



2015

Research and Creative Activity
Department of Industrial Engineering
Lamar University

Victor Zaloom, Ph.D., P.E., Professor
Associate Dean of College of Engineering

Brian Craig, Ph.D., P.E., CPE, Professor, Chair

James Curry, Ph.D., Associate Professor

Xinyu Liu, Ph.D., Associate Professor

Alberto Marquez, Ph.D., Associate Professor

Weihang Zhu, Ph.D., Associate Professor

Yueqing Li, Ph.D., Assistant Professor

Berna Tokgoz, Ph.D., Assistant Professor

Yisha Xiang, Ph.D., Assistant Professor

Mohammad Sima, Ph.D., Visiting Assistant Professor

Gary Yentzen, M.B.A., Instructor

Ezra Wari, D.E. Instructor / Lab Technician

Tae Hoon Kim, Ph.D., Adjunct Instructor

February 2016

This report is published yearly by the Lamar University Department of Industrial Engineering to highlight the research and creative accomplishments of the faculty and students of the department. Listings are in alphabetical order.

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Publications

1. Nam, C.S., Moore, M., Choi, I., & **Li, Y.** (2015). Designing Better, Cost-Effective Brain-Computer Interfaces. *Ergonomics in Design: The Quarterly of Human Factors Applications*.
2. **Li, Y.**, & Nam, C.S. Evaluation of collaborative brain-computer interface for people with motor disabilities. IEEE CIM (accepted)
3. **Li, Y.**, Jeon, W., & Nam, C.S. (2015). Navigation by vibration: effects of vibrotactile feedback on a navigation task. *International Journal of Industrial Ergonomics*, 46, 76-84.
4. **Li, Y.**, & Nam, C.S. (2015). A collaborative brain-computer interface (BCI) for ALS patients. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*.
5. Qin Qian, **Xinyu Liu**, Michale E. Barrett and Randall J Charbeneau, "Physical Modeling on Hydraulic Performance of Rectangular Bridge Deck Drains", Water, Accepted.
6. **Xinyu Liu**, Ning Lou, Swapnil Patole, Dan Rutman, Yachao Wang and Jing Shi, "Experimental Investigation of Micro-Machinability of Nano-TiC Reinforced Inconel Fabricated by Direct Metal Laser Melting", Proceedings of the 2015 International Mechanical Engineering Congress & Exposition, Nov 2015, Houston, TX
7. **Xinyu Liu** and **Shreyas Shashidhara**, "Experimental Investigation of the Tool Wear in Micro-milling of Stainless Steel 316", in print, International Journal of Mechatronics and Manufacturing Systems.
8. MA Ardakan, AZ Hamadani, **M Sima**, M Reihaneh, "A hybrid model for economic design of MEWMA control chart under maintenance policies", International Journal of Advanced Manufacturing Technology, pp 1-10, 2015.
9. **Berna Eren Tokgoz** and Adrian Gheorghe "Implementation of Quantification of Resilience to Essential Facilities", Industrial and System Engineering Annual Research Conference and Expo 2015, May 30 - June 2, 2015, Nashville, TN, USA
10. **Ezra Wari**, **Weihang Zhu**, **Xinyu Liu**, Genetic Algorithms Applications in the Food Process Industry, Industrial and System Engineering Annual Research Conference and Expo 2015, May 30 - June 2, 2015, Nashville, TN, USA
11. **Alem Demissie**, **Weihang Zhu**, A Survey on Gas Pipelines Operation and Design Optimization, Industrial and System Engineering Annual Research Conference and Expo 2015, May 30 - June 2, 2015, Nashville, TN, USA
12. **Alem Demissie**, **Weihang Zhu**, Daniel Kitaw, Amare Matebu, Quality Assessment on the Garment Enterprises in Ethiopia, Industrial and System Engineering Annual Research Conference and Expo 2015, May 30 - June 2, 2015, Nashville, TN, USA
13. Ge Jiang, Dingzhong Feng, **Weihang Zhu**, Lean Shipbuilding for Project-based Manufacturing, Industrial and System Engineering Annual Research Conference and Expo 2015, May 30 - June 2, 2015, Nashville, TN, USA
14. **Weihang Zhu**, **Alberto Marquez**, Julia Yoo, Development of "Engineering Economics Career" Mobile App, ASEE annual conference 2015, June 2015, Seattle, WA, USA

15. Liang Diao, Liguo Shuai, Huiling Chen and **Weihang Zhu**, Improvement of ELM algorithm for multi-object identification in gesture interaction, The International Conference on Extreme Learning Machines (ELM 2015), Hangzhou, China, December, 2015
16. **Weihang Zhu, Alberto Marquez**, Julia Yoo, “Engineering Economics Jeopardy!” Mobile App for University Students, Journal of Engineering Economist, Vol. 60, Issue 4, 2015, Pages: 291-306, DOI: 10.1080/0013791X.2015.1067343.

Theses and Field Studies Published

Doctoral Dissertations/Field Studies

1. Jaber Alzahrani (May 2015). Measuring Efficiencies and Economic Impact of the Air Transportation Sector in the US Economy Using Data Envelopment Analysis and Leontieff Analysis. Committee: Alberto Marquez*, James Curry, Xinyu Liu, Ashraf El Houbi.
2. Ezra Wari (Fall 2015). Efficient Scheduling for Energy Saving for Food Processing Industry - A Case for an Ice Cream Processing Facility. Committee: Weihang Zhu*, James Curry, Alberto Marquez, Xinyu Liu, Helen Lou
3. Alem Demissie (Fall 2015). Multi-objective Optimization for Natural Gas Pipeline Network Operation, Committee: Weihang Zhu*, James Curry, Alberto Marquez, Xinyu Liu, Xianchang Li

* Denotes committee chair. ** denotes co-chair.

Thesis Students

1. Laya Pouresmaeil (August 2015). Using Python to Analyze Safety Records. Committee: James Carl Curry*, Brian Craig, Xinyu Liu.

* Denotes committee chair. ** denotes co-chair.

Presentations Only

1. **Craig, B.**, Port Management Initiative at Lamar University, West Gulf Maritime Association, Sabine Area Meeting, Beaumont, Texas, 2015
2. **Craig, B.**, Center for the Advances of Port Management, National University of Singapore, Singapore, October 2015
3. **Craig, B.**, and McSweeney. K., Introduction to Safety Culture and Leading Indicator Assessment for <Industry Partner>, Singapore, October 2015
4. McSweeney, K., and **Craig, B.**, Introduction to the Mariner Personal Safety Project for <Industry Partner>, Singapore, October 2015
5. **Craig, B.**, ASTM Near Miss and Injury Reporting Standards Update, SOCP Safety and Health Working Group, Linthicum Heights, Maryland, October 2015

6. **Craig, B.**, ABS Project on Safety Culture and Leading Indicators of Safety – Combined Safety Culture Dataset Results. National Safety Council, Waterborne Transport Group, Atlanta, Georgia, September 2015
7. **Craig, B.** and McSweeney, K., ASTM Near Miss and Injury Reporting Standards Update, SOCP Safety and Health Working Group, WebEx Presentation, August 2015
8. **Craig, B.**, McSweeney, K., **Curry, J.**, and **Zhu, W.**, Maritime Near Miss Reporting, 2015 BSEE Domestic and International Standards Workshop, Houston, May 2015
9. **Li, Y.** (2015). A collaborative BCI. Houston Human Factor & Ergonomics Society 2015 Symposium.
10. **Xinyu Liu**, Research Enhancement Grant, Lamar University, “Research and proposal preparation for advanced manufacturing”, \$8,000.
11. **Xiang, Y.**, and Coit, D.W. (2015), Joint Burn-in and Imperfect Condition-based Maintenance for n -Subpopulations, INFORMS, Philadelphia, PA
12. Alaswad, S., **Xiang, Y.** (2015), A Survey of Condition-based Maintenance Policies for Deteriorating Systems, INFORMS, Philadelphia, PA
13. **Weihang Zhu**, Invited Talk at Mega Mobile Mania Conference at Educational Service Center for Region 5: Introduction to Computer-aided Design for 3D Printing, Beaumont, Texas, USA, November 2015

Current Funding

*Center for Advancement in Port Management, Lamar University, Beaumont, Texas, January 2015 – Present (funded special item by the State of Texas for \$2.72M, September 1, 2015 – August 31, 2017)

1. University Scholar – Research Enhancement Grant, Lamar University, **Brian Craig** – Principal Investigator (Fall 2014 – Summer 2016) \$5,000
2. Research Enhancement Grant at Lamar University, **Yueqing Li**, “Develop a haptically enhanced and game based science learning system”. Amount: \$5,000.
3. Research Enhancement Grant, Lamar University, **Xinyu Liu**, “Research and proposal preparation for advanced manufacturing”, \$8,000.
4. Research Enhancement Grant at Lamar University as PI “Resilience Quantification for Essential Facilities for a Hurricane Event”. Amount: \$5,000. **Berna Eren Tokgoz**
5. “Benefit Cost Analysis Research and Development for Port of Beaumont” PI: **Victor Zaloom** with Co-PI’s **Alberto Marquez** and *Sujay Mahale*, \$3,753. Sponsored by Port of Beaumont, June 1, 2015 – August 31, 2015.
6. Assessment of the Wake Wash Problem on the Sabine-Neches Waterway, Sponsored by the Sabine-Neches Waterway District, PI **Victor Zaloom**, Co-PI’s Robert Yuan, Qin Qian, Mien Jao, Xing Wu, \$99,453, Nov. 1, 2015 – Oct. 31, 2016.
7. Development of the *ASTM Standard for Injury and Illness Data Collection and Reporting* and the *ASTM Standard for Near Miss Collection and Reporting*, Ship Operations Cooperative Program (SOCP), Woodinville, Washington, **Brian Craig** – Principal Investigator with Co-PI’s: **James Curry** and **Weihang Zhu** (2014 – Present) \$50,000 (part of Mariner Safety Program)

8. Prototype Leading Indicator Tool, American Bureau of Shipping, Houston, Texas, **Brian Craig** – Principal Investigator with Co-PI's: **James Curry** and **Weihang Zhu** (Fall 2010 – Present) \$437,099
9. Mariner Safety Program (formerly Mariner Personal Safety), American Bureau of Shipping, Houston, Texas, **Brian Craig** – Principal Investigator with Co-PI's: **James Curry** and **Weihang Zhu** (Fall 2009 – Present) \$469,402
10. Multimedia Learning of 'Engineering Economics' through Role Play Gaming on a Mobile Platform, National Science Foundation DUE-1140457, **Alberto Marquez**, **Weihang Zhu** and Julia Yoo, \$191,505, May 2012 – April 2016.
11. Industrial and Mechanical Engineering Scholars with Scholarships, Career Mentoring, Outreach and Advisement, Professional Societies and Engineering Learning Community (SCOPE), National Science Foundation S-STEM, \$625,300, **Weihang Zhu**, **Brian Craig**, **James Curry**, Hsing-wei Chu, Jiang Zhou, September 2015 to August 2020
12. Presidential Faculty Fellowship for Undergraduate Teaching Research 2015, \$15,000, with Jiang Zhou, Ken Aung, **Weihang Zhu** and **Xinyu Liu**.
13. Distinguished Faculty Fellowships Instructional Enhancement Project: Exploring the Design and Pedagogy of an Interactive E-book Mobile App to Assist Teaching Software-based Engineering Courses, \$5000, September 2015 to August 2018, **Weihang Zhu**

Panels

1. **Brian Craig**, STEM Outreach Workshop, Invited Panelist, Lamar University, Beaumont, Texas, January 2015
2. **Yueqing Li**, Panel Review for National Science Foundation Graduate Research Fellowships Program (GRFP), December, 2015.
3. **Victor Zaloom**, Selected to Serve on the "Engineering Field of Study" committee of the Texas Higher Education Coordinating Board, 2014-2016.
4. **Victor Zaloom**, Served on the Lamar University Strategic Planning Committee, 2014-15.
5. **Victor Zaloom**, Conducted ABET review of B.S. Industrial Engineering Program at Florida A & M – Florida State University, Tallahassee, FL, Oct. 4-6, 2015
6. **Weihang Zhu**, Panel Review for National Science Foundation, November, 2015

IE Student Papers

1. **Xinyu Liu**, *Ning Lou*, *Swapnil Patole*, Dan Rutman, Yachao Wang and Jing Shi, "Experimental Investigation of Micro-Machinability of Nano-TiC Reinforced Inconel Fabricated by Direct Metal Laser Melting", Proceedings of the 2015 International Mechanical Engineering Congress & Exposition, Nov 2015, Houston, TX
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Online Courses

1. BSIE 2+2 online Program was officially launched in Fall 2014 semester and currently has 12 online BSIE students.
2. MEM online program was officially launched in Fall 2014 semester and one student will graduate in May 2016. Three local students are taking advantage of the online courses, combining them in to an hybrid program (on and off campus) for their convenience and preference.
3. In 2015, the IE department taught 38 online and distance education courses.
4. **Weihang Zhu**'s online course 'Simulation of Industrial Systems' has passed the Quality Matters standard assessment in 2015, administered by Center of Distance Education, Lamar University.

Miscellaneous

1. Session Chair, June 2, 2015, Industrial and System Engineering Research Conference, *Alem Demissie*
2. Session Chair, November 18, 2015, Advanced Materials Design, Synthesis, Processing, and Application, ASME-IMECE Conference, Houston, TX. **Mohammad Sima**
3. Session Chair, November 18, 2015, Computational Modeling and Simulation for Advanced Manufacturing, ASME-IMECE, Houston, TX. **Mohammad Sima**
4. Session Chair, "Engineering Management", June, 2015, Industrial and System Engineering Annual Research Conference and Expo, Nashville, TN, USA, **Berna Eren Tokgoz**
5. "13th New Faculty Colloquium" June, 2015, Industrial and System Engineering Annual Research Conference and Expo, Nashville, TN, USA, **Berna Eren Tokgoz**
6. "The IIE Accreditation Workshop". June, 2015, Industrial and System Engineering Annual Research Conference and Expo, Nashville, TN, USA, **Berna Eren Tokgoz**
7. Session Chair, May 2015, Assisted Manufacturing Processes, NAMRC-MSEC conference, Charlotte, NC. **Mohammad Sima**
8. Session Chair, Nov 1-4, 2015, INFORMS, **Yisha Xiang**

9. 'Design for Flow' Session Chair, June 1, 2015, Industrial and System Engineering Research Conference, **Weihang Zhu**
10. Session Chair, Oct 3, 2015, Texas STEM Conference, **Weihang Zhu**
11. Session Chair, November 18, 2015, Advanced Materials Design, Synthesis, Processing, and Application, ASME-IMECE Conference, Houston, TX. **Xinyu Liu**