineering problems involving both theoretical foundation and experimental measurements and developing numerical algorithm to solve such problems."

Selected Publications
Wang, W., Gu, R., "Buckling Analysis of Structures under Combined Loading with Acceleration Forces," *Structural Engineering and Mechanics, An International Journal,* Vol. 52, No. 5 1051-1067, 2014.

Song, J., and Gu, R.J., "A Finite Element Based Methodology for Inverse Problem of Determining Contact Forces Using Measured Displacements," *Inverse Problems in Science and Engineering,* 1-15, 2011.

Gu, R.J., Shillor, M., Barber, G., and Jen, T.C. "Thermal Analysis of Grinding Processes," *Math and Computer Modelling,* 39/9-10, pp. 991-1003, 2004.

Ranganathan, R., Lee, Y.L., Gu, R.J. "A Methodology for Fatigue Life Prediction of Notched Plates Including Stress Gradient Effects," *Int. J. of Material and Product Technology,* pp. 539-554, v21, n6, 2004.

"Design Method Using Knowledge-Based Optimization," Inventors: L. Oriet, Y. Teng, and R. Gu, United States Patent: 7,181,372, 2004.

Gu, R.J., Murty, P., and Zheng, Q. "Use of Penalty Variable in Finite Element Analysis of Contacting Objects," *Computers & Structures,* pp. 2449- 2459, v. 80 (31), 2002.

Laila Guessous, Ph.D.
University of Michigan

Professor and SECS Faculty Development Coordinator
Mechanical Engineering

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Teaching
Fluid mechanics; heat transfer; computational fluid dynamics (CFD); thermodynamics.

Research
CFD and computational heat transfer; wind turbine farm layouts using Spectral Element Methods; Conjugate heat transfer numerical simulations; Multiphase flow simulations of piston oil jet cooling.

"I strive to use numerical tools to improve our understanding and modeling of various fluid/ thermal problems, including wind turbines, electronics, conjugate heat transfer, engine flows, and problems related to wear and scuffing of materials."

Selected Publications
Julie Walters, Leanne DeVreugd, and Laila Guessous, "WIP - Mentoring Early-career Engineering Faculty: A Faculty Development Coordinator Model," Paper # 29135, 2020 ASEE Annual Conference, June 2020

Murphy O'Dea and Laila Guessous, "ALEVO: Development of a New Wind Turbine Actuator Line Numerical Model," Paper # FEDSM2020-20019, Proceedings of the ASME 2020 Fluids Engineering Division Summer Meeting, Orlando, FL, July 2020

Juszkiewicz, J.R. and Guessous, L., "Approximating Convective Boundary Conditions for Transient Thermal Simulations with Surrogate Models for Thermal Packaging Studies," SAE Technical Paper 2019-01-0904, 2019, doi:10.4271/2019-01-0904

Murphy O'Dea and Laila Guessous, "Development of an advanced wind turbine actuator line model," Paper # FED-SM2018-83173, ASME 2018 5th Joint US-European Fluids Engineering Summer Conference, Montreal, QC, Canada, July 2018

Laila Guessous, "Long term assessment after more than a decade of involving undergraduate students in an REU program," Paper # 22937, 2018 ASEE Annual Conference and Exposition, Salt Lake City, UT, June 2018

Bolong Ma, Morgan Jones, Aaron Demers, Laila Guessous and Brian Sangeorzan, "Numerical simulation of upward facing oil-jet cooling of a flat plate," Paper # TFEC-IWHT2017-17517, 2nd Thermal and Fluid Engineering Summer Conference, Las Vegas, NV, April 2017

Bazinski S. J., Wang, X, Brian Sangeorzan and Laila Guessous, "Measuring and assessing the effective in-plane thermal conductivity of Lithium Ion Phosphate Pouch Cells", Energy, Volume/Issue 114C, Aug 2016, Pages 1085-1092

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University of Oklahoma

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Teaching
Engineering Mechanics; Finite Element Analysis; Mechanics of Materials; Fluid Mechanics

Research
Mechanics of Composite Materials and Structural Design; Finite-Element Analysis of the Metal-Forming Process; Computational Fluid Mechanics and Numerical Heat-Transfer Analysis; Vibration Analysis of Plate and Shell Structures; Hot-wire and LDA Measurements in Fluid Flows; Analytical Modeling of Fluid-Structure Interaction; Dynamics and Nonlinear Vibration; Impact Dynamics and Plasticity

Selected Publications
"Conjugate Heat Transfer Analysis of Laminar Pipe Flows with Convective Boundary Conditions," *International Journal of Heat and Mass Transfer.*

"A Semi-Analytical Method and a Time-Dependent Finite Element Method for the Vibration Analyses of Beams with Viscous Damping," *International Journal of Engineering Science.*

Krzysztof J Kobus, Ph.D.
Oakland University

Associate Professor, Mechanical Engineering; Director of Outreach, Recruitment and Retention; Director of Engineering and Energy Education, OU INC Clean Energy Research Center (CERC); OU Center for Excellence in Teaching and Learning (CETL) Faculty Fellow

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Teaching
Alternative Energy Systems; Energy Management; Thermal Engineering; Fluid Mechanics and Heat Transfer; Fluid and Thermal System Design; Engineering Mechanics, Dynamics, Fundamentals of Nuclear Engineering

Research
Clean Energy Applied Research; Energy Efficiency, Energy Management, Transient and Unstable Behavior in Two-Phase Evaporating and Condensing Flow; Single and Multitube Systems; Combined Forced and Natural Convective Heat Transfer; Boundary Layer Theory; Analytical and Experimental Methods Associated with Steady-State and Time Varying Fluid and Thermal Systems, Components, and Processes.

"One of my research areas is in energy efficiency in maintaining our standard of living, but minimizing the environmental footprint necessary to do so. The biggest challenge to humanity has historically been survival, but now is sustainability and that affects everything and everyone."

Selected Publications
Kobus, C.J. and Labban, S., "An Experimental Investigation Into Natural Convection Heat Transfer From Horizontal Upward FacingCircular Isothermal Surfaces At Low Rayleigh Number," 2nd Pacific Rim Thermal Engineering Conference, 2019.

Kobus, C.J., Huyssen, M. and Piper, R., Schall, J.D., Wang, X., and Guessous, L., "Thermal Resistance and Compressive Strength of Polystyrene-Seeded Concrete for Better Insulative Value," Proceedings of the 2018 ASME International Mechanical Engineering Conference and Exposition, November 9-15, Pittsburgh, PA.

Kobus, C.J., "Utilizing The Integral Technique To Determine The Similarity Variable In Classical Heat Transfer Problems – Boundary Layer Theory," Proceedings of the 2018 ASME International Mechanical Engineering Conference and Exposition, November 9-15, Pittsburgh, PA.

Patents
JG Chupa, CJ Kobus, S Ganesan - US Patent 7,915,749, Method for generating electrical power from municipal wastewater, 2011

S Ganesan, CJ Kobus, JG Chupa - US Patent 8,154,138, Municipal wastewater electrical power generation assembly and a method for generating electrical power, 2012

Michael A. Latcha, Ph.D.
Wayne State University

Associate Professor
Mechanical Engineering

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Teaching
Machine Design (modeling, analysis, simulation and fabrication of electro-mechanical systems); Numerical Methods; Mechanics of Materials; Dynamics, Vibrations

Research
Modeling, Analysis, Simulation and Fabrication of Electro-Mechanical Systems; Numerical Methods, Computational Mechanics; Modeling of Multi-Body Dynamic Systems; Structural, Numerical and Visco-Thermal Acoustics

Selected Publications
Latcha, M., and Zohdy, M., "Melting-Pot Senior Design at OU: 10 Years of Lessons Learned," *Proceedings of the 2014 ASEE North Central Conference, ASEE.*

Latcha, M.A., Debnath, D., Elhajj, I., Gu, E., Haskell, R.E., "Melting Pot Design at Oakland University," *Proceedings of the Engineering Capstone Design Course Conference,* 2007

Latcha, M.A., Ganesan, S., Gu, E., Haskell, R.E. "The Melting Pot Approach to Senior Design Part II: Assessment and Improvement," *Proceedings of the 2005 ASEE North Central Conference, ASEE.*

Latcha, M.A., Ganesan, S., Gu, E., Haskell, R.E. "The Melting Pot Approach to Senior Design," *Proceedings of the 2004 ASEE North Central Conference, ASEE.*

Jonathan Maisonneuve, Ph.D.
Concordia University

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Teaching
Alternative Energy; Thermodynamics; Fluid Mechanics; Heat Transfer

Research
Membrane Processes; Energy and Water Systems; Energy Efficient Building

"My research group develops membrane processes for the production of power, water, and food in a variety of applications including buildings, agriculture, industry, and space exploration. The goal of our work is to ensure the sustainability of these critical resources."

Selected Publications
S. Moussaddy, G. Yuan, and J. Maisonneuve, "A new concept for generating mechanical work from gas permeation," Journal of Membrane Science, vol. 614, 2020.

G. Lekshminarayanan, M. Croal, and J. Maisonneuve, "Recovering latent and sensible energy from building exhaust with membrane-based energy recovery ventilation," Science and Technology for the Built Environment, vol. 26, pp. 1000-1012, 2020.

J. Maisonneuve and S. Chintalacheruvu, "Increasing osmotic power and energy with maximum power point tracking," Applied Energy, vol. 238, pp. 683-695, 2019.

S. Bhide and J. Maisonneuve, "Modeling and simulation of a photosynthetic solar cell," Transactions of the ASABE, vol. 62, 2019.

J. Maisonneuve and P. Pillay, "Introduction to PRO for energy conversion applications including an electric equivalent circuit," IET Renewable Power Generation, vol. 11, pp. 115-122, 2016.

J. Maisonneuve, C. B. Laflamme, and P. Pillay, "Experimental investigation of pressure retarded osmosis for renewable energy conversion: Towards increased net power," Applied Energy, vol. 164, pp. 425-435, 2016.

Ryan Monroe, Ph.D.
Michigan State University

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Teaching
Dynamics; Vibrations; Statics; Automotive Driveline Dynamics and Controls; Electromechanical Systems; Advanced Differential Equations and Multivariable Calculus

Research
Fundamental: Nonlinear Dynamics and Vibrations; Transient Dynamics and Resonance of Nonlinear Systems; Psycho-acoustics; Reduced-order Modeling; Applied: Automotive Vehicle Drive and Sound Quality; Vibration Absorbers for Rotating Machinery; Powertrain and Transmission Controls and Vibration Isolation; Electrified Powertrains; Aerospace Vehicle Launch Dynamics

Selected Publications
R.J. Monroe and S.W. Shaw, "Nonlinear Transient Dynamics of Pendulum Torsional Vibration Absorbers, Part I: Theory," Journal of Vibration and Acoustics, 135(1), 2013.

R.J. Monroe and S.W. Shaw, "Nonlinear Transient Dynamics of Pendulum Torsional Vibration Absorbers, Part II: Experimental Results," Journal of Vibration and Acoustics, 135(1), 2013.

R.J. Monroe and S.W. Shaw, "On the Transient Response of Forced Nonlinear Oscillators," Nonlinear Dynamics, 67(4), 2012.

R.J. Monroe, S.W. Shaw, A.G. Haddow, and B.K. Geist, "Accounting for Roller Dynamics in the Design of Bifilar Torsional Vibration Absorbers," Journal of Vibration and Acoustics, 133(6), 2011.

Zissimos P. Mourelatos, Ph.D.
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Teaching
Design Under Uncertainty; Reliability Methods; Vibrations and Controls; Random Vibrations; Noise, Vibration and Harshness (NVH)

Research
Design under Uncertainty; Reliability, Safety and Quality; Probabilistic Methods; Reliability-Based Design Optimization; Model Validation and Verification; Design Optimization of Large-Scale Vibratory Systems; Random Vibrations; Noise, Vibration and Harshness (NVH); Bearing Lubrication; I.C. Engine Dynamics

Selected Publications
Geroulas, V., Mourelatos, Z.P., Tsianika, V., and Baseski, I. "Reliability of Nonlinear Vibratory Systems under Non-Gaussian Loads," *ASME Journal of Mechanical Design,* 140(2), 021404 (9 pages), 2017.

Mourelatos, Z.P., Majcher, M., and Geroulas, V. "Time-Dependent Reliability Analysis of Vibratory Systems with Random Parameters," *ASME Journal of Vibration and Acoustics,* 183(3), 031007 (9 pages), 2016.

Skowronska, A., Gorsich, D., Pandey V., and Mourelatos, Z.P., "Optimizing the Reliability and Performance of Remote Vehicle-to-Grid Systems using a Minimal Set of Metrics," *ASME Journal of Energy Resources Technology,* 137(4), 041204 (7 pages), 2015.

Drignei, D., Baseski, I., Mourelatos, Z.P., and Kosova, E. "A Random Process Metamodel Approach for Time-Dependent Reliability," *ASME Journal of Mechanical Design,* 138(1), 011403(9 pages), 2015.

Mourelatos, Z.P., Majcher, M., Pandey V., and Baseski, I. "Time-Dependent Reliability Analysis Using the Total Probability Theorem," *ASME Journal of Mechanical Design,* 137(3), 031405 (8 pages), 2015.

Nikolaidis, E., Mourelatos, Z.P., and Pandey, V. *Design Decisions under Uncertainty with Limited Information,* CRC Press, Taylor & Francis Group, London, UK, 525 pages, ISBN 978-0-415-49247-8, 2011.

Sayed A. Nassar, Ph.D.
University of Cincinnati

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Director of FAJRI
Mechanical Engineering

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Teaching
Mechanical System Design; Engineering Mechanics; Fasteners and Bolted Joints; Mechanics of Materials; Finite Elements; Vibrations

Research
Joining of Material; Fasteners and Bolted Joint; Vibration-Induced Loosening of Threaded Fasteners; Lightweight Materials and Composite Joins, Damage Modeling

Selected Publications
Nassar, S.A., Mazhari, E., "A Coupled Shear Stress-Diffusion Model for Adhesively Bonded Single Lap joints", *Journal of Applied Mechanics-ASME Transactions,* vol. 83, no.10, pp.101006-1~7, 2016.

Nassar, S. A., Sakai, K., "Failure Analysis of Composite-Based Lightweight Multimaterial Joints in Tensile-Shear Tests After Cyclic Heat at High Relative Humidity", *Journal of Manufacturing Science and Engineering-ASME Transactions,* vol. 139, no. 4, pp. 041007-1~9, 2017.

Nassar, S. A., Wu, Z., Moustafa, K., and Tzelepis, D., "Effect of Adhesive Nanoparticle Enrichment on Static Load Transfer Capacity and Failure Mode of Bonded Steel-Magnesium Single Lap Joints", *ASME Journal of Manufacturing Science and Engineering,* vol. 137, no. 5, 051025-051025-7. doi:10.1115/1.4029830, 2015.

Nassar, S. A. and Ali, R. "An Improved Cumulative Damage Criterion for Preloaded Threaded Fasteners", *ASME Journal of Mechanical Design,* vol. 136, no. 7, pp. 074502-1~5, 2014.

Wu, Z., Nassar, S. A., Jagatap, S., and Satav, K., "Thread Forming in Lightweight Material Joints Using Self-Tapping Screws", *Journal of Manufacturing Science and Engineering-ASME Transactions,* vol. 138, no. (9), pp. 091006-1~10, 2016.

Brian P. Sangeorzan, Ph.D.
University of Wisconsin, Madison

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Teaching
Thermodynamics; Fluid Mechanics; Heat Transfer; Internal Combustion Engines; Combustion; Nuclear Power Plants

Research
Internal Combustion Engines; Heat Transfer and Fluid Mechanics in Thermal Systems, Thermal System Modeling; Instrumentation and Optical Diagnostics; High-Speed Motion Photography

Selected Publications
Bazinski, S.J., Wang, X., Sangeorzan, B.P., Guessous, L. "Measuring and Assessing the Effective In-Plane Thermal Conductivity of Lithium Iron Phosphate Pouch Cells," *Energy,* Volume 114, 1 Pages 1085–1092, 2016.

"Laboratory Experiments on Oil-Jet Cooling of Internal Combustion Engine Pistons: Area-Average Correlation of Oil-Jet Impingement Heat Transfer.", *J. Energy Eng.,* 10.1061/(ASCE)EY.1943-7897.0000227, C4014003.

"An Area-Average Correlation for Oil-Jet Cooling of Automotive Pistons", *J. Heat Transfer.* 2014; 136(12):124501-124501-4. HT-12-1125, doi: 10.1115/1.4027835.

"Development of an Optical Sensor for Temperature Measurement and Water Droplet Detection in PEMFC Gas Channels," *ASME Energy Sustainability Conference and Fuel Cell Conference,* 2011.

"Development of an AMESim-Based Engine Thermal Management Model to Predict Piston and Oil Temperatures," *SAE International Congress and Exposition,* SAE Paper No. 2011-01-0647, 2011.

"Design of an Optical Thermal Sensor for Proton Detection of a Proton Exchange Membrane Fuel Cell Using Phosphor Thermometry," *Journal of Power Sources,* 2011.

Xia Wang, Ph.D.
Rensselaer Polytechnic Institute

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Teaching
Introduction to Thermal Engineering; Introduction to Fluid and Thermal Energy Transport; Energy System Analysis and Design; Fundamentals of Battery Systems for Hybrid and Electric Vehicles; Fuel Cell Science and Technology; Convective Transport Phenomena

Research
Physics-based model for Fuel Cells and Li-ion Batteries; Thermal properties Characterization of Li-ion batteries; Fast charging strategy for Li-ion batteries; Cold performance of Li-Ion Batteries; Battery Aging and Capacity Fade.

"My research is to advance the understanding and development of electrochemical conversion devices such as fuel cells and batteries by developing physics-based models to study the multiphysics phenomena occurring inside the system in conjunction with the experimental design and testing."

Selected Publications
Xu, M., Wang, R., Zhao, P. and Wang, X., Fast Charging Optimization for Lithium-ion Batteries Based on Dynamic Programming Algorithm and Electrochemical-Thermal-Capacity Fade Coupled Model, *Journal of Power Sources*, Volume 438, Oct 2019, 227105.

Xu, Meng, Reichman B., and Wang, X., Modeling the Effect of Electrode Thickness on the Performance of Lithium-ion Batteries with Experimental Validation, *Energy,* Vol 186, Nov 2019, 115846.

Bazinski S. J. and Wang, X., Predicting Heat Generation in a Lithium-ion Pouch Cell through Thermography and the Lumped Capacitance Model," Journal of Power Sources, HYPERLINK *"http://www.sciencedirect.com/science/journal/03787753/293/supp/C"Volume 305*, 15 February 2016, Pages 97-105.

Inman, K., and Wang, W., "In-Situ Temperature Measurement on Cathode GDL in PEMFC Using an Optical Fiber Temperature Sensor," *Journal of Electrochemical Society,* Vol. 160, Issue 6, F496-F500, 2013.

Zhijun (Jason) Wu, Ph.D.
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Mechanical Engineering

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Teaching
Engineering Graphics & CAD; Computer-Aided Design; Engineering Mechanics; Mechanical Systems Design; Fasteners & Bolted Joints

Research
Mechanical behavior of various joining technologies including threaded fasteners, adhesive bonding and spot welding, structural durability, properties of materials, engine component design, computer-aided design and simulation.

Selected Publications
Wu, Z., Nassar, S., Jagatap, S., Satav, K., "Thread Forming in Lightweight Material Joints Using Self-Tapping Screws," *Journal of Manufacturing Science and Engineering,* Vol. 138 (9), pp. 091006-1~10, 2016.

Wu, Z., Nassar, S., and Yang, X. "Axial Fatigue Performance of Medical Screws in Synthetic Bone," *International Journal of Biomedical Engineering and Technology,* Vol. 17, no.2, pp. 192~207, 2015

Nassar, S., Wu, Z., Moustafa, K., Tzelepis, D. "Effect of Adhesive Nanoparticle Enrichment on Static Load Transfer Capacity and Failure Mode of Bonded Steel-Magnesium Single Lap Joints," *Journal of Manufacturing Science and Engineering,* Vol. 137, 051024-1~6, 2015.

Wu, Z., Nassar, S., and Yang, X. "Nonlinear Deformation Behavior of Bolted Flanges under Tensile, Torsional and Bending Loads," *Journal of Pressure Vessel Technology,* Vol. 136, 061201-1~8, 2014.

Wu, Z. Nassar, S., and Yang, X. "Pullout Performance of Self-Tapping Medical Screws," *Journal of Biomechanical Engineering,* Vol. 133, 111002-1~9, 2011.

Yang, X., Nassar, S., and Wu, Z., "Criterion for Preventing Self-Loosening of Preloaded Cap Screws Under Transverse Cyclic Excitation," *Journal of Vibration and Acoustics,* Vol. 133, 041013-1~11, 2011.
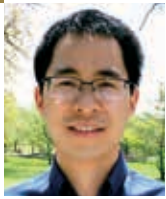
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Teaching
Properties of Materials

Research
Energy-efficient Materials and Devices: Photonics, 2D Materials, Thermal Management; High Energy-Density Battery: Li-S battery; In-situ Study of Energy-related Materials: Optical Microscopy and Spectroscopy

Selected Publications
A. Yang#, G. Zhou#, S. Fakra, H.Y. Hwang, J. Qin, S. Chu, Y. Cui, et al, "Electrochemical generation of liquid and solid sulfur on 2D materials with distinct areal capacities", Nature Nanotechnology, 15, 231-237 (2020).

G. Zhou#, A. Yang#, G. Gao#, L.-W. Wang, Y. Cui, et al, "Super-cooled liquid sulfur cathode towards high performance Li-S batteries", Science Advances, 6, 21, eaay5098 (2020).

J. Zhang#, A. Yang#, X. Wu#, S.-C. Zhang, M.L. Brongersma, J. Li, Y. Cui, et al, "Reversible and selective ion intercalation through top surface of few-layer MoS2", Nature Communications 9, 5289 (2018).

A. Yang, Y. Cui, et al, "Thermal management in nanofiber-based face mask", Nano Letters 17 (6), 3506-3510 (2017).

A. Yang, G.C. Schatz, T.W. Odom, et al, "Programmable and reversible plasmon mode engineering", Proceedings of the National Academy of Sciences 113, 14201-14206 (2016).

A. Yang, M.H. Mikkelsen, G.C. Schatz, T.W. Odom, et al, "Real-time tunable lasing from plasmonic nanocavity arrays", Nature Communications 6, 6939 (2015).

A. Yang, R.P. Van Duyne, T.W. Odom, et al, "Hetero-oligomer nanoparticle arrays for plasmon-enhanced hydrogen sensing" ACS Nano 8, 7639-7647 (2014).

Lianxiang Yang, Ph.D.
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Teaching
Optical Measurement and Quality Inspection; Advanced Optical Methods in Experimental Mechanics; Mechanics of Materials; Materials Properties

Research
Development and application of advanced optical techniques for solving engineering problems. The research focuses on materials characterization under extreme conditions, such as under high temperature and high speed etc., experimental strain/stress analysis, nondestructive testing of composite materials, vibration measurement and analysis, microstructure and MEMS measurement, and design validation and optimization.

Selected Publications
(Book) Yang, L.X., and Xie X., "Digital Shearography: New Developments and Applications," SPIE Press, Bellingham, WA98227, USA, ISBN: 9781510601567, 2016.

(Book) Steinchen W., and Yang, L.X., "Digital Shearography: Theory and Application of Digital Speckle Pattern Shearing Interferometry" SPIE Press, Bellingham, WA98227, USA, ISBN 0-8194-4110-4, 2003.

(Book Chapter) Yang, L.X., and Gao, X., "Chapter D4.5: Electronic speckle pattern interferometry-ESPI (30 pages)" in Handbook of Laser Technology & Application, to be published 2020 by Taylor & Francis Books, Inc.

(Book Chapter) Yang, L.X., and Li, J., "Chapter 5: Shearography (37 pages)" in Handbook of Advanced Non-Destructive Evaluation," edited by N. Ida and N. Meyendorf, Springer International Publishing AG, https://doi.org/10.1007/978-3-319-30050-4_3-1, 2018

(US Patent) Yang, L.X., Xie, X., Xu, N., and Chen X., "Spatial Phase-Shift Shearography System for Non-destructive Testing and Strain Measurement," US Patent 10,330,463, granted on June 25, 2019

Yongsoon Yoon, Ph.D.
University of Minnesota, Minneapolis

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(248) 370-3796

Teaching
Vibrations and Controls

Research
Dynamic Systems; Controls, Estimation; Diagnostics and Optimization with Applications to Internal Combustion Engines; Electrified Powertrain; Autonomous and Connected Vehicles; Fluid Power Systems and Renewable Energy.

Selected Publications
Y. Yoon, A. Brahma, "Air Fuel Ratio Imbalance Diagnostic of Spark Ignited Engines with Modulated Sliding Discrete Fourier Transform", *ASME Journal of Dynamic Systems, Measurement and Control*, Vol.142(8), pp. 081003, 2020.

Y. Yoon, Z. Sun, H. Du, "Inverse Modeling Approach for Parametric Frequency Domain Analysis of An Electrohydraulic System", *Mechanical Systems and Signal Processing*, Vol.120, pp. 412-425, 2019.

Y. Yoon, Z. Sun, "Spectral Analysis of Electrohydraulic Systems", *ASME Journal of Dynamic Systems, Measurement and Control*, Vol.139(2), pp. 021005, 2017.

Y. Yoon, Z. Sun, "Robust Motion Control for Tracking Time-Varying Reference Signals and Its Application to A Camless Engine Valve Actuator", *IEEE. Trans. on Industrial Electronics*, Vol. 63(9), pp.5724-5732, 2016.

Y. Yoon, Z. Sun, S. Zhang, G. G. Zhu, "A Control-Oriented Two-Zone Charge Mixing Model for HCCI Engines with Experimental Validation Using An Optical Engine", *ASME Journal of Dynamic Systems, Measurement and Control*, Vol. 136(4), pp. 041015, 2014.

Y. Yoon, J. Shin, H. Kim, Y. Park, S. Sastry, "Model Predictive Active Steering and Obstacle Avoidance for Autonomous Vehicles", *Control Engineering Practice*, Vol. 17(7), pp.741-750, 2009.

Peng Zhao, Ph.D.
Princeton University

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Mechanical Engineering

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Teaching
EGR 2500: Introduction to Thermal Engineering; ME 4500: Energy System Analysis and Design; ME 5560: Combustion Processes

Research
Combustion and reacting flow; Fuel property screening; Advanced engine combustion strategy; Thermal management and safety control of Li-ion batteries

"My work aims to design and analyze the next-generation energy and power systems based on multiphysics reacting flow science."

Selected Publications
On the critical state and safety regime of Li-ion battery thermal runaway, *Journal of Power Sources*, under review, 2019.

Toward computational singular perturbation without eigen-decomposition, *Combust. Flame*, 209 (2019) 63.

Prediction of autoignition and flame properties for multicomponent fuels using machine learning techniques, *SAE* 2019-01-1049.

ReactingFoam-SCI: An open source CFD platform for reacting flow simulation, *Computers. Fluids*, 190 (2019) 114.

Insights into engine autoignition: combining engine thermodynamic trajectory and fuel ignition delay iso-contour, *Combust. Flame* 200 (2019) 207.

Fuel wall film effects on premixed flame propagation, quenching and emission, *Int. J. Engine Research*, 2018, https://doi.org/10.1177/1468087418799565.

Qian Zou, Ph.D.
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Teaching
Statics and Dynamics; Mechanics of Materials; Analysis and Design of Mechanical Structures; Lubrication, Friction and Wear; Advanced Tribology

Research
Automotive Tribology, Wear and Scuffing - Modeling and Testing, Nanofluids, Lubrication Theory, Contact Mechanics Analysis.

Selected Publications
"Response of grease film at low speeds under pure rolling reciprocating motion", Friction, v8, n1, p115-135, February 1, 2020.

"A review: phase transformation and wear mechanisms of single-step and dual-step austempered ductile irons", Journal of Materials Research and Technology, v9, n1, p1054-1069, 2020.

"Dry sliding friction and wear characterization of in situ TiC/Al-Cu3.7-Mg1.3 nanocomposites with nacre-like structures", Journal of Materials Research and Technology, v9, n1, p641-653, 2020.

"Modified Experimental Approach to Investigate Coefficient of Friction and Wear under Lubricated Fretting Condition by Utilizing SRV Test Machine", SAE Technical Paper 2018-01-0835, 2018.

"Microstructures and Compressive Properties of Al Matrix Composites Reinforced with Bimodal Hybrid In-Situ Nano-/Micro-Sized TiC Particles", Materials, v11, n8, p1284, 2018.

"Tribological properties of ZnO and WS2 nanofluids using different surfactants", Wear, v8, n14, p382, 2017.

"Investigation of the Stability and Tribological Performance of Ionic Nanoliquids," Tribology Transactions, v60, n5, p845-851, 2017.

"Effect of Particle Concentration on Tribological Properties of ZnO Nanofluids," Tribology Transactions, v 60, n1, p154-158, 2017.

"Experimental Observation on the Surface Dimple Variations in Starved EHL of Sliding Steel-Glass Point Contacts," Tribology International, v105, p166–174, 2017.

"Microstructure and Sintering Mechanism of C/Cu Composites by Mechanical Alloying/Spark Plasma Sintering," Journal of Composite Materials, v5, n21, p3065-3074, 2017.

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