

OKLAHOMA STATE UNIVERSITY

SCHOOL OF INDUSTRIAL ENGINEERING & MANAGEMENT

COWBOY CONNECTIONS

A NEWSLETTER PUBLISHED BY IEM AT OSU

Table of Contents

| | |
|---|---------|
| Faculty, Staff and Industrial Advisory Board Members List | Page 2 |
| Faculty and Staff Spotlights | Page 2 |
| Student Spotlights | Page 3 |
| Industrial Advisory Board Spotlight | Page 3 |
| Student Achievements | Page 4 |
| Honors and Awards | Page 5 |
| Virtual Reality Lab | Page 7 |
| Awards and Achievements | Page 8 |
| Research Grants | Page 9 |
| Research Articles | Page 10 |



Dr. Sunderesh S. Heragu
School Head



Dr. Manjunath Kamath
Graduate Program Director



Dr. David B. Pratt
Undergraduate Program Director

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A Message from the School Head

On behalf of the School of Industrial Engineering and Management (IEM) at Oklahoma State University (OSU), I am most delighted to send you this first edition of *Cowboy Connections*. You will be receiving this newsletter a couple of times a year detailing the numerous activities and achievements of our students, faculty, alumni and staff.

I am honored and excited to join OSU as the tenth Head of IEM. I arrived here on August 1st and have been busy learning about the School, College, University, IEM faculty, students and alumni. During that process, I realized there is so much that is happening here you may not know about - hence, our attempt to connect with all our stakeholders via this newsletter and other media.

For those of you who do not know me, I have had the privilege of serving on the faculty of State University of New York (Plattsburgh and Buffalo campuses), Rensselaer Polytechnic Institute, University of Louisville, Eindhoven Institute of Technology, University of Twente, and IBM's Thomas J. Watson Research Center in tenured or visiting positions.

I am truly honored and humbled at the opportunity to lead this great School which has a rich history and legacy. IEM at OSU granted its first IE degree almost 87 years ago, MS degree 66 years ago and first PhD 56 years ago. This School has been represented and led by giants in Industrial Engineering - winners of the *Institute of Industrial Engineer's* highest award - Frank and Lillian Gilbreth award (Ken Case, Joe Mize and H.G. Thuesen), members of the National Academy of Engineering (Ken Case and Joe Mize), *IIE* and *American Society for Quality* presidents (Wilson Bentley, Ken Case, Tim Greene, Joe Mize and Scott Sink), *Association of Energy Engineers* president (Wayne Turner), co-inventor of the parking meter (H.G. Thuesen), authors of leading textbooks, *IIE* and other society Fellows, among others.

I have large shoes to fill, but with the IEM faculty, we have embarked on an ambitious strategic plan to propel the program to greater heights in the coming years. Our goal is to improve our ranking and reputation as a top-notch IE program in the country preparing undergraduate and graduate students for successful leadership and professional careers in industry and academia, develop and advance leading-edge, practically-relevant and extramurally-funded research, and connect with the thousands of IEM alumni as well as local and national organizations so that IEM can be a lead player in industry-government-university partnerships that impact all our stakeholders in a positive manner.

Today, we graduate about 25 students with BS degrees, 40 with MS degrees and four with PhD. In addition, we graduate 50 Masters students in the Engineering Technology and Management distance education program. Our annual research expenditures were \$2.9 million last fiscal year and we had about \$3.4 million in active contracts in that year. There are a lot of exciting things happening here, so I encourage you to read this newsletter and stay in touch with us.

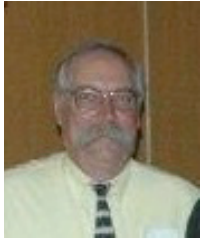
Finally, I want to thank Bill Kolarik for his leadership of the IEM program for the past fourteen years. He has played an important part in its growth and recruitment of top-notch faculty.

Go Pokes!

Sunderesh S. Heragu, Professor and Head
Donald and Cathey Humphreys Chair

WHO'S WHO IN IE&M

SPOTLIGHT



Dr. John W. Nazemetz

FACULTY SPOTLIGHT

Dr. John Nazemetz has seen many changes in the IEM department. Next year marks his 35th year as a professor at OSU, making him the longest employed faculty member in IEM.

"The entire faculty has turned over since I came here, there is nobody that came here before I did," Nazemetz said. "Obviously there have been a lot of changes in emphasis, personalities, research. Turned over deans, presidents, provosts. The more things change, the more they stay the same."

With changes also come accomplishments. In 1985, Nazemetz was named the *Outstanding Young Industrial Engineer* by IIE. Currently, he has the largest research funding expenditures of any CEAT member.

OSU's School of Industrial Engineering and Management is proud to be the home to elite faculty members like Dr. Nazemetz.



Cassidy Young

STAFF SPOTLIGHT

Cassidy Young might be a new face for some around IEM, but she has become a familiar face for everyone already. She started working as the senior administrative support assistant and the assistant to the graduate program director toward the end of the 2013 spring semester. Young graduated from East Central University [Ada, Okla.] with a Bachelor's in sociology and minor in psychology in 2010.

Her favorite part of IEM is working with the students everyday and helping them with what they need, she said. Young relies on this Dr. Seuss quote to get her through the day,

"You have brains in your head. You have feet in your shoes. You can steer yourself in any directions you choose. You're on your own, and you know what you know. And you are the guy who'll decide where to go."

IE&M Faculty and Staff

Dr. Balabhaskar Balasundaram

Associate Professor

Laura Brown

Senior Financial Assistant

Dr. Satish T.S. Bukkapatnam

AT&T Professor

Mindy Bumgarner

Administrative Support Specialist

Dr. J. Cecil

Associate Professor

Dr. Terry Collins

Associate Professor

Dr. Camille DeYong

Associate Professor

Jennifer Glenn

Adjunct Associate Professor

Dr. Ricki G. Ingalls

Associate Professor

Dr. William J. Kolarik

Professor

Dr. Tieming Liu

Associate Professor

Dr. John W. Nazemetz

Associate Professor

Paul E. Rossler

Adjunct Associate Professor

Leva Swim

Adjunct Associate Professor

Cassidy Young

*Sr. Administrative Support Assistant
to the Graduate Program Director*

Industrial Advisory Board

Warren Blackmon

Michelin North America

Kristin Case

Owner, CaseConsults

Subodh Chitre

Deloitte Consulting

Dan Crawford

Power Costs, Inc.

Jeff McKnight

SCIFIT Systems, Inc.

Andrea Nightingale

ConocoPhillips

Cara Noltensmeyer

Devon Energy

David Reed

Webco Industries

Katie Speakes

Lockheed Martin

Matt Turner

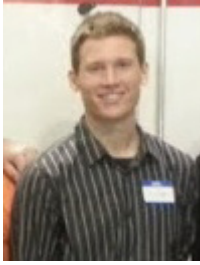
INTEGRIS Health

Matthew Williams

Raytheon Missile Systems

WHO'S WHO IN IE&M

SPOTLIGHT



Ian Giese

UNDERGRADUATE STUDENT SPOTLIGHT

What started out as family trips to football games, soon turned into calling OSU home. Ian Giese, an IEM junior, traveled with his family members to every original Big 12 stadium to watch the Iowa State University Cyclones play.

His grandfather, an industrial engineering graduate, and father, who works with material handling equipment, helped him decide what he wanted to do.

"I want to work in a food manufacturing facility," Giese said. "So many of my good memories involve a time when people are gathering at a dinner table, or tailgate event."



"I want to work where I can improve how those products are made and distributed so others may continue to enjoy them as I have."



Mina Azhar

MASTERS STUDENT SPOTLIGHT

From Indonesia to South Korea to Oklahoma State, Mina Azhar knows where she is going next. Azhar, an Industrial Engineering and Management master's student, chose to study enterprise systems and supply chains. But it took a lot of consideration for her to get here.

"Due to the numerous fields Industrial and Systems Engineering can be applied in, I interned in multiple areas to find which one I would be most suitable in," Azhar said.

Her internships include the Financial System Stability Bureau in Central Bank of Indonesia, research work at the Korean Advanced Institute of Science and Technology, where she received her undergraduate, and in the Kaizen section in the Vehicle Logistics Division of Toyota Astra Motors in Indonesia. It was through these internships she realized she wants to become a consultant in the supply chain management field in Indonesia.



"My vision is to be able to contribute to my country's development," Azhar said. "I come from a country that is made up of thousands of islands, and logistics has been a huge problem there even for large companies, thus supply chain management has become crucial in its development."



Gustavo Perez

DOCTORAL STUDENT SPOTLIGHT

By the end of the year, Gustavo Perez will have added another degree to his wall. He is working on his Ph.D. with IEM focusing on lean enterprise transformation.

"I am designing a generic framework that holistically integrates the main components that are crucial to transform a traditional enterprise into a lean enterprise, using concepts and tools of industrial, systems and enterprise engineering, as well as lean tools and principles," Perez said.

He is putting his framework to use with a German engine parts company where he will continue researching and consulting until the end of 2014. He wants to implement this framework into the Red Cross in Mexico as a community service.

"I hope to apply the gained knowledge in the industry and health-care sectors helping organizations in their Lean journey to transform the company or healthcare organization into a more productive system, a Lean Organization," he said.

Cara Noltensmeyer

Industrial Advisory Board Member Spotlight



From IEM student to IAB member, Cara Noltensmeyer enjoys working with different people and learning new things. She graduated from OSU in the spring of 2007 and started working at Halliburton Energy Services in its Supply Chain Management Program.

A few years later, Noltensmeyer was starting to take steps back toward OSU's IEM department.

"When I worked for Halliburton, a fellow employee was retiring from the Board and asked if I would be interested in applying to take her opening," she said. "I remembered the IAB from my days as a student and wanted the chance to give back to the department, maintain relationships with professors, and mentor/coach students, so this seemed like the perfect opportunity."

That was more than two years ago. Now, Noltensmeyer is a senior analyst at Devon Energy. Some of her core responsibilities are contract management, identifying opportunities for improvement in the supply chain and building supplier relationships.

STUDENT ACHIEVEMENTS

OSU IIE student chapter received the 2013 Gold Award from IIE

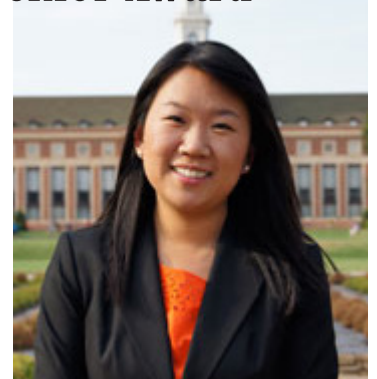
OSU IIE student chapter received the 2013 Gold Award from IIE that recognizes the chapter's overall achievements in AY 2012-2013. There are nearly 130 active student chapters in the US and the award places OSU among the top 1/3rd. Please join us in congratulating our outgoing 2013 officer group.



Outgoing 2013 IIE officers: Natalie Whalen, president; Brandon Martens, vice-president; Kaitlin Krause, secretary; Ian Giese, treasurer; Zach Kelch, activities coordinator; Akkarapol Sa-ngasoongsong, student council representative; Kunal Gandhi, graduate student representative; Akshaya Satpute, public relations officer.

Rachel Seo Receives Dean's Outstanding Senior Award

The School of IE&M is proud to announce the 2013 Dean's Outstanding Student Award was given to Ms. Rachel Seo. This Outstanding CEAT Senior embodies the passion and work ethic all students should aspire to have. Not only was Seo involved with a multitude of leadership activities, she also possesses the personal drive for success evident in all areas of her life. During her time at OSU, Seo was active in several CEAT organizations. She served as secretary and treasurer for IIE, is a member of Alpha Pi Mu (the honor society for industrial engineers), and served on the CEAT Technology Fee Committee during her sophomore year. She has been coordinator of "CEAT Week" and received the CEAT Student Council "Outstanding Member Award" in 2011. She served as vice-president of finance during her junior year and as the CEAT Student Council's president in her senior year. She has also worked as a success



coach for transfer & chemical engineering students, and was a mentor for the Girl's Engineering Club, where she mentored five middle school girls. She has served as Stout Hall senator and played the violin in the OSU symphony from 2009-2011. She has held two internships at Lockheed Martin Aeronautics Company as a quality engineer in 2011 and 2012. She now works at Netsmart Technologies in Kansas, a health and human services management firm.

Kristina George Receives 2013 St. Patrick's Award

The School of IE&M is proud to announce Kristina George is one of only five recipients of the 2013 St. Patrick's Award. Recipients of this CEAT award are selected by a panel of faculty, administration and students. During her time at OSU, George was active in Society of Women Engineers and CEAT Student Council. Within SWE, she served as the social chair, SWE Day event chair and president. During her presidency, George worked to increase SWE membership and awareness, and served on the Collegiate Leadership Coaching Committee. In CEAT Student Council, George served as the K-12 Outreach committee chair and was selected as the "CEAT Student Council Member of the Year" in May 2013. In addition, she found her passion for helping others succeed in their education as the student



coordinator of the Academic Excellence Center, a part of the Engineering Student Services Department. She oversaw more than 100 success coaches who served as mentors for first-year engineering students and 30 tutors who helped students excel in their engineering courses. She currently works at Pepsi Beverages as an engineer in the operations department in Tulsa, OK.

IEM Doctoral Student Diana Rodriguez Recognized At Transportation Consortium



Diana Rodriguez, an IEM doctoral student placed second at the Ph.D. level student competition during the First Heartland Transportation Consortium sponsored by the Oklahoma Transportation Center (OkTC).

The competition was held during April 2-4, 2013 in Oklahoma City with the goals of fostering student research and encouraging regional collaboration between students in order to facilitate building a diverse, high-performing transportation workforce. Her presentation titled "Humanitarian Logistics: Modeling Response Operations" was co-authored with Dr. Manjunath Kamath from the School of IEM, and Dr. Sonia Jaimes and Dr. Angelica Sarmiento from Escuela Colombiana de Ingenieria Julio Garavito and Universidad de la Sabana, Bogota, Colombia.

HONORS AND AWARDS

Dr. Manjunath Kamath receives 2013 Regents Distinguished Teaching Award



The School of IE&M is proud to announce that Dr. Manjunath Kamath is one of nine OSU faculty members to be named a recipient of the 2013 Regents Distinguished Teaching Award by the OSU Board of Regents. This is the 23rd year outstanding faculty members across the university have been recognized for their expertise and dedication to teaching. Those chosen showed evidence of significant

and meritorious achievement in the instruction of graduate and/or undergraduate students for a significant period of years. Such achievement is reflected by:

- Unusual effort devoted to ensuring the quality of the students' classroom learning experience.
- Possession of high scholarly standards for both the rigor and currency of course content and for the level of student performance with respect to these standards.
- Service as a mentor and role model to other faculty.

Each college nominates up to three people for the award. A review and selection committee composed of an undergraduate and a graduate student, two faculty members at large, two department heads and the provost or designee, identifies the winners. Kamath is the only recipient from the College of Engineering, Architecture and Technology.

IEM Alumni named to CEAT Hall of Fame

The College of Engineering, Architecture and Technology at Oklahoma State University inducted IEM graduate Rick Webb to its Hall of Fame on Sept. 27, 2013.

As a distinguished professional, Webb was honored by OSU for his exceptional leadership and career success. Webb is a 1977 OSU graduate of architectural engineering, who later earned both a master's degree and Ph.D. in

Industrial Engineering and Management from OSU in 1979 and 1984 respectively. Webb has held prominent position with companies like Arthur and Young, KMPG, Stillwater National Bank, and was president of the Webb Group from 1998-2003.

Webb spent 20 years consulting in the retail industry for companies like Disney, Warner Bros, Nordstrom, Neiman Marcus, Barnes & Noble, Sears and JCPenney. He joined Wal-mart in 2004, where he is currently the Sr. Vice President of Global Business Processes. Webb and his team are responsible for enhancing the Wal-mart customer's shopping experience and all store operating procedures and systems; increasing the effectiveness of the merchandising/planning/marketing organizations by streamlining processes; and developing supporting systems and identifying opportunities to better optimize merchandise flow to Wal-mart Stores worldwide.

Webb is a Registered Professional Engineer, a Board Member for the Northwest Arkansas Children's Shelter, and current member of the Strategic Advisory Council for OSU's College of Engineering, Architecture and Technology.

The 2013 CEAT Hall of Fame took place in the ConocoPhillips OSU Alumni Center on Sept. 27. Webb joined a list of more than 90 esteemed professionals who have previously been inducted to this Hall of Fame.



Rick Webb

HONORS AND AWARDS

Historic Alum Honored with Lohmann Medal



The College of Engineering, Architecture and Technology at Oklahoma State University honored Dr. Ken Case with the prestigious Lohmann Medal on March 29. This award is considered the college's highest honor for distinguished graduates.

Dr. Case, regent's professor emeritus at OSU, is widely regarded as one of the top Industrial Engineers in the world. He holds three degrees from OSU and has taught at both OSU and Virginia Polytechnic Institute. He served as professor and head of Industrial Engineering. His crowning achievement has been his visionary leadership in developing the Master of Science and Engineering Program at OSU. This distance learning degree program was innovative in its design, and has now graduated more than 400 students.

"Dr. Case is the most outstanding university faculty member I have ever known," said Dr. Joe Mize, regent's professor emeritus at OSU. "He is known as an original thinker, and many of his technical achievements are regarded as game changers in education."

Dr. Case is an ASQ Certified Quality Engineer, Certified Reliability Engineer, Certified Quality Auditor, Certified Manager of Quality / Organizational Excellence, and Certified Six Sigma Black Belt, as well as Certified in Production and Inventory Management by APICS. His primary interests are in quality and reliability engineering, economic analysis, and production planning and control. He serves as a consultant to industry, having assisted 60 organizations, many involving repeat visits, with a few resulting in 10-28 year relationships. Dr. Case is a licensed professional engineer and was named the Outstanding Engineer in Oklahoma in 1987. Additionally, he was a Senior Examiner on the Malcolm Baldrige National Quality Award from 1988 to 1990.

The Melvin R. Lohmann Medal was established in 1991 to recognize graduates of the Oklahoma State University College of Engineering, Architecture and Technology who have made outstanding contributions to the profession or education of engineers, architects or technologists. The medal is named after Dr. Melvin R. Lohmann, former dean (1955-77), who led the college to national prominence.

There have now been 29 distinguished graduates of the College presented with the Lohmann Medal.

VIRTUAL LEARNING LAB

Research aims to open world of science to kids who have autism

A young child grabs the controls of what looks like a video game controller to interact intently with the 3-D solar system on the large screen before her. She is having fun playing in the high-definition virtual reality environment. And she's a part of a quiet revolution involving the future of learning, and Oklahoma State University faculty members are at the forefront of it.

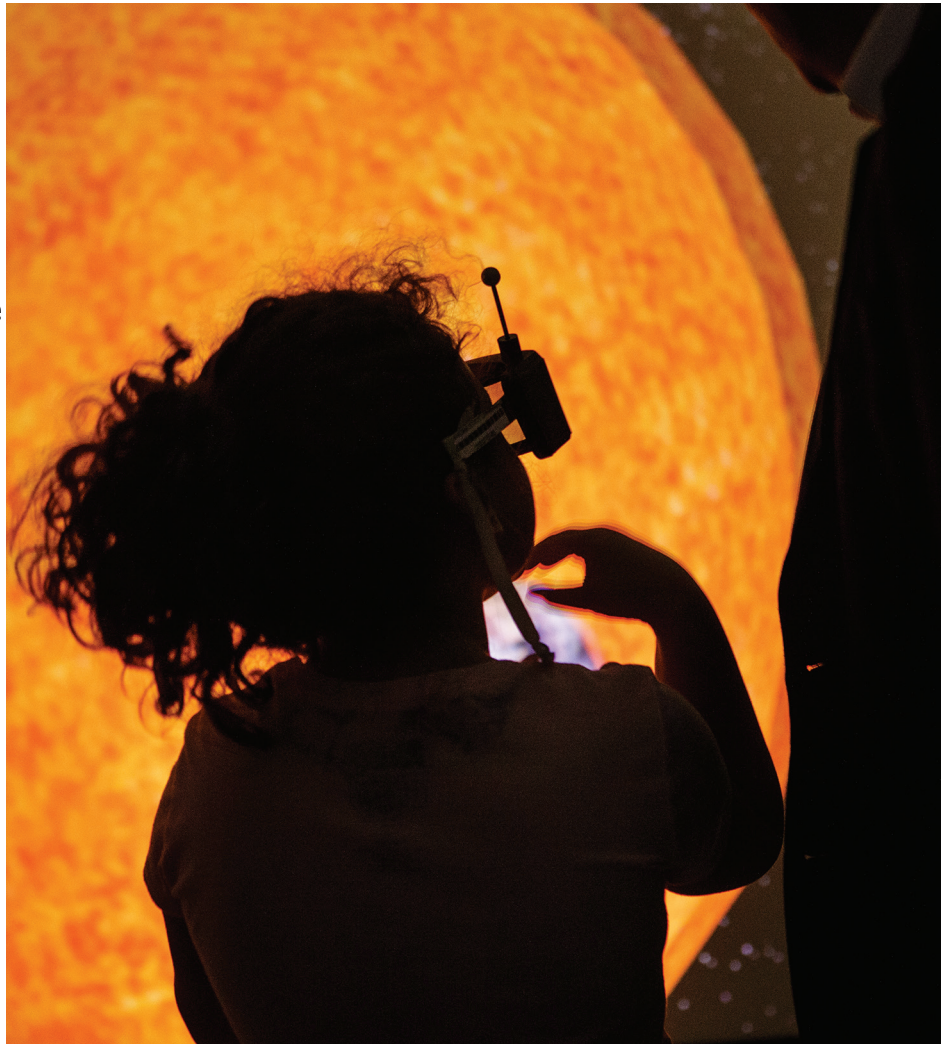
The child at play has autism, and this learning experience is part of a pilot initiative aimed at helping children with autism learn science.

Dr. J. Cecil, associate professor in the School of Industrial Engineering at OSU, heads up this research with engineering and education faculty and students.

"We are in the preliminary stages of this exciting research," says Cecil. "Our group is interested in exploring how advanced engineering technologies can be used to help children with special needs. Virtual environments have the extraordinary potential to engage children with autism and help them learn."

An estimated one in 88 children has an autism spectrum disorder in the U.S, according to the Centers for Disease Control and Prevention, and the number is growing. A 2012 report from the CDC noted a 23 percent increase since 2009 in autism diagnoses among 8-year-olds in the U.S., but noted that at least some of that increase is due to the way children are identified, diagnosed and served in their communities today.

Symptoms of an autism spectrum disorder, including a lack of social interaction, delayed communication and limited activities and interests, usually appear by the time a child is 3 years old.



*A small group of students with autism from local schools in Stillwater are interacting with OSU professors in this pilot project.
Photo by Gary Lawson, University Marketing.*

*The research takes place through the Center for Information Centric Engineering.
For more information on research at CICE, visit <http://www.okstate.edu/cinbm/>*

AWARDS

- T. Liu, **Riata/Koch Faculty Fellow**, OSU, 2012.
- J. Cecil, **Riata Faculty Fellow**, OSU, 2012 and 2013.
- B. Balasundaram, Co-Recipient of the **2013 ISERC Best Paper Award** (Operations Research Track from the IIE Operations Research Division), May 2013.
- B. Balasundaram, Recipient, **2013 Outstanding Young Faculty Award, Halliburton Foundation, Inc.**, College of Engineering Architecture and Technology, Oklahoma State University, March 2013.
- B. Balasundaram, Recipient, **2012 CEAT Outstanding Advisor Award**, College of Engineering Architecture and Technology, Oklahoma State University, Dec. 2012.
- S. Bukkapatnam (winner as part of Dr. Komanduri led team), **OSU President's cup for most creative interdisciplinary research**, 2011-12.
- S. Bukkapatnam, **IIE Hamed H. Eldin Outstanding Young Industrial Engineer (Educator) Award**, 2012.
- S. Bukkapatnam, **Co-Recipient of the Best Paper (runner-up) and Student Ambassador Award (with A. Sa-Ngasoongsong)**, SAS Datamining Conference, 2012.
- S. Bukkapatnam, **Co-Recipient of the Best Student Paper Award (with A. Sa-Ngasoongsong)**, IE Research Conference, Society of Engineering Management Systems, 2012.
- S. Bukkapatnam, **Co-Recipient of the OSU Riata Business Plan Competition (student led)**, 2nd place for the best business plan, 2013 (Won Oklahoma Business Pitch Competition (2012), a student-led commercial venture initiated; \$1K Reynold's Governor's Cup High Growth Interview category, \$1K Governor's cup pitch competition, \$10K 2nd place award at OSU Riata Business Plan competition, \$1K most innovative technology award (2013).
- M. Kamath, Recipient, **Regents Distinguished Teaching Award**, College of Engineering, Architecture and Technology, Oklahoma State University (2013).
- M. Kamath, Recipient, **Lockheed Martin Aeronautics Teaching Excellence Award**, College of Engineering, Architecture and Technology, Oklahoma State University (2013).
- M. Kamath, Recipient, **Halliburton Excellent Teacher Award**, College of Engineering, Architecture and Technology, Oklahoma State University (2012).

PATENTS

- S. Bukkapatnam (Lead inventor) with R. Komanduri and T. Le, Wireless multi-sensor monitoring of cardiac disorders, OSU Invention Disclosure No. 2011.01, 2010. (Provisional Patent Application Filed 2012).
- S. Bukkapatnam (Lead inventor) with M. Ruppert-Stroescu, B. Benjamin et al., HealthSmart: Wearable smart garment for sleep apnea testing cardiorespiratory monitoring, OSU Invention Disclosure 2012.013.
- S. Bukkapatnam (Lead inventor) with T. Le, C. Cheng, A. Sangasoongsong, W. Wongdhamma, Sleepeez: Prediction and control of Sleep Apnea Episodes using a Wireless Wearable Multisensor Suite, OSU Invention Disclosure No. 2012.034, 2012 (Provisional Patent Application Filed 2012).
- S. Bukkapatnam (Lead inventor) with T. Le and D. Dawson, A method for derivation of hemodynamic-signals from one-lead ECG based on real-time modeling of cardiovascular dynamics, Disclosure No. 2013.11 (Provisional Patent Application Filed).

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- Heragu, S.S., *Facilities Design*, 3rd Edition, CRC Press, Boca Raton, FL 2008
- Kolarik, W. J., *Creating Quality: Concepts, Systems, Strategies, and Tools*, New York, NY: McGraw-Hill, 900 pages, 1995.
- Kolarik, W. J., *Creating Quality: Process Design for Results*, New York, NY: McGraw-Hill, 600 pages, 1999.
- White, J.A., K.E. Case, and D.B. Pratt, *Principles of Engineering Economic Analysis*, 6th Edition, John Wiley & Sons, Hoboken, NJ, 2012.
- White, J.A., K.S. Grasman, K.E. Case, K.L. Needy, D.B. Pratt, *Fundamentals of Engineering Economic Analysis*, John Wiley & Sons, Hoboken, NJ, 2014.

RESEARCH GRANTS

- B. Balasundaram*, Z. Kong, S. Bukkapatnam, Proactive approach to transportation resource allocation under severe winter weather emergencies, **Oklahoma Transportation Center for the U.S. Department of Transportation-RITA**, (co-PIs), Jul 2009-Jan2012, \$261,194.
- S. Butenko*, V. Boginski and B. Balasundaram, Clique Relaxations in Biological and Social Network Analysis: Foundations and Algorithms, **Air Force Office of Scientific Research**, July 2012–Jun 2015, \$452,942.
- B. Balasundaram*, V. Boginski, S. Uryasev, S. Butenko, Robust Optimization for Connectivity and Flows in Dynamic Complex Networks, **Department of Energy**, Sep 2009–Sep 2013, \$589,092.
- S. Bukkapatnam*, R. Komanduri and Z. Kong, Characterization and Real-Time Defect Mitigation in Chemical/Mechanical Polishing of Microelectronic Wafers Using Decision Theory and MultiSensor Fusion, **National Science Foundation**, Jul 2010-Jun 2014, \$454,000.
- Z. Kong*, S. Bukkapatnam and R. Komanduri, Recurrent Nested Dirichlet Process for Real-Time Defect Detection in Copper Chemical Mechanical Planarization Process, **National Science Foundation**, Jul 2010-Jun 2014, \$310,000.
- B. Benjamin*, S. Bukkapatnam and M. Ruppert-Stroescu, CWeSST: Center for Wearable Sensor Systems and Technologies, **OSU Interdisciplinary Grant**, Jul 2012 Dec 2013, \$35,200.
- B. Benjamin*, S. Bukkapatnam and M. Ruppert-Stroescu, Wearable Smart Garments for Monitoring Cardiovascular System Dynamics, **OCAST Health Research Grant**, Jul 2012–Dec 2013, \$135,000.
- B. Benjamin*, S. Bukkapatnam and M. Ruppert-Stroescu, HealthSmart Technology Development, **National Science Foundation**, Jul 2012–Dec 2013, \$50,000.
- S. Bukkapatnam* B. Benjamin and M. Ruppert-Stroescu, HealthSmart Technology Commercialization, **OSU Technology Development**, Jul 2012–Dec 2013, \$50,000.
- S. Bukkapatnam, Smart Energy Systems and Wireless Sensors for Oil and Gas Fields, **Central Rural Electric Cooperative (CREC)/Smart Energy Systems**, Mar 2012 - Aug 2013, \$33,500.
- S. Bukkapatnam, R. Singh and S. Harimkar, Failure via Three Dimensional Cracking in Fuel Clad for Advanced Nuclear Materials, **Department of Energy**, 2011-2012, \$132,000.
- S. Bukkapatnam*, R. Singh and Z. Kong, Atomistic Dynamics of Acoustic Emission (AE) Generation in Ultra-Precision Machining (UPM) for Incipient Anomaly Detection, **National Science Foundation**, Jun 2013 - May 2016, \$200,000.
- J. Cecil, EAGER: US IGNITE: Web-architectures for Extensible, Adaptable and Scalable Manufacturing, **National Science Foundation**, Sep 2012–Aug2014, \$50,000.
- J. Cecil, Collaborative Research: US IGNITE: EAGER: Exploring Ultrafast Networks for Training Surgeons Using Virtual Reality Based Environments, **National Science Foundation**, Oct 2012–Sep 2014, \$150,000.
- Chandler*, J. Cecil, Augmented Reality for Research, Education and Outreach, **OSU**, Aug 2012 - Aug 2014
- J. Jacob*, S. O'Hara, J. Cecil, R. Bartholomew and S. Marks, Interdisciplinary program in Space Engineering and Architecture, **OSU**, Sep 2012- Aug 2013, \$37,000.
- S.S. Heragu*, M. Kamath and C. DeYong, Real-time Decision Support System for Healthcare and Public Health Protection, University of Louisville Research Foundation, Inc., for **US Department of Homeland Security**, Aug 2013-Jun 2014, \$480,002.
- R. Ingalls*, M. Kamath, B. Balasundaram and T. Liu, Oklahoma Center for Transportation and Logistics Research, Education and Outreach, **Oklahoma Transportation Center**, Jul 2011-Jun 2013, \$150,000.
- R. Ingalls, **Diamond Head Associates, Inc.**, Optimization and Simulation of Large Scale Supply Chain Networks, Jan 2011–Dec 2013.
- W. Kolarik, Industrial Assessment Center Program, U.S. **Department of Energy**, 2011–2016, \$1,500,000.
- T. Liu* and B. Balasundaram, Development of an Available-To-Promise Decision Support System for Webco Industries, **Webco Industries Inc.**, Apr 2010 Jun 2012, \$137,995.
- Z. Kong* and T. Liu, Development of a Structural Health Monitoring (SHM) Guidebook for Critical Bridge Structures, **Oklahoma Transportation Center for the U.S. Department of Transportation-RITA**, Jul 2009–Dec 2012.
- T. Liu*, T. Collins, Y. Hong, J. Vogel, H. Yu and L. Zhu, Decision Support System for Road Closures in Flash Flood Emergencies, **Oklahoma Transportation Center**, Apr 2012 - Jun 2013, \$224,988.
- T. Liu, S. Bukkapatnam Y. Hong, N. Wang and H. Yu, Black Ice Detection and Road Closure and Warning Control System for Oklahoma, **Oklahoma Department of Transportation**, Oct 2012–Sep 2014, \$230,544.
- M. Kamath*, R. Ingalls, B. Balasundaram, Collaborative: CELDi (Center for Engineering Logistics and Distribution) Renewal, **National Science Foundation**, Aug 2007–Jul 2013 (R. Ingalls - PI until Apr 2012), \$125,000.
- M. Kamath* and R. Ingalls, A Decision Support System for Transportation Infrastructure and Supply Chain System Planning, **Oklahoma Transportation Center for the U.S. Department of Transportation-RITA**, Aug 2008–May 2012, \$270,000.
- M. Kamath* and B. Balasundaram, Collaborative: CELDi (Center for Engineering Logistics and Distribution) RET Supplement, **National Science Foundation**, Dec 2008–Jul 2013, \$60,000.
- M. Kamath*, R. Ingalls, B. Balasundaram and T. Liu, Cutting-Edge Educational, Outreach and Diversity Programs in Transportation and Logistics for Oklahoma, **University of Oklahoma for the Oklahoma Transportation Center for the U.S. Department of Transportation-RITA Developing**, Oct 2011–Jun 2013, \$87,465.
- J. Nazemetz, Motorcycle Crash Causation Study, United States Department of Transportation-**Federal Highway Administration**, April 2012–March 2015, \$2,514,868. 9

RESEARCH ARTICLES

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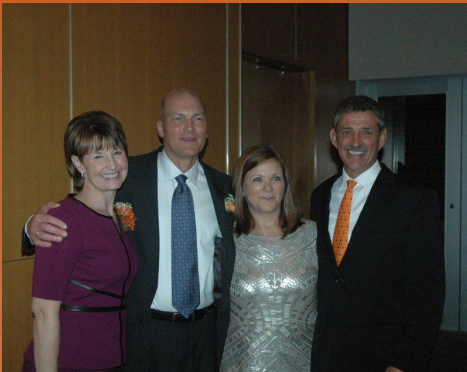


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