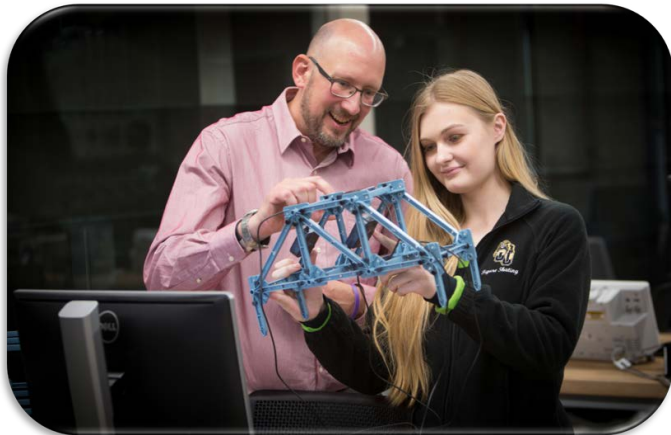# OAKLAND UNIVERSITY™

School of Engineering and Computer Science

Faculty Research Profiles
2017

Office of the Dean
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Rochester, MI 48309-4479

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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 national security, medical applications, the automotive industry, and military programs. 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, Professor and Dean

About the School of Engineering and Computer Science

SECS comprises four departments:
- **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 3,344 undergraduate and 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.
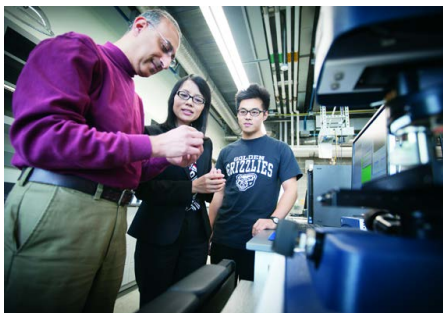
School of Engineering and Computer Science

Dean's Office

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Kathy Livelsberger, Career Services	(248) 370-3211
Anthonie Burke, Director of Development	(248) 370-4176

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FAJRI
Sayed Nassar, Ph.D.	(248) 370-3781

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Mehdi Bagherzadeh
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Iowa State University

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Teaching
CSE 231/506: Object Oriented Computing II

Research
Making engineering of correct software easier for concurrent, secure, mobile and big data software.

Selected Publications
1. *Modular reasoning in the presence of event subtyping*. In Transactions on Modularity and Composition 1, special edition: Best papers of Modularity' 15, pages 167-223, 2016.
2. *On ordering problems in message passing software*. In Proceedings of the 15th International Conference on Modularity, MODULARITY 2016, pages 54-65, New York, NY, USA, 2016.
3. *Panini: A concurrent programming model for solving pervasive and oblivious interference*. In Proceedings of the 14th International Conference on Modularity, MODULARITY 2015, pages 93-108, New York, NY, USA, 2015. ACM.
4. *AspectJML: Modular specification and runtime checking for crosscutting contracts*. In Proceedings of the 13th International Conference on Modularity, MODULARITY '14, pages 157-168, New York, NY, USA, 2014.
5. *On exceptions, events and observer chains*. In Proceedings of the 12th Annual International Conference on Aspect-oriented Software Development, AOSD '13, pages 185-196, New York, NY, USA, 2013. ACM.

6. *Translucid contracts: Expressive specification and modular verification for aspect-oriented interfaces*. In Proceedings of the Tenth International Conference on Aspect-oriented Software Development, AOSD '11, pages 141-152, New York, NY, USA, 2011. ACM.
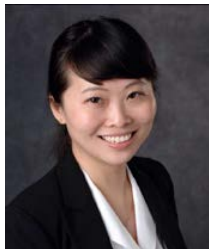
Jingshu Chen
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Teaching
Software Engineering and Practice

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

Selected Publications

1, Ensuring Average Recovery with Adversarial Scheduler. Jingshu Chen, Mohammad Roohitavaf and Sandeep Kulkarni, The International Conference on Principles of Distributed Systems (OPODIS) 2015.
2, Refinement of Probabilistic Stabilizing Programs Using Generic Algorithms. Ling Zhu, Jingshu Chen and Sandeep Kulkarni, The international Symposium on Stabilization, Safety and Security of Distributed System (SSS) 2015.
3, The Complexity of Adding Multitolerance. Jingshu Chen, Ali Ebnenasir and Sandeep Kulkarni, ACM Transactions on Autonomous and Adaptive Systems (TAAS), 2014.

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

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Teaching
Computer Architecture, Microprocessor-Based Systems, Logic Synthesis for Digital Systems, and 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
*1. "*Embedded Software Implementation of a Key Agreement Protocol Using 160-bit Elliptic Curve,*" International Journal of Computers and Their Applications,* 2010

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

Laura Dinsmoor
M.S.
Oakland University

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Computer Science and Engineering Department

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Teaching

Computer Problem Solving in Computer Science; Introduction to Computer Programming, Introduction to Object Orientated Programming, Sophomore Project

Research

Computer Science Education; Increasing recruitment of women into Computer Science degrees. *"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."* Laura Dinsmoor, 2016

Erik Fredericks

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Michigan State University

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Computer Science and Engineering Department

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Teaching

System Administration, Database Systems

Research

Search-based software engineering, evolutionary computation, software testing, requirements engineering, software modeling, software engineering applications, embedded systems, cloud computing

Selected Publications

1. E. M. Fredericks, "Automatically hardening a self-adaptive system against uncertainty," in *Proceedings of the 11th international workshop on software engineering for adaptive and self-managing systems*, New York, NY, USA, 2016, pp. 16-27.
2. E. M. Fredericks and R. H. Hariri, "Extending search-based software testing techniques to big data applications," in *Proceedings of the 9th international workshop on search-based software testing*, New York, NY, USA, 2016, pp. 41-42.
3. E. M. Fredericks and B. H. C. Cheng, "An empirical analysis of providing assurance for self-adaptive systems at different levels of abstraction in the face of uncertainty," in *Proceedings of the 8th International Workshop on Search-based Software Testing*, 2015.
4. E. M. Fredericks and B. H. C. Cheng, "Automated generation of adaptive test plans for self-adaptive systems," in *Proceedings of the 10th International Symposium on Software Engineering for Adaptive and Self-managing Systems*, 2015.
5. E. M. Fredericks, B. DeVries, and B. H. C. Cheng, "Autorelax: automatically relaxing a goal model to address uncertainty," *Empirical Software Engineering*, pp. 1-36, 2014.

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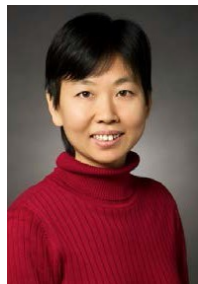Postdoctoral Fellow, Rice University

Professor
Outstanding Service Award
Computer Science and Engineering Department

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Teaching

Introduction to Computer Networks, Advanced Computer Communication, Information Security Practice, and 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

1. Ye Zhu, Anil Vikram, Huirong Fu, and Yong Guan, "On Non-Cooperative Multiple-Target Tracking with Wireless Sensor Networks," *IEEE Transactions on Wireless Communications*, vol. 13, no.11, pp. 6496-6510, 2014.
2. Ye Zhu, Anil Vikram, and Huirong Fu, "On Topology of Sensor Networks Deployed for Multi-Target Tracking," *IEEE Transactions on Intelligent Transportation Systems*, vol. 15, no. 4, pp. 1489-1498, 2014.
3. Qing Wang, Supeng Leng, Huirong Fu, and Yan Zhang, "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.
4. Supeng Leng, Liren Zhang, Huirong Fu, and Jianjun Yang, "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.
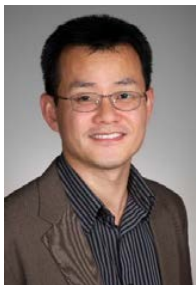
Dae-Kyoo Kim
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Coloradio State University

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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"* Dae-Kyoo Kim, 2016

Selected Publications

1. "Model Transformation between OPC UA and UML," *Computer Standards & Interfaces*, 2016

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

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

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

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

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

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George Mason University

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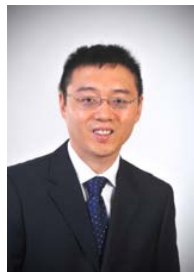
Teaching
Introduction to Computer Programming; Computer Architecture, Programming Languages, Operating Systems, Network and System Security

Research
Network and system security, intrusion detection and prevention, malware analysis and defense,
steganography, digital forensics, and privacy

Selected Publications
1. Anyi Liu, Jim Chen, and Harry Wechsler. Real-time Timing Channel Detection in a Software-Defined Networking Virtual Environment. Intelligent Information Management, Vol.7, No.6, 2015, pages 283-302.
2. Anyi Liu, Jigang Liu, and Tetsutaro UeharaSecure. 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.
3. Anyi Liu, Jim X. Chen, and Harry Wechsler. Detecting Covert Timing Channels in a Networked Virtual Environment. The Ninth IFIP WG 11.9 International Conference on Digital Forensics (ICDF '13). Orlando, Florida, USA. January 28-30, 2013.
4. Anyi Liu, Duminda Wijesekera, and Angelos Stavrou. SQLProb, a proxy-based architecture towards preventing SQL injection attacks. The 24th Annual ACM Symposium on Applied Computing (SAC '09). Honolulu, Hawaii, USA, March 9-12, 2009.
5. Lingyu Wang, Anyi Liu, and Sushil Jajodia. Using attack graphs for correlating, hypothesizing, and predicting network intrusion alerts. Computer Communications, Vol.29, No.15, 2006, pages 2917-2933.
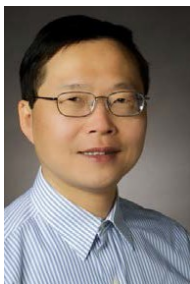
Lunjin Lu
Ph.D.
University of Birmingham (UK)

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Computer Science and Engineering Department

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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

1. L. Lu, *A Polymorphic Type Dependency Analysis for Logic Programs,* New Generation Computing, 29(4): 409-444 (2011)
2. A. King and L. Lu, *A Backwards Analysis of Constraint Logic Programs* TPLP 2 (4-5): 517-547 (2002)
3. L. Lu and A. King, *Determinacy Analysis of Logic Programs,* ESOP 2015: 108-123.
4. Astrid Younang, Lunjin Lu: Improving Precision of Java Script Program Analysis with an Extended Domain of Intervals. COMPSAC Workshops 2015: 441-446
5. S Kim, D-K Kim, L Lu and S Park, *Quality Driven Architecture Development Using Architectural Tactics,* Journal of systems and Software, 82 (8): 1211-1231 (2009)
6. L Lu and D-K Kim, *Required Behavior of UML Sequence Diagrams: Semantics and Conformance*, ACM TOSEM, 23 (2): 15:1 – 15:28, (2014)

Khalid Mahmood
Ph.D.
Tokyo Institute of Technology, Japan

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Department of Computer Science & Engineering

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(248) 370-3542

Teaching

Information Security Practices; Advanced Web Design and Applications; Computer Networks; Interactive Web Systems; System Analysis; Object Oriented Programming

Research

"My research interests include designing Autonomous Decentralized network systems using semantic web technologies. Research topics comprise of Semantic based Information Security &privacy, Semantic Modeling and Intelligent Learning Systems, Semantic modeling and design of healthcare applications using Natural Language Processing and Cognitive Computing, Semantic based web filtering and Semantic based Cloud Robotics"

Selected Publications

1. Mahmood K, Raza A., Krishnamurthy M., Takahashi H. "Autonomous Decentralized Semantic-based Architecture for Dynamic Content Classification", IEICE Trans. Commun, vol.E99-B, No.4, pp.849-858, April 1, 2016.
2. Mahmood K, Hironao Takahashi, Mazen Alobaidi "Autonomous Decentralized Semantic Based Traceability Link Recovery Framework" IEICE Transactions on Information and Systems Vol. E99.D (2016) No. 9 pp. 2283-2294
3. Mahmood K., X.D. Lu, Y. Horikoshi and K. Mori, "Autonomous Pull-Push Community Construction Technology for High-Assurance," *IEICE Trans. on INFO. & SYST.*, Vol.E92-D, No.10, pp.1836-1846, 2009.
4. Mahmood K., X. Lu, K. Mori, "Autonomous Community Construction Technology to Achieve Service Assurance in ADCS," *IEICE Trans. on INFO. & SYST.*, Vol. E91-D, No. 9, pp. 2259-2266, Sept. 2008.
5. Takahashi H., Mahmood K., K. Mori, "Autonomous L3 Cache Technology for High Responsiveness," *IPSJ Transaction; Journal of Information Processing Japan*, Vol. 20 No.2, 2012.

Hua Ming
Ph.D.
Iowa State University

Assistant Professor
Computer Science and Engineering Department

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Teaching
Emerging programming paradigms, programming languages of different paradigms, compiler construction, software engineering

Research
Software intensive systems, formal semantics of programming languages, program analysis techniques, programming language type theory, design and implementation of programming languages, map-based mobile application development. "*My research currently focuses on the foundational and practical applications of a new abstraction called Situation, supported by programming languages design theory (formal semantics), program analysis techniques (especially Abstract Interpretation) and the implementation level state-of-the-art (big data oriented software construction, mobile apps, compiler implementation and beyond)." Hua Ming, 2015.*

Selected Publications
1. Hua Ming, Carl K. Chang, and Jingwei Yang. "Dimensional Situation Analytics: From Data to Wisdom." In *Computer Software and Applications Conference (COMPSAC), 2015 IEEE 39th Annual, vol. 1, pp. 50-59. IEEE, 2015.*
2. Tianyu Meng, Hua Ming, Yan Gao, Georgi Batinov, Michelle Rusch, Les Miller "Understanding Situations in Map-based Applications" *Proceedings of the 30th International Conference on Computers and Their Applications. Honolulu, HI. March 9-11, 2015. pp. 425-430*
3. Carl K. Chang, Hsin-yi Jiang, Hua Ming, Katsunori Oyama "Situ: A Situation-theoretic Approach to Context-Aware Service Evolution," *IEEE Transaction on Service Computing, IEEE Computer Society. Vol.2. No. 3. pp. 261 – 275,*
4. L. Miller, S. Nilakanta, Y. Song, L. Zhu, H Ming. "Managing Knowledge in Organizational Memory Using Topic Maps." *International Journal of Knowledge Management, IGI Publishing. Vol. 4. No. 1. pp. 17-28. 2008*

Nilesh Patel
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Wayne State University

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(248) 370-2247

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

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

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

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

4. "Multi Camera Multi Object Tracking using Block Search over Epipolar Geometry," *NUiCone,* 2010
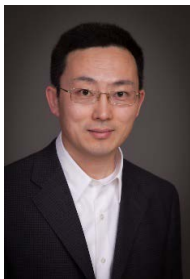
Guangzhi Qu
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University of Arizona

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Teaching
Operating Systems; Wireless Networking; Network Security; System Administration; Data Mining; Machine Learning

Research
Data Mining; Machine Learning; Healthcare Computing; Information and Network Security; Discrete Event Simulation; Graph Databases

Selected Publications

1. "Local Analgesia Adverse Effects Prediction using Multi-label Classification," *Neurocomputing*, vol. 92, pp. 18-27, 2012.
2. "Complex Networks Properties Analysis for Mobile Ad hoc Networks," *IET Communications*, vol. 6, Issue 4, pp.370-380, 2012.
3. "Bucket Learning: Improving Model Quality through Enhancing Local Patterns, Knowledge-based System," *Available online* 2 October, 2011, ISSN 0950-7051, 10.1016/j.knosys.2011.09.013.
4. "A Weighted-Graph-Based Approach for Diversifying Search Results," *International Journal on Knowledge and Web Intelligence*, 2011 - Vol. 2, No.1 pp. 15-35.
5. "Neuropathic Pain Scale Based Clustering for Subgroup Analysis in Pain Medicine," *IEEE the 9th International Conference on Machine Learning and Applications,* 2010.

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

Professor
Computer Science and Engineering Department

isethi@oakland.edu
(248) 370-2820

Teaching
Intro Computing with Excel, Computer Vision, Data mining, Deep Learning, Machine Learning, Pattern Recognition, and 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
*1. "*From Centralized to Distributed Decision Tree Induction using CHAID and Fisher's Linear Discriminate Function Algorithms," *Journal of Intelligent Decision Technologies,* 2011.
2. "Multilabel Classification Method for Multimedia Tagging," *International Journal of Multimedia Data Engineering Management,* 2010.
3. "Confidence-based Active Learning," *IEEE Trans. Pattern Analysis and Machine Intelligence*, 2006.
4. "Convolution-Based Edge Detection for Image/Video in Block DCT Domain," *Journal of Visual Communication and Image Representation*, 1996.
5. "Entropy Net: From Decision Trees to Neural Nets,"   *Proceedings of the IEEE*, 1991.
6. "Finding Trajectories of Feature Points in a Monocular Image Sequence," *IEEE Trans. Pattern Analysis and Machine Intelligence*, 1987.

Mohammad-Reza Siadat
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Wayne State University

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Teaching

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

Research

Research interests include Medical Signal and Image Processing, Computational Anatomy and Physiology, and 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

1. "Unstructured Medical Image Query using Big Data – An Epilepsy Case Study," *Journal of Biomedical Informatics,* Vol. 59, pp. 218–226, 2016.
2. "Analysis of Incomplete and Inconsistent Clinical Survey Data," *Journal of Knowledge and Information Systems,* Vol. 46, Issue 3, pp 731-750, 2016.
3. "Validation of Brain Connectivity Analysis using fMRI Simulation," *Int. J. of Engin. Sys. Modelling and Simulation*, Vol. 7, No. 4, pp. 279–293, 2015.
4. "Conversion of a Surface Model … into a Volume Model for Medical Image Retrieval," *Applied Medical Informatics*, Vol. 36, No. 2, pp. 9-30, 2015.
5. "Continence Index: a New Screening Quest. to Predict Probability of Incont. …," *Int. Urology and Nephrology*, Vol. 47, No. 7, pp 1091-1097, 2015.
6. "Stratification of Clinical Survey Data Using Contingency Tables," *Int. J. of Data Mining and Knowledge Management Process*, Vol.4, No.4, July 2014.
7. "A Simulation … Feature Selection Methods Utilizing Gene Ontology for Gene Expr. Classif.," *J. of Biomed. Info.*, Vol. 46, No. 6, pp. 1044-59, 2013.
8. "Comparison Improved Feature Select. by Incorp. Gene Similarity into LASSO," *Int. J. of Knowl. Discovery in Bioinf.*, Vol. 3, No. 1, pp. 1-19, 2012.
9. "Novel Application of Statistical Methods to Identify Urinary Incontinence Risk Factors," *The Journal of Advances in Urology*, Vol. 2012, pp. 1-8, 2012.

Gautam B. Singh
Ph. D.
Wayne State University

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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

1. Book: <u>Foundations of Computational Biology and Bioinformatics</u>. Springer, January 2015.
2. "Protecting Innovative Business Methods, Software and Databases," *Global Journal of Business Information Systems, Enriched Publications*. v. 1(1), pp. 1-10, 2013-2013.
3. "Learning Information Patterns in Biological Databases – Stochastic Data Mining," *Data Mining and Knowledge Discovery Handbook*, 2010
4. "Modified SACO Algorithm for Productive Emergence," *International Journal of Computers and Their Applications*, 2010
5. "Using Hidden Markov Models In Vehicle Crash Detection," *IEEE Transactions on Vehicular Technology*, 2009
6. "Component-Based Approach for Educating Students in Bioinformatics," *IEEE Transactions on Education*, 2009
7. "Mathematical model to predict regions of chromatin attachment to the nuclear matric," *Nucleic Acid Research*, 1997

Hoda Abdel-Aty-Zohdy
Ph.D.
University of Waterloo (Canada)

Director of the Microelectronics & Bio-Inspired Systems Design Lab, Electrical and Computer Engineering Department, Professor

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(248) 370-2243

Selected Publications

1. "Optimal Design of Short Fiber Bragg Grating Using Bat Algorithm With Adaptive Position Update," *IEEE Photonics Journal,* Vol. 8, No. 1, pp.1-12, February 2016

2. "Applying Hyper-Fuzzy Extended Kalman Filter to Indoor Security Monitoring," *International Congress of Global-Science and Technology, ACSE Journal, ISSN 1687-4811, Vol 17, issue 1,* pp. 41-51, *June* 2017.

3. "Dimensions in the Bat Algorithm with Adaptive Position Update (APU-BA) for Short Fiber Bragg Grating Optimal Design" Proceedings of the *IEEE, NAECON-OIS*, pp. 262-265, August 2016.

4. "High-Birefringence Photonic Crystal Fiber Structures Based on the Binary morse-thue Fractal Sequence," Proceedings of the *IEEE Optical Engineering Applications, SPIE* Vol 9958 99580W 1-to-10, November 2016.

5. Technical Report for *SBIR and Center for Innovative Radar Engineering (CIRE) AFRL*, Contract FA8650-10-D-1750-Tech Area 1.1, [1] "Design and implementation of Daubechies-4 wavelets IC Chip preprocessor for Classifications." [2] "Improved Radar Angle of Arrival (AOA) Classification using Modified Self-Organizing Feature." 24 pages, August 2015.

6. "Design and Test of D4 Wavelets Integrated Chip Preprocessor for Chemical Classifications," *Proceedings of the IEEE MWSCAS2014,* pp.651-654, August 2014

7. "Dual Mode Digital Pulse Modulation (PWM & PFM) Generator ASIC for Laser Electro-Optic Q-Switching Application," *Proceedings of the IEEE MWSCAS2014,* pp.901-904, August 2014

8. "Design and application of an enhanced GA," *Proceedings of the IEEE MWSCAS,* pp.864-867, August 2014

9. "**Bio-Inspired Chips for High Fidelity Classifications,"** Invited Tutorial at the *IEEE NAECON 2014.*

10. "Study and Simulation of Microstructured Photonic Crystal Optical Fiber," *Proceedings of the IEEE NAECON*, pp.41-45, June 2014

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Department

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Teaching
Microprocessor-Based System Design

Research
General-Purpose Computing on Graphics Processing Units (GPGPU), High
Performance Computing, Embedded System Design with GPUs, Software
Optimization, Numerical Simulation and Modeling, Machine Learning, Software
Design Analysis.

Selected Publications
1. "Accelerating Numerical Ice Engineering Tools Using GPGPU",
Shadi Alawneh, Jan Willem Thijssen, and Martin Richard, Proc. the International
Arctic Technology (ATC 2016), October 2016, St. John's, Newfoundland, Canada.
2. "GPU-Based Monte-Carlo Simulation for a Sea Ice Load Application",
Sara Ayubian, **Shadi Alawneh**, and Jan Thijssen, Proc. the 2016 Summer
Computer Simulation Conference (SCSC 2016), July 2016, Montreal, Quebec,
Canada.
3. "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.
4. "Fast Quadratic Discriminant Analysis Using GPGPU for Sea Ice Forecasting".
Shadi Alawneh, Carl Howell, and Martin Richard, Proc. The IEEE International
Symposium on High Performance and Smart Computing (HPSC 2015) in
conjunction with The 17th IEEE International Conference on High Performance
Computing and Communications (IEEE HPCC 2015), August 2015, New York,
USA

Daniel N. Aloi
Ph.D.
Ohio University

Professor and Chair
Electrical and Computer Engineering Department

Director, 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

1. Xiang He, **Daniel N. Aloi,** "Probabilistic Multi-Sensor Fusion Based Indoor Positioning System on Mobile Device," submitted to Sensors Journal on 9/15/2015, Manuscript ID: sensors-101368.

2. **Daniel N. Aloi** and Abualkair Alkhateeb, "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, Number 2, 2015, pp. 151-160.

3. Elias Ghafari and **Daniel N. Aloi**, "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 (2014): 1066-1074.

4. **Daniel N. Aloi**, Elias Ghafari, Mohammad S. Sharawi and Ashley Steffes, *"*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 (2014): 782-793.

5. Mohammad S. Sharawi, Sameir E. Deif, Elias Ghafari and **Daniel N. Aloi**, "A Programmable Compact Wide-Band RF Feed Network," *International Journal on Microwave and Wireless Technologies*, available on CJO2014. doi:10.1017/S175907871400035X.

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

Assistant Professor
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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 experimental methods, power system protection, electric power transmission and distribution.

Selected Publications

1. S. A. Arefifar, Yasser A. R. I. Mohamed, M. Ordonez, "Voltage and Current Controllability in Multi-Microgrid Smart Distribution Systems," in IEEE Transactions on Smart Grid, (In Press, Accepted April 2016).
2. S. A. Arefifar, M. Ordonez, Yasser A. R. I. Mohamed, "Energy Management in Multi-Microgrid Systems— Development and Assessment," in IEEE Transactions on Power Systems, (In Press, Accepted April 2016).
3. S. A. Arefifar, M. Ordonez, Yasser A. R. I. Mohamed, "V-I Controllability-Based Optimal Allocation of Renewable Resources in Smart Grids," in IEEE Transactions on Smart Grid, vol.62, no.2, pp.711,723, Feb. 2015.
4. S. A. Arefifar, Yasser A. R. I. Mohamed, T. H. M. EL-Fouly, "Optimized Multiple Microgrid-Based Clustering of Active Distribution Systems Considering Communication and Control Requirements," in IEEE Transactions on Industrial Electronics, vol.7, no.3, pp.1378-1388, May 2016.
5. S. A. Arefifar, Yasser A. R. I. Mohamed, "DG Mix, Reactive Sources and Energy Storage Units for Optimizing Microgrid Reliability and Supply Security," in IEEE Transactions on Smart Grid, vol.5, no.4, pp.1835,1844, July 2014.

Ka Chai Cheok
Ph.D.
Oakland University

Professor
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Teaching

Automotive Mechatronics; Microcomputer-based Control Systems; Electric Drive Systems; Adaptive Control Systems; Intelligent Control Systems; Autonomous Vehicle Systems

Research

Basic theoretical research on control and estimation, signal and image processing, computational intelligence and decisions. Exploratory experiments in embedded controls and mechatronics; virtual & physical simulators; autonomous mobile robots; positioning & navigation system. Applications to self-navigating unmanned ground vehicles and omnidirectional vehicles, auto-lane centering automobile system, mine-detection robots, and automated IR cancer detection system. *"My academic research strives to grasp deep insights of the subjects and extend their potential so they can be developed into useful tools. I work with professionals and entrepreneurs to bring these ideas to meaningful real world applications."* K.C. Cheok, 2013

Selected Publications

1. "Design and Implementation of Low-Cost Mobile Robot for Mine Detection," *2012 NDIA Ground Vehicle Systems Engineering and Technology Symposium (GVSETS) - Robotic Systems (RS) Mini-Symposium,* Troy, MI, August 14-16, 2012.
2. "Adaptive Backstepping Control based on Estimation of Dominant Parameters for Brushless DC Motor*," ICGST International Conference on Computer Science and Engineering, CSE-Dubai-12*, Dubai, UAE, 16-18 Jul 2012.
3. "Comparison of Optimal Path Planning Algorithms for an Autonomous Mobile Robot," *The 3rd Annual IEEE International Conference on Technologies for Practical Robot Applications,* Woburn, MA, USA, from April 11-12, 2011.

Manohar Das
Ph.D.
Colorado State University

Professor
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das@oakland.edu
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Teaching

Digital Signal Processing, Digital Image Processing, Communication Systems, Signals and Systems, Power Electronics, System Optimization

Research

Adaptive Signal Processing and Control, Digital Signal and Image Processing, Data Compression, Pattern Recognition, System Modeling and Identification. *"Research in modeling, adaptive signal processing and control involves development of signal/system models, and algorithms for filtering, detection, identification and controls in presence of uncertainties and noise in a process or system."* Monohar Das, 2015

Selected Recent Publications

1. Ziyad Kas, Manohar Das, "An Electrothermal Model Based Adaptive Control of Resistance Spot Welding Process," *Intelligent Control and Automation*, June 2015.

2. Arab AlSharif and Manohar Das, "A Piecewise Linear Time-Varying Model for Modeling the Charging and Discharging Processes of a Lithium-Ion Battery," *International Journal of Handheld Computing Research*, 5(2), 101-119, June 2014, pp. 101-119.

3. Edward Gu and Manohar Das, "Backstepping Control Design for Vehicle Active Restraint Systems," *ASME Transactions on Dynamic Systems, Measurements and Control*, 2013.

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

5. US Patent Application, Publication no. US20130186868 A1, Jul 25, 2013. Title: System and method for performing resistance spot welding. Inventors: Manohar Das, Vernon Fernandez, John Paille, Douglas P. Gouin.

Brian Dean
Ph.D.
University of Wyoming

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Electrical and Computer Engineering Department

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(248) 370-2822

Teaching

Instrumentation and Measurement, Bioinstrumentation and Signal Processing, Electronics

Research

Sensors, Signal Conditioning and Signal Processing, Biomimicry, Electric Motors, Embedded Systems

Selected Publications

1. Dean, B.K.; Wright, C.H.G.; Barrett, S.F., "Biomimetic Signal Conditioning and Light Adaptation for Compound Vision Sensors," in Sensors Journal, IEEE , vol.15, no.1, pp.269-278, Jan. 2015.
2. Agrawal, S., Dean, B.K., Carpenter, K., Grimm W., and Motzny M. "Removal of Signal Artifacts from Biomimetic Vision Sensor Based on the Common Housefly," Medical Measurements and Applications (MeMeA), Rochester, MN, May 2017 – *Accepted*.
3. 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, Sept. 2015.
4. B. K. Dean, C. H. G. Wright, and S. F. Barrett, "Preliminary Tests of a possible Outdoor Light Adaptation Solution of a Fly Inspired Visual Sensor: A Biomimetic Solution," *ISA Biomedical Sciences Instrumentation*, vol. 47, pp. 147–152, Apr. 2011.
5. B. K. Dean, C. H. G. Wright, and S. F. Barrett, "Advances in Sensor Adaptation to Changes in Ambient Light: A Bio-inspired solution," *ISA Biomedical Sciences Instrumentation*, vol. 46, pp. 20–25, Apr. 2010.
6. B. K. Dean, C. H. G. Wright, and S. F. Barrett, "The Design of an Analog Module for Sensor Adaptation to Changes in Ambient Light," *ISA Biomedical Sciences Instrumentation*, vol. 45, pp. 185–190, Apr. 2009.

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

Professor
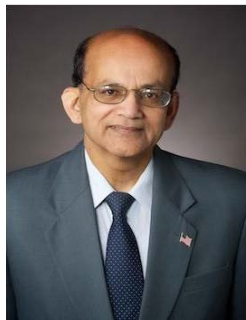Electrical and Computer Engineering
Department
Associate Director Center for Robotics,
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Teaching

Graduate level courses: 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, and Developing embedded senor 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 engine controller for low cost and high gas mileage, Application of computer engineering for assistance to the needy, and also safety and comfort of the world. Real time tracking with iPad display and sensors.

U.S. Provisional Patent: 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

U.S. Provisional Patent: Subramaniam Ganesan, Aqeel F. Aqeel and John Chupa "Retina analysis" 5/13/2016.

Selected Publications

1. Suresh Sankaranarayanan, Subramaniam Ganesan, "Applications of intelligent agents in mobile commerce- a review" International journal of agent technologies and systems, 6(4) 35-71 October-December 2014. IGI global. 36 pages paper.

2. Prajapati and S. Ganesan, "Applications of Univariate Statistical Techniques and Neural Networks in Condition-based Maintenance," *Quality and Reliability Engineering International, John Wiley*, ISSN: 0748-8017, Vol. 29, Issue 3, April 2013, pp 439-461.

Edward Y. Gu
Ph.D.
Purdue University

Professor
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Teaching
Robotic Systems and Control; Analysis of Nonlinear Control Systems; Electromechanical Energy Conversion; Automatic Control Systems

Research
Kinematics, Task-Planning, Dynamic Modeling and Control of Robotic Systems; 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."* Edward Y.L. Gu, 2013

Selected Publications
1. "A Journey from Robot to Digital Human," *Springer*, Berlin Heidelberg, September 2013, ISBN 978-3-642-39046-3.
2. "Backstepping Control Design for Vehicle Active Restraint Systems," *ASME Transactions: Journal of Dynamic Systems, Measurement and Control*, Vol. 135, No. 1, January 2013, paper number 011012, pp. 1-9.
3. "Modeling of Human-Vehicle Dynamic Interactions and Control of Vehicle Active Systems", *International Journal on Vehicle Autonomous Systems*, Vol.10, No. 4, December, 2012, pp. 297-314.
4. "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

Associate Professor
Outstanding Teaching Award
Electrical and Computer Engineering Department

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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

1. "Flexible Embedded System Design using Flowpaths," *International Conference on Engineering Reconfigurable Systems and Algorithms,* 2011
2. "Generating Hardware from Java Using Self-Propagating Flowpaths," *International Conference on Engineering Reconfigurable Systems and Algorithms,* 2011.
3. "FPGA-based Hybrid Systems in Forth: a Forth Core and Reconfigurable Hardware from Forth," *International Conference on Embedded Systems and Applications,* 2010.
4. "Implementing Error Detection and Error Correction with Explicit Area Constraints," *International Conference on Engineering of Reconfigurable Systems and Algorithms,* 2010.
5. "3D Virtual Videos of Brain Chemistry Using Spatiotemporal Neural Networks," *Journal of Pattern Recognition,* 2010.
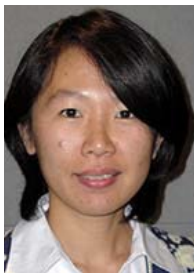
Jia Li
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University of Michigan

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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 Signal Processing with applications in biomedical imaging and communications. The current and past projects include image segmentation, reconstruction and registration of different imaging modalities, UWB channel modeling and capacity evaluation, and intra-vehicle wireless sensor network. *"(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."* Jia Li, 2013

Selected Publications

*1. "*An Automated Visi-Coil Fiducial Markers Detection Method on kV Projection Images During Prostate Radiation Therapy," *IEEE Nuclear Science Symposium and Medical Imaging Conference,* 2013
2. "A New Method & Schema for Real-time Prostate Tracking During VMAT Delivery," *The American Association of Physicists in Medicine 54*th *Annual Meeting,* 2012
3. "Intra-vehicle UWB MIMO Channel Capacity," *IEEE Wireless Communications and Networking Conference,* 2012
4. "Measured Channel Capacity of SIMO-UWB for Intra-Vehicle Communications," *5th European Conference on Antennas and Propagation,* 2011
5. "Reconstruction of 3D Tubular Structures from Cone-beam Projections," *International Symposium on Biomedical Imaging,* 2011

Daniel Llamocca
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University of New Mexico

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(248) 370-4042

Teaching

Digital Logic, Reconfigurable Computing, Computer Architecture, Microprocessors, Embedded Systems, Digital Signal and Image Processing with FPGAs

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."* Daniel Llamocca, 2014.

Selected Publications

1. 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, January. 2016.
2. 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, January 2015.
3. Llamocca, D., Murray, V., Jiang, Y., Pattichis, M., Lyke, J., and Avery, K., "Scalable Open-Source Architecture for Real-Time Monitoring of Adaptive Wiring Panels", *AIAA Journal of Aerospace Information Systems*, vol. 11, no. 6, pp. 344-358, June 2014.
4. Llamocca, D., Pattichis, M., "A Dynamically Reconfigurable Pixel Processor System based on Power/Energy-Performance-Accuracy Optimization", *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 23, no. 3, pp. 488-502, March 2013.

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

Assistant Professor
Electrical and Computer Engineering Department

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(248) 370-2860

Teaching
Microcontrollers

Research
Robotics, Sensing and Controls, Human-Robot Interactions, Machine Learning and Artificial Intelligence, User-Centered Design, User Testing
"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 manufacturing, medical, service, space, social and personal robotics."

Selected Publications

1. W.-Y. G. Louie and G. Nejat, "A learning from demonstration system architecture for robots learning social group recreational activities," in IEEE International Conference on Intelligent Robots and Systems, pp. 808–814, 2016.
2. W.-Y. G. Louie, T. Vaquero, G. Nejat, and J. Beck, "An autonomous assistive robot for planning, scheduling and facilitating multi-user activities," in IEEE International Conference on Robotics and Automation, Available: http://dx.doi.org/10.1109/ICRA.2014.6907637, 2014, pp. 5292–5298.
3. W.-Y. G. Louie and G. Nejat, "A victim identification methodology for rescue robots operating in cluttered USAR environments," Advanced Robotics, vol. 27, no. 5, pp. 373–384, 2013.
4. W.-Y. G. Louie, J. Li, T. Vaquero, and G. Nejat, "A focus group study on the design considerations and impressions of a socially assistive robot for long-term care," in IEEE International Symposium on Robot and Human Interactive Communication, pp. 237–242, 2014.
5. W.-Y. G. Louie, D. McColl, and G. Nejat, "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, Chrysler Controls & Robotics Laboratory
Electrical and Computer Engineering Department

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Teaching

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

Research

Collaborative robots (machine vision, sensor integration, teaching interfaces); Industrial mobile robots (modular scalable platforms, reliable indoor autonomous navigation, safety standards); Cloud robotics (Machine learning, big data, IOT, Industry 4.0, part-centric robot programming). *"Industrial robots and automation is the key component for advanced manufacturing. My research is focused on developing ideas and engage in multidisciplinary fields to realize the next generation industrial robotics."* Khalid Mirza, 2016.

Selected Publications

1. "Intuitive 3D-Vision Based Wand for Robot Tool Path Teaching," *Proceedings of the 2014 International Conference on Advanced and Agile Manufacturing Systems*
2. "General formulation for force distribution in power grasp," *IEEE International Conference on Robotics and Automation*
3. "Dynamic simulation of enveloping power grasps," *IEEE International Conference on Robotics and Automation*
4. "Force control of planar power grasp in the DIGITS System," *Fourth International Symposium on Robotics and Manufacturing*
5. "Power grasp force distribution control using artificial neural network," *Journal of Robotic Systems*

Hongwei Qu
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University of Florida

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Teaching
Electronic circuits and devices; Fundamentals of MEMS; Integrated devices and circuits; Advanced electronics design

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

Selected Publications

1. 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).
2. G. Sreenivasulu; P. Qu; V. Petrov; H. Qu and G. Srinivasan, "Sensitivity enhancement in magnetic sensors based on ferroelectric-bimorphs and multiferroic composites", *Sensors,* 16 (2), 2016, pp. 262-274.
3. H. Qu, "CMOS-MEMS Technologies and Devices", *Micromachines,* 7 (1), 2016, pp.14-32.
4. G. Sreenivasulu; P. Qu; V. Petrov; H. Qu and G. Srinivasan, "Magneto-electric interactions at bending resonance in an asymmetric multiferroic composite," *Journal of Applied Physics,* 117 (17), 2015, 174105.
5. G. Sreenivasulu, P. Qu, E. Piskulich, V. Petrov, Y. Fetisov, A. Nosov, H. Qu, and G. Srinivasan, "Shear strain mediated magneto-electric effects in composites of piezoelectric lanthanum gallium silicate or tantalate and ferromagnetic alloys," *Applied Physics Letters,* 105, 032409 (2014).

Osamah A. Rawashdeh
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University of Kentucky

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Teaching

Microcontrollers; Mixed-Signal Embedded Systems; 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.*" Osamah Rawashdeh, 2015

Selected Publications

1. N.A. Rawashdeh, O.A. Rawashdeh, and B.H. Sababha, "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.
2. A. 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.
3. R. AbouSleiman and O. Rawashdeh, "Optimal Energy Routing for Electric Vehicles using Particle Swarm Optimization," IET Intelligent Transport Systems, Manuscript ID ITS-2014-0177.R1, 2014.
4. M. Ferrari, B. Harrison, O. Rawashdeh, R. Hammond, Y. Avery, M. Rawashdeh, W. Sa'deh, M. Maddens, "Clinical feasibility trial of a motion detection system for fall prevention in hospitalized older adult patients," *Geriatric Nursing*, vol. 33, no. 3, pp. 177-83, 2012.

Andrew Rusek
Ph.D.
Warsaw Technical University (Poland)

Professor
Electrical and Computer Engineering
Department

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Teaching

Electronic Circuit Devices, Electronic Circuit Design, Advanced Electronics, Analog and Digital Communication Circuits and Systems, High Frequency Electronics, Electromagnetic Compatibility, Instrumentation and Measurements

Research

Electromagnetic Compatibility, High Frequency Electronics. *"The major part of research is related to measurements, modeling and simulations of high speed twisted pair transmission lines applied in automotive industry."* Andrew Rusek, 2013

Selected Publications

1. "AC 2007-246: Easy to Do Transmission Line Demonstrations of Sinusoidal Standing Waves and Transient Pulse Reflections, ASEE 2007 Conference." *Time Domain Reflectometers, J. Wiley Encyclopedia*, 2007 Internet Edition
2. "Oscilloscopes," chapter published in the 5-th edition of *Wiley Interscience Eshbach's Handbook of Engineering Fundamentals,* January 8, 2009, ISBN 9780470085783
3. "Improving Student Understanding of Instrumentation and Measurements in US Engineering Undergraduate Programs," *2009 ASEE, North Central Section Conference*, Grand Valley State University, Grand Rapids, MI., April 3-4, 2009
4. "Bridging Communication Systems and Circuits with PSPICE," *ASEE North Central Sectional Conference T1A-1*, Pittsburgh, PA, March 26-27, 2010

Jing Tang
Ph.D.
University of Illinois, Urbana
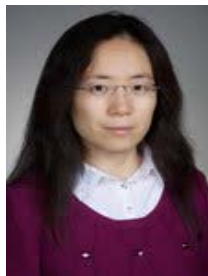
Assistant Professor
Outstanding Research Award
Electrical and Computer Engineering Department

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Teaching

Biomedical Imaging; Digital Image Processing; Digital Signal Processing

Research

Image reconstruction, evaluation, and analysis in emission computed tomogra- phy. *"To develop and advance medical imaging techniques to improve clinical diagnosis and disease treatment."* Jing Tang, 2016

Selected Publications

1. J. Tang, B. Yang, Y. Wang, and L. Ying, "Sparsity-constrained PET image reconstruction with learned dictionaries," *Phys. Med. Biol*., 61 (17), 6347-6368, 2016.
2. J. Tang and A. Rahmim, "Anatomy assisted PET image reconstruction in- corporating multi-resolution joint entropy", *Phys. Med. Biol.,* 60 (1) 31-48, 2015.
3. A. Rahmim and J. Tang, "Noise propagation in resolution modeled PET imaging and its impact on detectability," *Phys. Med. Bio/.,* 58 (19), 6945-6968, 2013.
4. A. Rahmim, J. Tang, and H. Zaidi, "Four-dimensional image reconstruction strategies in cardiac-gated and respiratory-gated PET imaging," *PET Clinics,* 8, 51-67, 2013.
5. J. Tang, W. P. Segars, T.-S. Lee, X. He, A. Rahmim, and B. M. W. Tsui, "Quantitative study of cardiac motion estimation and abnormality classifica- tion in emission tomography," *Med. Eng. Phys*., 33 (5), 563-572, 2011.

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

Professor
Electrical and Computer Engineering
Department

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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, also FCA Powertrain controls, Lear Power Electronics, Kia motors, NSF, USAID.

Selected Publications

1. "Application of HyperFuzzy Modeling and Control for Bioinspired Systems," *ICCAE*, 2011.
2. "Unscented Kalman Filters for Continuous Phase FSK Equalizations," *ICII*, 2011.
3. "Modeling Nonlinear Systems using Multiple Piecewise Linear Equations," *Nonlinear Analysis and Modeling and Control*, 2010.
4. "An accurate Model of Polyglutamine," *Proteins Structure Function and Bioinformatics*, 2010.
5. "Robust Motion Control of Biped Walking Robot," *WSEA Trans Systems and Control*, 2010.

William Edwards, P.E.
Ph.D.
Oakland University

Visiting Professor
Industrial & Systems Engineering

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Teachings

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

Research

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

Selected Publications & Presentations

1. Move It Forwards Theory (MIFT);
      IEOM Conference, Lawrence Technical University, September 2016
2. Move It Forward Theory (MIFT),
      Oakland University Graduation Research Symposium, April 2016
3. Move It Forward Theory (MIFT)
      INFORMS Symposium Wayne State University; November 2013
4. Engineering and its Future
      AISES Conference Presentation, Phoenix AZ, November 2007
5. Vehicle Dynamics,
      Vehicle Dynamics Conference, New Orleans LA, December 2003

Awards

Wards AutoWorld 10 Best Engines Award, Ford Customer Driven Quality
Award, Ford Complexity Reduction Award

Affiliations (Current & Past)

Boardmember of Michigan Simulation Users Group (M-SUG)	SAE, TBP
American Indian Science & Engineering Society (AISES)	ASME, IEEE
Native American Indian Employee Resources Group (NAERG)	Society Mfg Engrs
Project Management Institute (PMI)	ESD

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

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Teaching

ISE 4431/5431: Engineering Operations Research-Stochastic Models

Research

Cyber-Physical Systems, Network Systems Modeling and Optimization, Smart Grid, Cyber Manufacturing, Big-Data Analytics

Selected Publications

1. Nasim Nezamoddini, Yong Wang, (2017) "Real-Time Electricity Pricing for Industrial Customers: Survey and Case Studies in the United States," *Applied Energy*,195, 1023-1037.
2. Nasim Nezamoddini, Amirabbas Mousavian, Melike Erol-Kantarci, (2017) "A Risk Optimization Model for Enhanced Power Grid Resilience Against Physical Attacks," *Electric Power Systems Research, 143, 329–338.*
3. Nasim Nezamoddini, Yong Wang, (2016) "Risk Management and Participation Planning of Electric Vehicles in Smart Grids for Demand Response," *Energy*, 116, 836-850.
4. Nasim Nezamoddini, Mohammad T. Khasawneh, (2016), "Modeling and Optimization of Resources in Multi-Emergency Department Settings with Patient Transfer," *Operations Research for Health Care,* 10, 23-34.
5. Nasim Nezamoddini, Sarah S. Lam, (2015), "Reliability and Topology Based Network Design Using Pattern Mining Guided Genetic Algorithm," *Expert Systems with Application*, 42(21), 7483–7492.

Barbara Oakley
Ph.D.
Oakland University

Professor of Engineering
Industrial and Systems Engineering
Department

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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

1. "Concepts and implications of altruism bias and pathological altruism," Barbara Oakley, *Proceedings of the National Academy of Sciences*, 2013, 110 (2): 10408-10415. Cited as "revolutionary" in the *Wall Street Journal.*
2. *A Mind for Numbers: How to Excel at Math and Science*, Barbara Oakley, 2014, Penguin-Random House. A *New York Times* best-selling science book.
3. "A Practical Approach to Understanding—and Applying!—the Scholarship of Application," Barbara Oakley and Cynthia J. Finelli, *IEEE Transactions on Engineering Education*, May 2014, Vol. 57, No. 2, 69-74.

4. "Turning student groups into effective teams," B Oakley, RM Felder, R Brent, I Elhajj, *Journal of Student Centered Learning*, 2004, 2 (1), 9-34. (nearly 450 citations)

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

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Industrial and Systems Engineering Department

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Teaching

Engineering Decision Analysis, Mathematical Optimization, Probability Theory, Reliability Engineering, Product Development and Systems Engineering, Design and Analysis of Mechanical Systems and Genetic Algorithms.

Research

Engineering Design, Decision Based Design, Mathematical Optimization, Reliability Engineering, Systems Engineering, Decision Analysis and Sustainability. *"I am interested in decision-based design of engineering systems with considerations of designer preferences, optimality, robustness and sustainability."* Vijitashwa Pandey, 2017

Selected Publications

1. Naranjo, S., Patil, V. and **Pandey, V.**, 2016, "Preference Aggregation in Lifecycle Decision Making" Proceedings of ASME International Design Engineering Technical Conferences, Charlotte, NC.
2. **Pandey, V**., 2016, "Flaws Lurking in Engineering Design-Decision Making: The Attribute Set Dissociation Problem" Proceedings of ASME International Design Engineering Technical Conferences, Charlotte, NC.
3. **Pandey, V.** and Mourelatos, Z., 2015, "A New Method for Design-Decision Making: Decision Topologies" ASME Journal of Mechanical Design, Vol. 137(3), 031401, 8 pages.
4. **Pandey, V.**, 2013, <u>Decision Based Design</u>, Taylor and Francis, 1st Edition.
Nikolaidis, E., Mourelatos, Z. and **Pandey, V.**, 2011, <u>Design Decisions under Uncertainty with Limited Information</u>, Taylor and Francis, 1st Edition.

Michael P. Polis
Ph.D.
Purdue University

Professor
Industrial and Systems Engineering
Department

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Teaching
Circuits; modeling and statistical methods; controls; operations research

Research
Identification, estimation and control of distributed parameter systems, that is systems described by partial differential or delay equations. Transportation systems, and particularly for subway systems. Smart-grid problems relating to optimizing the electric power grid of the future. *"This research enables systems to work more efficiently."* Michael Polis, 2016

Selected Publications
1. Bo Zhao, Feng Lin, Caisheng Wang, Xuesong Zhang, Michael P. Polis, Le Yi Wang, Supervisory Control of Networked Timed Discrete Event Systems and its Applications to Power Distribution Networks, Accepted for publica- tion IEEE Trans. on Control of Network Systems, 2015.
2. Le Yi Wang, Caisheng Wang, George Yin, Feng Lin, Michael P. Polis, Caiping Zhang, and Jiuchun Jiang, Balanced Control Strategies for Intercon- nected Heterogeneous Battery Systems, Accepted for publication IEEE Trans. On Sustainable Energy, 2015.
3. L.Y. Wang, M.P. Polis, G.G. Yin, W. Chen, Y. Fu, and C.C. Mi, "Battery Cell Identification and Estimation Using String Terminal Voltage Measure- ments," *IEEE Trans. on Vehicular Technology*, 61 (2012), no. 7, pp. 2925- 2935
4. I. Kolmanovsky, I. Sivergina, and M.P. Polis, "Identification of Heat Flux in a Quasi-static Thermoelastic System," *ASME Journal of Dynamic Sys- tems, Measurement and Control,* 128 (2006), no. 3, 608-616
5. H.H. Hoang, M.P. Polis, A. Haurie, "Reducing energy consumption through trajectory optimization for a Metro network," *IEEE Trans. IEEE Trans. Automatic Control*, AC-20, 5, pp. 590-595, 1975.

Sankar Sengupta
Ph.D.
Clemson University

Professor
Industrial and Systems Engineering Department

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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
1. S. Sengupta, and R.P. Davis, "Heuristic procedure for resolving a production planning model of an FMS," *Computers & Industrial Engineering,* Volume 30, Issue 2, April 1996, Pages 161–170.
2. S. Sengupta, R.P. Davis, W.G. Ferrell, **"**Production planning and control in a JIT environment," *Applied Mathematical Modelling*, Volume 17, Issue 1, January 1993, Pages 41-46.

Robert P. Van Til
Ph.D.
Northwestern University

Pawley Professor of Lean Studies
Chair
Industrial and Systems Engineering Department

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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
1. M. Deneweth, S. Sengupta and R. Van Til, "Operational Concerns When Modeling a Global Supply Chain," *Proc. of the Winter Simulation Conf.*, 2016.
2. N.R. Choudhury, S. Sengupta and R.P. Van Til, "A Novel Method To Reduce Inspection Process Cycle Time While Using A Coordinate Measurement Machine," *Proc. of the AMSE DSC Conf.*, 2015.
3. A. Khiste, P. Hillberg and R. Van Til, "Developing an IT Infrastructure for Educational Institutions Teaching Product Lifecycle Management," *Proc. of the ASEE NCS Conf.*, 2014.
4. S. Sengupta, T. White, K. Das and R. Van Til, "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.
5. T. White, S. Sengupta and R. Van Til, "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 Department

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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
1. "Scuffing Behavior of Gray Iron and 1080 steel in Reciprocating and Rotational Sliding," *Journal of Wear of Materials Conference,* 2011
2. "Effect of Material Microstructure on Scuffing Behavior of Ferrous Alloys," *SAE Congress,* 2011
3. "Investigation of Scuffing Resistance of Heat Treated 8625 Alloy Steel Under Lubricated Conditions," *SAE Congress,* 2011
4. *"Numerical Investigation of Temperature Distribution in a Bolted Joint for Different Bolt and Workpiece Material Combinations," STLE Annual Meeting,* 2011
5. "Evaluation of the Convective Heat Transfer Coefficient for Minimum Quantity Lubrication," *Journal of Industrial Lubrication and Tribology,* 2012

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

Associate Professor
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ychang@oakland.edu
(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."* Yin-Ping Chang, 2015

Selected Publications

1. J. Chen, M. Qin, Y. Jiang, L. Jin, and Y.P. Chang, "Modeling, Analysis and Optimization of the Twist Beam Suspension System," *SAE International Journal of Commercial Vehicle,* Vol. 8, No. 1, 2015.
2. D. Wu and Y.P. Chang, "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.
3. Y.P. Chang, and I. Her, "A Virtual Cam Method for Locating Instant Centers of Kinematically Indeterminate Linkages," *ASME Journal of Mechanical Design,* Volume 130, Issue 6, 062304, June 2008.
4. J. Iqbal, Y.P. Chang, and M.S. Qatu, "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.
5. Y.P. Chang, "Tyre Vertical Transmissibility Transient Response Analysis," *International Journal of Vehicle Noise and Vibration*, Vol. 2, No. 3, pp.191–208, 2006.

Dan DelVescovo
Ph.D.
University of Wisconsin-Madison

Assistant Professor
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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."* – Dan DelVescovo, 2016

Selected Publications

1. Splitter, D. A., Wissink, M. L., DelVescovo, D. A., Reitz, R. D., "Improving the
Understanding of Intake and Charge Effects for Increasing RCCI Engine
Efficiency", SAE Int. J. Engines 7(2): 913-927, 2014
2. Walker, N. R., Wissink, M. L., DelVescovo, D. A., Reitz, R. D., "Natural Gas for
High Load Dual-Fuel Reactivity Controlled Compression Ignition (RCCI) in
Heavy-Duty Engines", J. Energy Resour. Technol., 2015
3. DelVescovo, D. A., Wang, H., Wissink, M. L., Reitz, R. D., "Isobutanol as both
the Low Reactivity and High Reactivity Fuels with the addition of Di-Tert Butyl
Peroxide (DTBP) in RCCI Combustion", SAE Int. J. Fuels Lubr. 8(2),2015
4. Wang, H., DelVescovo, D. A., Yao, M., Zheng, Z., Reitz, R. D., "Reaction
Mechanisms and HCCI Combustion Processes of Mixtures of n-Heptane and the
Butanols," Front. Mech. Eng. 1(3), 2015
5. DelVescovo, D. A., Kokjohn, S.L., Reitz, R. D., "The Development of an Ignition
Delay Correlation for PRF Fuel Blends from PRF0 (n-heptane) to PRF100
(isooctane)," SAE Int. J. Engines 9(1): 520-535, 2016

Sergey Golovashchenko
Ph.D.
Bauman Moscow State Technical University

Associate Professor
Mechanical Engineering Department

golovash@oakland.edu
(248) 370-4051

Teaching

Mechanics of Metal Forming, Mechanics of Materials, Metal Forming Processes; Fundamentals of Metal Forming.

Research

Innovative technologies of sheet metal forming and joining enabling substantial weight savings for automotive industry including high velocity forming and welding methods. *"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."* Sergey Golovashchenko, 2014

Selected Publications

1. Hu, X., Sun, S. and Golovashchenko S.F. An Integrated Finite Element-based Simulation Framework: From Hole Piercing to Hole Expansion, Journal of Finite Elements Analysis and Design, Vol. 109, 2016, Issue C, pp. 1–13.
2. Wang, N. and Golovashchenko, S.F. Mechanism of fracture of aluminum blanks subjected to stretching along the sheared edge," Journal of Materials Processing Technology, Vol. 233, 2016, p.142–160.
1. A.V. Mamutov, S.F. Golovashchenko, V.S. Mamutov, J.J.F. Bonnen. Modeling of electrohydraulic forming of sheet metal parts. Journal of Materials Processing Technology, 2015, Volume 219, pp. 84-100.
2. S.F. Golovashchenko, A.J. Gillard, A.V. Mamutov, and R.Ibrahim "Pulsed Electrohydraulic Springback Calibration of Parts Stamped from Advanced High Strength Steel. Journal of Materials Processing Technology, 2014, V.214, p.2796-2810.
5. Recent US Patents granted: 9,421,636; 9,375,775; 9,296,037; 9,266,190; 9,174,259; 9,168,581; 9,056,346; 9,044,801; 8,966,950; 8,875,554; 8,844,331.

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

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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."* Randy Gu, 2013

Selected Publications

1. Wenjing Wang, Randy Gu, "Buckling Analysis of Structures under Combined Loading with Acceleration Forces", Structural Engineering and Mechanics, An International Journal, Vol. 52, No. 5 (2014) 1051-1067.
2. J. Song and R. J. Gu, "A Finite Element Based Methodology for Inverse Problem of Determining Contact Forces Using Measured Displacements," *Inverse Problems in Science and Engineering, ,* 1-15, Dec. 2011.
3. R. J. Gu, M. Shillor, G. Barber, and T. C. Jen, "Thermal Analysis of Grinding Processes," *Math and Computer Modelling*, 39/9-10, pp. 991-1003, May 2004.
4. R. Ranganathan, Y. L. Lee, R. J. Gu, "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.
5. Design Method Using Knowledge-Based Optimization, Inventors: L. Oriet, Y. Teng, and R. Gu, United States Patent: 7,181,372, March 4, 2004.
6. R. J. Gu, P. Murty, and Q. Zheng, "Use of Penalty Variable in Finite Element Analysis of Contacting Objects," *Computers & Structures*, pp. 2449-2459, v. 80 (31), Dec. 2002.

Laila Guessous
Ph.D.
University of Michigan

Professor and SECS Faculty
Development Coordinator
Mechanical Engineering Department

guessous@oakland.edu
(248) 370-2183

Teaching
Fluid Mechanics; Heat Transfer; Computational Fluid Dynamics

Research
Computational fluid dynamics and computational heat transfer; wind turbine farm layouts using Spectral Element Methods; 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, engine flows, and problems related to wear and scuffing of materials."* Laila Guessous, 2016

Selected Publications

1. 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

2. Murphy O'Dea and Laila Guessous, "Further Developments in Numerical Simulations of Wind Turbine Flows Using the Actuator Line Method," Paper # FEDSM2016-7863, ASME 2016 Fluids Engineering Division Summer Meeting, Washington, DC, July 2016

3. J. Easter, C. Jarrett, C, Pespisa, Yen Chung Liu, A.C. Alkidas, L. Guessous, and B. P. Sangeorzan, "An Area-Average Correlation for Oil-Jet Cooling of Automotive Pistons," *Journal of Heat Transfer*, Vol 36, No 12, 2014, doi:10.1115/1.4027835

4. Yen-Chung Liu, Laila Guessous, Brian P. Sangeorzan, and Alexandros Costas Alkidas, "Laboratory Experiments on Oil-Jet Cooling of IC Engine Pistons: An Area-Average Correlation of Oil-Jet Impingement Heat Transfer," *ASCE Journal of Energy Engineering*, DOI: 10.1061/(ASCE)EY.1943-7897.0000227

5. Rebeca Lumbreras, Monica Majcher, Laila Guessous, Gary Barber, J. David Schall, and Qian Zou, "Numerical Modeling of the Transient Temperature Rise during Ball-on-Disk Scuffing Tests," Paper # #1569878041, HEFAT2014, Orlando, FL, July 2014.

Ching Long Ko
Ph.D.
University of Oklahoma

Associate Professor
Mechanical Engineering Department

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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

1. "Conjugate Heat Transfer Analysis of Laminar Pipe Flows with Convective
Boundary Conditions," in preparation, *International Journal of Heat and Mass
Transfer*
2. "A Semi-Analytical Method and a Time-Dependent Finite Element Method
 for the Vibration Analyses of Beams with Viscous Damping," in preparation,
International Journal of Engineering Science

Krzysztof J Kobus
Ph.D.
Oakland University

Associate Professor; Director of Outreach,
Recruitment and Retention, School of
Engineering and Computer Science
(SECS); 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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(248) 370-2489

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

- Recipient of the 2013 Dr. Wilbert J. McKeachie International Poster Prize for best poster at the 7th Annual OU-Windsor Conference on Teaching and Learning.
- Recipient of 2014 SECS Teaching Excellence Award

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 Convec-
tive Heat Transfer; Boundary Layer Theory; Analytical and Experimental
Methods Associated with Steady-State and Time Varying Fluid and Ther-
mal 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 humani-
ty has historically been survival, but now is sustainability and that affects
everything and everyone."* Krzysztof Kobus, 2013

Selected Publications

1. Kobus, C. J., "On Condensate Inertia Enhanced Transient Thermal
Amplification Characteristics, Flow Reversals and Surges in Horizontal Two-
Phase Condensing Flow Systems due to Perturbations in Inlet Vapor
Flowarate,", accepted to the *International Journal of Multiphase Flow.*
2. Kobus, C. J., 2006, "True Fluid Temperature Reconstruction Compensat-
ing for Conduction Error in the Temperature Measurement of Steady Fluid
Flows," *Review of Scientific Instruments,* Vol. 77, No. 3.

Michael A. Latcha
Ph.D.
Wayne State University

Associate Professor
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Teaching

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

Research

Research interests:

- 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

- *Melting-Pot Senior Design at OU: 10 Years of Lessons Learned*, M. Latcha and M. Zohdy, Proceedings of the 2014 ASEE North Central Conference, ASEE
- *Melting Pot Design at Oakland University*, M.A. Latcha, D. Debnath, I. Elhajj, E. Gu, R.E. Haskell, Proceedings of the Engineering Capstone Design Course Conference, 2007
- *The Melting Pot Approach to Senior Design Part II: Assessment and Improvement*, M.A. Latcha, S. Ganesan, E. Gu, R.E. Haskell, Proceedings of the 2005 ASEE North Central Conference, ASEE
- *The Melting Pot Approach to Senior Design*, M.A. Latcha, S. Ganesan, E. Gu, R.E. Haskell, Proceedings of the 2004 ASEE North Central Conference, ASEE

Jonathan Maisonneuve
Ph.D.
Concordia University

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Teaching

Renewable energy; Energy conversion; Thermodynamic; Fluid mechanics; Power engineering

Research

Renewable energy systems; Food, energy, water nexus; Energy efficient greenhouse systems; Photosynthetic solar cells; Salt gradient energy conversion

Selected Publications

1. J. Maisonneuve and P. Pillay, "Introduction to PRO for Energy Conversion Applications Including an Electric Equivalent Circuit," *IET Renewable Power Generation*, pp. 1-8, 2016.
2. J. Maisonneuve, C. B. Laflamme, and P. Pillay, "Experimental Investigation of Pressure Retarded Osmosis for Renewable Power Applications: Towards Increased Net Power," *Applied Energy*, vol. 164, pp. 425-435, 2016.
3. J. Maisonneuve, C. B. Laflamme, and P. Pillay, "Osmotic Power Potential in Remote Regions of Quebec," *Renewable Energy*, vol. 81, pp. 62-70, 2015.
4. M. F. Naguib, J. Maisonneuve, C. B. Laflamme, and P. Pillay, "Modeling Pressure-Retarded Osmotic Power in Commercial Length Membranes," *Renewable Energy*, vol. 76, pp. 619-627, 2015.
5. J. Maisonneuve, P. Pillay, and C. B. Laflamme, "Pressure-Retarded Osmotic Power System Model Considering Non-Ideal Effects," *Renewable Energy*, vol. 75, pp. 416-424, 2015.

Zissimos P. Mourelatos
Ph.D.
University of Michigan

Professor
Mechanical Engineering Department

mourelat@oakland.edu
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Teaching

Design under Uncertainty; Reliability Methods; Vibrations and Controls; Random Vibrations; Noise, Vibration and Harshness (NVH)

Research

Design and Decision Making 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. *"(I am) a nationally and internationally recognized expert in engineering design and automotive R&D with substantial contributions in reliability methods, quality, and safety, as well as in engine design and dynamics."* Zissimos Mourelatos, 2013

Selected Publications

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

2. A. Skowronska, D. Gorsich, V. Pandey, and Z.P. Mourelatos, "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.

3. D. Drignei, Z. P. Mourelatos, M. Kokkolaras, and V. Pandey, "A Variable-size Local Domain Approach for Increased Design Confidence in Simulation-based Optimization," *Structural and Multidisciplinary Optimization*, 46(1), 83-92, 2012

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

5. A. Singh, Z. P. Mourelatos, and J. Li, "Design for Lifecycle Cost using Time-Dependent Reliability," *ASME Journal of Mechanical Design*, 132(9), 2010.

Sayed A. Nassar
Ph.D.
University of Cincinnati

Distinguished University Professor
Director of FAJRI
Mechanical Engineering Department

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

Research
Joining of materials, fasteners and bolted Joint, vibration-induced loosening of threaded fasteners, lightweight materials and composite joins, damage modeling.

Selected Publications

1. **Nassar, S.A.**, Mazhari, E., "A Coupled Shear Stress-Diffusion Model for Adhesively Bonded Single Lap joints", 2016, *Journal of Applied Mechanics-ASME Transactions*, vol. 83, no.10, pp.101006-1~7.
2. **Nassar, S. A.**, Sakai, K., "Failure Analysis of Composite-Based Lightweight Multimaterial Joints in Tensile-Shear Tests After Cyclic Heat at High Relative Humidity", 2017, *Journal of Manufacturing Science and Engineering-ASME Transactions*, vol. 139, no. 4, pp. 041007-1~9.
3. **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", 2015, ASME Journal of Manufacturing Science and Engineering, vol. 137, no. 5, 051025-051025-7. doi:10.1115/1.4029830.
4. **Nassar, S. A**. and Ali, R. "An Improved Cumulative Damage Criterion for Preloaded Threaded Fasteners", 2014, ASME Journal of Mechanical Design, vol. 136, no. 7, pp. 074502-1~5.
5. Wu, Z., **Nassar, S. A.**, Jagatap, S., and Satav, K., "Thread Forming in Lightweight Material Joints Using Self-Tapping Screws", 2016, *Journal of Manufacturing Science and Engineering-ASME Transactions,* vol. 138, no. (9), pp. 091006-1~10.

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

Professor and Chair
Mechanical Engineering Department

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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
1. "Measuring and assessing the effective in-plane thermal conductivity of lithium iron phosphate pouch cells", S.J. Bazinski, X. Wang, B.P. Sangeorzan, L. Guessous, *Energy, Volume 114*, 1 November 2016, Pages 1085–1092.
1. "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.*
2. "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.*
3. "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.
4. "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.
5. "Design of an Optical Thermal Sensor for Proton Detection of a Proton Exchange Membrane Fuel Cell Using Phosphor Thermometry," *Journal of Power Sources,* 2011.

James David Schall
Ph.D.
North Carolina State University

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Teaching

Electromechanical Systems; Materials Properties and Processes; Polymer Materials; Polymer Processing

Research

Molecular simulation of tribology; Molecular simulation of diamond and diamondlike carbon films; Experimental and theorectical measurement of thermal and tribological properties of nanofluids; Hydrogen embrittlement of wind turbine bearings; Nanoindentation of graphene and graphane films; Development of interatomic potentials

Selected Publications

1. "The Effects of Interface Structure and Polymerization on the Friction of Model Self-Assembled Monolayers," *Tribology Letters,* 2011
2. "Interdisciplinary Sophomore Design at Oakland University," *ASEE North Central & Illinois-Indiana Section Conference,* 2011
3. "AERIM Automotive-themed REU Program: Organization, Activities, Outcome and Lessons Learned," *ASEE Annual Conference and Exposition,* 2011
4. "Evaluation of Thermal Conductivity and Viscosity of Water-based AI2O3 Nanofluids," *Society of Hispanic Professional Engineers Conference,* 2010
5. "Modeling Materials in Contact," *American Vacuum Society Annual Meeting,* 2010
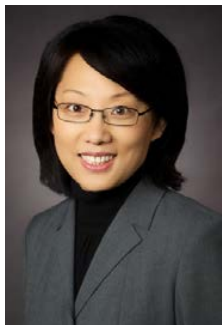
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Teaching
Thermodynamics; Heat Transfer; Fluids Mechanics; Energy Systems Analysis; Fuel Cells; Batteries for EV and HEV

Research
Thermal Management of Battery Systems; Fuel Cell Modeling, Design and Diagnostics; Biomass Pellets Properties Characterization and Optimization; Turbulent Boundary Layers with Separation; Forced Convection Turbulent Boundary Layers.

Selected Publications

1. K. Inman and X. Wang, "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
2. S. Bazinski and X. Wang, "Applying Lumped Capacitance Method to Calculate Heat Rates in the Charge/Discharge of Prismatic Lithium Cells in Natural Convection," *ECS Transactions*, Vol. 45, Issue 29, pp: 75-84, 2013
3. S. Bazinski and X. Wang, "Determining Entropic Coefficient of the LFP Prismatic Cell at Various Temperature and Charge/Discharge States," *ECS Transactions*, Vol. 45, Issue 29, pp: 85-92, 2013
4. J. Clement and X., Wang, "Experimental Investigation of Pulsating Heat Pipe Performance with regard to Fuel Cell Cooling Application," Journal of Applied Thermal Engineering, Vol. 50, Issue 1, pp.268-274, 2013
5. E. Petrach, I. Abu-Isa and X. Wang, "Percolation threshold study of a plastic-elastomeric matrix based composite material for bipolar plates in proton exchange membrane fuel cells," *Journal of Composite Materials*, Vol. 46, No. 23, pp.2959-2971, 2012

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Teaching
Engineering Graphics & CAD, Computer-Aided Design, Engineering Mechanics, Mechanical Systems Design, Fasteners and 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
1. Z. Wu, S. Nassar, S. Jagatap, K. Satav, "Thread Forming in Lightweight Material Joints Using Self-Tapping Screws", *Journal of Manufacturing Science and Engineering*, 2016, Vol. 138 (9), pp. 091006-1~10
2. Z. Wu, S. Nassar, and X. Yang, "Axial Fatigue Performance of Medical Screws in Synthetic Bone", *International Journal of Biomedical Engineering and Technology*, 2015, Vol. 17, no.2, pp. 192~207
3. S. Nassar, Z. Wu, K. Moustafa, D. Tzelepis, "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, 2015, Vol. 137, 051024-1~6
4. Z. Wu, S. Nassar, and X. Yang, "Nonlinear Deformation Behavior of Bolted Flanges under Tensile, Torsional and Bending Loads," *Journal of Pressure Vessel Technology*, 2014, Vol. 136, 061201-1~8
5. Z. Wu, S. Nassar, and X. Yang, "Pullout Performance of Self-Tapping Medical Screws," *Journal of Biomechanical Engineering*, 2011, Vol. 133, 111002-1~9
6. X. Yang, S. Nassar, and Z. Wu, "Criterion for Preventing Self-Loosening of Preloaded Cap Screws Under Transverse Cyclic Excitation," *Journal of Vibration and Acoustics*, 2011, Vol. 133, 041013-1~11

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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 experimental strain/stress analysis, nondestructive testing and material evaluation, vibration measurement and analysis, microstructure and MEMS measurement, and design validation and optimization.

Selected Publications in 2016

1. L.X. Yang and X. Xie, "Digital Shearography: New Developments and Applications," New Book published by SPIE Press, Bellingham, WA98227, USA, April 2016, ISBN: 9781510601567.
2. J.R. Li, X. Xie, G.B. Yang, T. Siebert and L.X. Yang (corresponding author), "Whole-field thickness strain measurement using multiple camera digital image correlation system," accepted by Optics and Lasers in Engineering (2016)
3. X. Xie, J.R. Li, B. Sia, T. Siebert and L.X. Yang (corresponding author), "An experimental validation of volume conservation assumption for aluminum alloy sheet metal using digital image correlation method," Journal of Strain Analysis, 2016, DOI 10.1177/0309324716668674.
4. X. Xie, C.P. Lee, J.R. Li, B.Y. Zhang, and L.X. Yang (corresponding author), "Polarized digital shearography for simultaneous dual shearing directions measurements," Review of Scientific Instruments, 87, 083110 (2016)
5. S.J. Wu, L.Q. Zhu, S.Y. Pan and L.X. Yang, "Spatiotemporal three-dimensional phase unwrapping in digital speckle pattern interferometry," Optical Letters, March 2016, Vol. 41, No. 5, p. 1050 - 1053.

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Princeton University

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Teaching

EGR 250: Introduction to Thermal Engineering; ME 456: Energy System Analysis and Design; ME 555: Combustion Processes

Research

Combustion and reacting flow; Abnormal combustion in spark-ignition engines; Fuel sensitivity and advanced compression ignition engines; Reaction network analysis and reduction; Thermal management and safety of batteries
"*My work aims to bridge fundamental combustion science with advanced engine and transportation technology, and eventually to realize low emission and high efficiency energy and propulsion systems.*" Peng Zhao, 2016

Selected Publications

1. "An alternative approach to accommodate detailed ignition chemistry in combustion simulation," *Combust. Flame*, 176, pp400-408, 2017
2. "The role of low temperature chemistry in combustion mode development under elevated pressures," *Combust. Flame*, 174, pp179, 2016
3. "Initiation and propagation of laminar premixed cool flames," *Fuel*, 166, 477-487, 2016.
4. "A predictive Livengood-Wu integral for two-stage ignition", *Int. J of Engine Research*, 17, 825-835, 2016.
5. "Interactions of flame propagation, auto-ignition and pressure wave during knocking combustion," *Combust. Flame*, 164, 319-328, 2016.
6. "On the controlling mechanism of the upper turnover states in the NTC regime," *Combust. Flame*, 164, 294-302, 2016.
7. "Autoignition-affected stabilization of laminar non-premixed DME/air jet flames," *Combust. Flame*,162 (9), 3437-3445, 2015.
8. "On the application of betweenness centrality in chemical network analysis: computational diagnostics and model reduction," *Combust. Flame*, 162, 2991-2998, 2015.
9. "Laminar flame speeds, counterflow ignition, and kinetic modeling of the butene isomers," *Proc. Comb. Inst*., 309-316, 2015.

Qian Zou
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Tsinghua University (China)

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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

1. "Experimental observation on the surface dimple variations in starved EHL of sliding steel-glass point contacts", *Tribology International,* Vol. 105, p166–174, January 2017.

2. "Investigation of the Stability and Tribological Performance of Ionic Nanoliquids", *Tribology Transactions*, 2016.

3. "Effect of Particle Concentration on Tribological Properties of ZnO Nanofluids", *Tribology Transactions*, 2016.

4. "Microstructure and sintering mechanism of C/Cu composites by mechanical alloying/spark plasma sintering", *Journal of Composite Materials*, 2016.

5. "Effect of C/Ti ratio on the compressive properties and wear properties of the 50 vol.-% submicron-sized TiCx/2014Al composites fabricated by combustion synthesis and hot press consolidation", *Powder Metallurgy*, 2016.

6. "Effects of ternary elements on the ductility of TiAl", *Canadian Metallurgical Quarterly*, 2016.