

Denny Yu

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Education

- 2014 **University of Michigan, Ann Arbor**
Ph.D. in Industrial and Operations Engineering
Dissertation Title: Application of Human Factors in Surgery: Studies on Technique, Displays, and Performance
Advisor: Thomas J. Armstrong
- 2011 **University of Michigan, Ann Arbor**
M.S.E. in Industrial and Operations Engineering
- 2009 **University of California, Berkeley**
B.S. in Bioengineering
Honors Thesis: “Inter-observer agreement in quantification of force and posture”
Advisor: David Rempel
 ◊ With Honors

Research and Work Experience

- 2015-Present **Assistant Professor**
School of Industrial Engineering, Purdue University, West Lafayette, IN
- 2015 **Assistant Professor of Healthcare Systems Engineering**
College of Medicine, Mayo Clinic, Rochester, MN
- 2014-2015 **Research Associate**
Department of Health Sciences Research, Mayo Clinic, Rochester, MN
Advisor: Susan Hallbeck, Ph.D.
 ◊ Quantifying workload demands and workflow in surgery, identifying factors that impact health and performance of medical providers and patient outcomes, and developing user-centered medical devices and health systems interventions for surgeon training and clinical practice

2009-2014

Graduate Student Research Assistant

Center for Ergonomics, University of Michigan, Ann Arbor, Michigan

Advisor: Thomas J. Armstrong, Ph.D.

- ◊ Graduate student lead for “Linking variations in surgical techniques with patient outcomes to identify best methods for surgical education”
- ◊ NIOSH Trainee for “Evaluating alternative visual displays systems on surgeon performance and ergonomic comfort using motion tracking, biomechanical models, task analysis, and surveys”

2013

Liberty Mutual Safety Research Fellow

Liberty Mutual Research Institute for Safety, Hopkinton, MA

Advisors: Jia-Hua Lin, Ph.D., Xu Xu, Ph.D.

- ◊ Designed and conducted analysis on the effects of anthropometry, biomechanical limits, and posture choice on maximum one-handed pull strength variations
- ◊ Developed biomechanical models of posture patterns and joint stresses among subjects
- ◊ Ongoing collaborations in writing journal manuscript

2012

NSF Engineering Innovations Fellow

Applied Biomechanics, Alameda, CA

Advisors: Louis Cheng, Ph.D., Jeffrey Lotz, Ph.D.

- ◊ Developed software interfacing motion tracking and biomechanics analysis for engineering consulting
- ◊ Implemented Microsoft Kinect™ as a tool for 3D analysis of musculoskeletal job hazards
- ◊ Conducted sensitivity analysis of low back compression with Matlab

2011

Graduate Student Research Assistant

University of Michigan and Various locations in China

Advisors: Covidien, Thomas J. Armstrong, Ph.D., Kathleen Sienko, Ph.D.

- ◊ Led undergraduate medical device design team on surgery ergonomics, workplace observations, and needs assessment in China’s operating rooms

2008-2009

Research Assistant

Orthopaedic Biomechanics Lab, Berkeley, CA

Advisor: Professor Tony M. Keaveny, Ph.D.

- ◊ Designed experiment, wrote SOP, prepared and assayed tissues, and analyzed molecular concentrations in intervertebral disc biochemistry study
- ◊ Developed code to processed microCT images in microdamage prediction study
- ◊ Analyzed strength/strain data from mechanical testing of bone tissue with MATLAB

- 2007-2009 **Undergraduate Researcher**
 Berkeley Ergonomics Laboratory, Richmond, CA
 Advisor: Professor David Rempel, M.D.
- ◊ Led physical exposure video assessments in the prospective multi-center work-related MSD Consortium Study on blue-collar workers
 - ◊ Designed analysis protocols for “Quantifying Hand Grip Differences Between Blue-Collar Jobs” and “Inter-observer Agreement in the Quantification of Force and Posture”
 - ◊ Led a team of 3 students for analysis of over 200 subject exposure videos
 - ◊ Created and presented 3 posters on research studies

Research Grants

- 2015-2016 **Endowment for Education Research Award (EERA)**, Office of Applied Scholarship and Education Science, Mayo Clinic
 “Wearables for Assessing Nontechnical and Technical Skills (WeNOTES): A Feasibility Study”
 Co-I: **Denny Yu**
- 2015-2016 **Endowment for Education Research Award (EERA)**, Office of Applied Scholarship and Education Science, Mayo Clinic
 “Advancing microsurgical skills in resident/fellow training: simulation versus translation to the Operating Room (OR)”
 Co-I: **Denny Yu**
- 2015-2016 **Department of Surgery Innovation Accelerator**, Mayo Clinic
 “Smart Wearables for Improving Safety”
 Co-PI: **Denny Yu and Susan Hallbeck**
- 2015-2016 **Midwest Center for Occupational Safety and Health Pilot Projects Research Training Program**, National Institute for Occupational Safety and Health Education and Research Center
 “Exposure assessment and intervention for reducing musculoskeletal stresses and work-related injuries among allied health professionals in surgical care”
 PI: **Denny Yu**; Co-I: Susan Hallbeck, Nirusha Lachman
- 2014 **Rackham Graduate Student Research Grant** (University of Michigan)
 “Effect of posture constraints and depth-of-field on musculoskeletal health and performance during prolonged surgical and dental tasks,”
 PI: **Denny Yu**

- 2010-2011 **National Institute for Occupational Safety and Health (NIOSH) Pilot Project Research Training Research Grant**, Michigan Education and Research Center
 “Assessment of the Biomechanical Impact in Microvascular Surgeries on Surgeon Health and Performance,”
 Recipient: **Denny Yu**
- ◊ Conceptualized and first authored grant
 - ◊ ~4 awards per year awarded in the Midwest region (IL, IN, MI, OH, WI, MN)

Honors and Awards

Fellowships

- 2015 **Delivery System Science Fellowship**
- ◊ External funding from Academy Health. Awarded through a competitive application, external recommendations, and interview process.
- 2011-2014 **National Science Foundation Graduate Student Fellowship**
- 2013 **American Society of Safety Engineers, Liberty Mutual Safety Research Fellowship**
- ◊ Two proposals per year are accepted through a competitive application process. Winning proposals selected by ASSE and Liberty Mutual peer reviewers. The fellowship represents an opportunity for collaboration on occupational health and safety research with scientists at an internationally recognized private research institute.
- 2012 **National Science Foundation Engineering Innovation Fellowship**
- ◊ Awarded through a competitive application process
- 2010-2011 **Teaching Fellowship**
- ◊ University of Michigan Office of Engineering Outreach and Engagement Fellowship awarded to two Ph.D. students through a competitive application process and interview. Fellowship represents an opportunity to engage with local high school students through presentations and teaching/designing hands-on lab activities designed to encourage students' interests in science, technology, engineering and math.
- 2010 **National Institute for Occupational Safety and Health (NIOSH) Traineeship**
- ◊ University of Michigan Occupational Safety Engineering and Ergonomics award
- 2009-2010 **National Occupational Research Agenda (NORA) Pre-Doctoral Fellowship**
- ◊ University of Michigan Occupational Safety Engineering and Ergonomics award

Honors and Scholarships

- 2014 **Dieter W. Jahns Student Practitioner Award**, Foundation for Professional Ergonomics
- 2013 **Rackham Domestic Travel Grant**, University of Michigan, Ann Arbor

- 2012 **First place: Oral presentation competition in IOE & Financial Engineering Technical Session at University of Michigan's Engineering Symposium**, University of Michigan, Ann Arbor
- 2012 **International Society of Biomechanics Technical Group Congress Travel Grant**
- 2012 **Rackham International Travel Grant**, University of Michigan, Ann Arbor, Michigan
- 2011 **College of Engineering Graduate Distinguish Achievement Award**, University of Michigan, Ann Arbor, Michigan
- ◊ University of Michigan outstanding graduate student prize awarded annually to 1 graduate student (Master's or Ph.D.) per department to recognize academic and personal excellence.
- 2011 **Rackham Domestic Travel Grant**, University of Michigan, Ann Arbor
- 2011 **Semifinalist, OnStar Student Developer Challenge**
- ◊ Selected for the most original and compelling vehicle voice-enabled application using OnStar vehicle data
- 2010 **Rackham Domestic Travel Grant**, University of Michigan, Ann Arbor, Michigan
- 2007, 2008 **Berkeley Summer Bioengineering Research Program Scholarship**, University of California, Berkeley
- ◊ Selected each summer in a competitive application process
- 2006 **Dean's Honor List**, University of California, Berkeley
- 2005-2009 **Seffens Scholarship**, University of California, Berkeley
- ◊ Competitive scholarship awarded to select students pursuing degree in science and engineering from East Bay Area. Selection based on academic merit and faculty recommendations.
- 2005-2009 **Robert C. Byrd Honors Scholars**, U.S. Department of Education
- ◊ For outstanding academic achievement

Publications

***indicates mentee of Yu, D.**

1. **Yu, D.**, Blocker, R. C., Sir, M. Y., Hallbeck, M. S., Hellmich, T. R., Cohen, T., . . . Pasupathy, K. S. (2016). Intelligent Emergency Department: Validation of Sociometers to Study Workload. *Journal of Medical Systems*, 40(3), 1-12. doi: 10.1007/s10916-015-0405-1 PMID: 26645317

2. **Yu, D.**, Green, C., Kasten, S. J., Sackllah, M. E., & Armstrong, T. J. (2016). Effect of alternative video displays on postures, perceived effort, and performance during microsurgery skill tasks. *Applied ergonomics*, 53, Part A, 281-289. doi: 10.1016/j.apergo.2015.10.016. PMID: 26585502
3. **Yu, D.**, Lowndes, B., Morrow, M., Kaufman, K., Hallbeck, M.S., & Bingener, J. (2015). Impact of a novel laparoscopic tool on wrist ergonomics and surgeon performance. *Surgical Endoscopy*. DOI: 10.1007/s00464-015-4634-7. PMID: 26541720
4. *Abdelrahman, A., Bingener, J., **Yu, D.**, Lowndes, B., & Hallbeck, M.S. (2015). Impact of Single Incision versus 4-Port Laparoscopic Cholecystectomy on Surgeon Stress and Workload: A Randomized Controlled Trial. *Surgical Endoscopy*, 1-7. DOI: 10.1007/s00464-015-4332-5. PMID: 26194249.
5. **Yu, D.**, Blocker, R.C., Hallbeck, S., Patel, A., & Pasupathy, K.S. (2015). Wearable sociometers in Chaotic Simulated Environments. *Journal of Medical Devices*, 9(2), 020946-020946. DOI:10.1115/1.4030150.
6. **Yu, D.**, Cha, J.S., Kasten, S.J., Green, C., & Armstrong, T. J. (2015). Design of low-cost ergonomic microsurgery equipment: Comparison of microscope and 3D video displays on task performance. *Journal of Medical Devices*. 9(2), 020918-020918. DOI: 10.1115/1.4030130.
7. **Yu, D.**, Lowndes, B., Bingener, J., Thiels, C., Lyons, R., Abdelrahman, A., & Hallbeck, M.S. (under review). Quantifying team workload in surgery: Effect of role, minimally-invasive or open technique, and surgical specialty. *World Journal of Surgery*
8. **Yu, D.**, Xu, X., & Lin, J.H. (under second review). Impact of posture choice on one-handed pull strength variations at low, waist, and overhead pulling heights. *Ergonomics*.
9. **Yu, D.**, Minter, R. M., Armstrong, T. J., Frischknecht, A. C., Green, C., & Kasten, S. J. (2014). Identification of technique variations among microvascular surgeons and cases using hierarchical task analysis. *Ergonomics*, 57(2), 219-235. DOI:10.1080/00140139.2014.884244. PMID: 24521243
10. **Yu, D.**, Sackllah, M., Wooley, C., Kasten, S. J., & Armstrong, T. J. (2012). Quantitative Posture Analysis of 2D, 3D and Optical Microscope Visualization Methods for Microsurgery Tasks. *Work: A Journal of Prevention, Assessment and Rehabilitation*, 41, 1944-1947. DOI:10.3233/WOR-2012-0412-1944. PMID: 22317000
11. Armstrong, T., **D. Yu**, A. Frischknecht, R. Minter, P. Andreatta, & S. Kasten (2012). Standardization of surgical procedures for identifying best practices and training. *Work: A Journal of Prevention, Assessment and Rehabilitation*, 41, 4673-4679. DOI:10.3233/WOR-2012-0108-4673. PMID: 22317440
12. **Yu, D.**, Sackllah, M. E., Woolley, C. B., Kasten, S. J., Kim, D., Green, C., & Armstrong, T. J. (2012). The effect of visualization method on the performance of simulated microsurgery tasks. *Work: A Journal of Prevention, Assessment and Rehabilitation*, 41, 5634-5636. DOI:10.3233/WOR-2012-0901-5634. PMID: 22317634

Peer-reviewed Conference Proceedings

***indicates mentee of Yu, D.**

1. *Nourallah, A., **Yu, D.**, Bingener, J., Hallbeck, S., Thiels, C. A., & Abdelrahman, A. M. (2015). Patient factors influence surgeons' workload. *Journal of the American College of Surgeons*, 221(4, Supplement 2), e16. doi: <http://dx.doi.org/10.1016/j.jamcollsurg.2015.08.338>

2. *Abdelrahman, A. M., Lowndes, B. R., **Yu, D.**, Bingener, J., Park, A. E., Bartley, A. C., & Hallbeck, M. S. (2015). Intraoperative exercises during surgery: surgical trainees rating of performance and disruption. *Journal of the American College of Surgeons*, 221(4, Supplement 2), e85-e86. doi: <http://dx.doi.org/10.1016/j.jamcollsurg.2015.08.122>
3. **Yu, D.**, Abdelrahman, A., Buckarma, E., Lowndes, B., Abdelsattar, J., Finnesgard, E., Gas, B., El-Khatib, M., Pandian, T.K., Farley, D., & Hallbeck, S. (2015). Mental and Physical Workloads in a Competitive Laparoscopic Skills Training Environment: A Pilot Study. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. doi: 10.1177/1541931215591109
4. **Yu, D.**, Blocker, R.C., Hallbeck, S., Sir, M., Hellmich, T., & Pasupathy, K.S. (2015). Application of sociometer badges in simulated health environments: Can wearable devices quantify individual's workload? *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. DOI 10.1177/1541931215591117
5. **Yu, D.**, Cha, J.S., Kasten, S.J., & Armstrong, T. J. (2014). Gaze and viewing patterns in microsurgery: Task analysis in the operating room. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 58(1):639-43. DOI:10.1177/1541931214581151
6. **Yu, D.**, Kasten, S., Green, C., & Armstrong, T. J. (2013). Task analysis of microsurgery and biomechanical modeling of surgeons to assess static-workloads. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 57, No. 1, pp. 1790-1794). SAGE Publications. DOI:10.1177/1541931213571401.
7. **Yu, D.**, Frischknecht, A., Green, C., Kasten, S., & Armstrong, T. J. (2012). Assessing Posture in Surgery: Video Sampling of Microsurgery. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 56, No. 1, pp. 2080-2083). SAGE Publications. DOI:10.1177/1071181312561441.
8. *Sackllah, M., **Yu, D.**, Woolley, C., Kasten, S., & Armstrong, T. J. (2012, September). Evaluating Alternate Visualization Methods for Microsurgery: 2D and 3D Optical Microscopes and Flat-Panel Displays. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 56, No. 1, pp. 782-786). DOI:10.1177/1071181312561163.
9. **Yu, D.**, Sackllah, M., Woolley, C., Kasten, S., & Armstrong, T. J. (2011). Alternative 2D and 3D Visualization Methods for Microsurgery: Posture, Performance, and Discomfort Analysis. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 55(1), 715-719. DOI:10.1177/1071181311551148.
10. **Yu, D.**, Kasten, S. J., & Armstrong, T. J. (2010). Development of a Hierarchical Taxonomy for Standardization of Microvascular Surgery. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 54(19), 1595-1599. DOI:10.1177/154193121005401950.

Presentations (without associated peer-reviewed proceedings) and Invited Lectures

*indicates mentee of Yu, D.

1. **Yu, D.** (2015). Smart Wearables and Working towards Intelligent Health Systems Using Workload: Current work and future directions. *Inaugural Mayo Clinic Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery Grand Rounds*. Rochester, MN. December 8, 2015. **(Invited talk)**.
2. **Yu, D.** (2015). Human factors applications in surgery and emergency department for improving healthcare delivery. *Purdue University Human Factors and Ergonomics Society Student Chapter*. West Lafayette, IN. December 2, 2015. **(Invited talk)**.
3. **Yu, D.** (2015). Ergonomics in healthcare. *Virginia Tech Human Factors and Ergonomics Society Student Chapter*. Blacksburg, VA. November 13, 2015. **(Invited talk)**.

4. **Yu, D.**, Blocker, R.C., Hallbeck, S., Patel, A., & Pasupathy, K.S. (2015). Wearable sociometers in the Zombie Apocalypse: Quantifying interactions in chaotic simulated health delivery environments. *Delivery Science Summit 2015*. Rochester, MN. September 16-18, 2015. (poster)
5. *Abdelrahman, A. (presenter), Lowndes, B., **Yu, D.**, Hallbeck, S., & Bingener, J. (2015). How surgical team workload evaluation impacts the practice: 4-port vs. single port laparoscopic cholecystectomy. *Delivery Science Summit 2015*. Rochester, MN. September 16-18, 2015. (poster)
6. Hallbeck, S., **Yu, D.**, Forsman, M., Dural, C., Egnell, L., Gettman, M., Sanchez-Salas, R., Collins, J., Morrow, M., Abdelrahman, A., Yang, L., & Kjellman, M. (2015). Application of innovative motion tracking wearables for measuring intraoperative surgeon workload. *Mayo Clinic-Larolinska Institutet 21st Annual Scientific Research Meeting*. Stockholm, Sweden. September 10-11, 2015. (poster)
7. Forsman, M., Hallbeck, S., Kjellman, M., Dural, C., Yang, L., Egnell, L., Sanchez-Salas, R., Collins, J., **Yu, D.**, Lowndes, B., Morrow, M., Abdlrahman, A., Gettman, M. (2015). Activity in trapezius muscle during robotic-assisted urological laparoscopic surgery-a comparison of the console and assisting surgeon roles. *Mayo Clinic-Larolinska Institutet 21st Annual Scientific Research Meeting*. Stockholm, Sweden. September 10-11, 2015.
8. *Abdelrahman A, Lowndes B, **Yu D**, Hallbeck S, Bingener-Casey J. (2015). How surgical team workload evaluation impacts the practice: 4-port vs. single port laparoscopic cholecystectomy. *Mayo Clinic-Larolinska Institutet 21st Annual Scientific Research Meeting*. Stockholm, Sweden. September 10-11, 2015. (poster)
9. **Yu, D. (presenter)**, Lowndes, B., Bingener, J., & Hallbeck, S. (2015). Impact of surgical role on fatigue: Self-reported fatigue before, during and after surgery over 79 cases. *19th Triennial Congress of the International Ergonomics Association*. Melbourne, Australia. August 9-14, 2015. (poster)
10. **Yu, D. (presenter)**, Cavauto, L., & Hallbeck, M.S. (2015). Quantifying workplace exposures in the operating room: Methodologies and preliminary results. *Industrial & Systems Engineering Research Conference*. Nashville, TN. May 30-June 2, 2015.
11. **Yu, D. (presenter)**, Xu, X., & Lin, J.H. (2015). Impact of posture choice on maximum one-handed pull strength variations among participants. *Industrial & Systems Engineering Research Conference*. Nashville, TN. May 30-June 2, 2015.
12. *Buckarma, E. (presenter), Gas, B., **Yu, D.**, Abdelrahman, A., Lowndes, B., Abdelsattar, J., Hallbeck, S., & Farley, D. (2015). Anxious about surgical residency performance? Are you and your hands ready? *Midwest Surgical Association 58th Annual Meeting*. Lake Geneva, WI. July 26-29, 2015. (poster)
13. **Yu, D.** (2015). Human factors and ergonomics of surgery: Examples from robotic prostatectomy. *2015 nuSURF Lecture Series*. Rochester, MN. July 14, 2015. **(Invited talk)**.
14. **Yu, D.**, Lowndes, B., Zahiri, H., Bingener, J., Abedlrahman, A., Hallbeck, S., Augenstein, V., Sutton, E., & Park, A. (2015). Intraoperative microbreaks reduces surgeon musculoskeletal pain and improves performance. *Minnesota Surgical Society Spring Meeting*. Minneapolis, MN. May 1, 2015.
15. *Abdelrahman, A. (presenter), **Yu, D.**, Lowndes, B., Buckarma, E., Abdelsattar, J., Finnesgard, E., Gas, B., El-Khatib, M., Pandian, T.K., Hallbeck, S., & Farley, D. (2015). Ergonomics in surgical simulation: An early step toward saving future surgeons. *Minnesota Surgical Society Spring Meeting*. Minneapolis, MN. May 1, 2015.
16. **Yu, D. (presenter)**, Lowndes, B., Abdelrahman, A., Bingener, J., Lyons, R., & Hallbeck, M.S. (2015). Quantifying and comparing workload in the surgical teams: Prospective study of 79 cases and 212

- participants. *2015 International Symposium on Human Factors and Ergonomics in Health Care: Improving the Outcomes*. Baltimore, MD. April 26-29, 2015.
17. *Singh, R., **Yu, D. (presenter)**, Carranza, D.A., Gebhart, J.B., & Hallbeck, S. (2015). Effect of surgeon chairs on work-related musculoskeletal disorders amongst gynecologic surgeons: A pilot study. *2015 International Symposium on Human Factors and Ergonomics in Health Care: Improving the Outcomes*. Baltimore, MD. April 26-29, 2015.
 18. Hallbeck, S. (presenter), Bingener, J., **Yu, D.**, Lowndes, B., Zahiri, H.R., & Park, A. (2015). Surgical Microbreaks-Can they work? *2015 International Symposium on Human Factors and Ergonomics in Health Care: Improving the Outcomes*. Baltimore, MD. April 26-29, 2015. (poster)
 19. *Abdelrahman, A. (presenter), **Yu, D.**, Lowndes, B., Hallbeck, S., & Bingener, J. (2015). Impact of the single incision laparoscopic cholecystectomy (SILC) versus 4-port laparoscopic cholecystectomy on surgeon stress and workload: A randomized controlled trial. *Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) 2015 Annual Meeting*. Nashville, TN. April 15-18, 2015.
 20. **Yu, D.** (2015). Moving Towards an Ergonomic Risk Model for the Operating Room. Karolinska Institutet. Solna, Sweden. March 30, 2015. **(Invited talk)**.
 21. **Yu, D.** (2015). The Save Our Surgeons (SOS) Initiative: Current & future work addressing fatigue, pain, and injuries in the operating room. *Health Care Delivery Works-in-Progress*. Rochester, MN. March 5, 2015
 22. Mohamad A, Abdelrahman A, **Yu D**, Lowndes B, McConico A, Hallbeck S, Bingener-Casey J. (2015). Does the number of ports impact workload? Comparing single port and 4 port laparoscopic cholecystectomy. *20th Annual Symposium*. Rochester, MN. December 5, 2014. (Poster)
 23. **Yu, D.** (presenter), Pencille, L., Bland, M., & Hallbeck, M.S. (2014). Breaks in the Operating Room. *Surgical Services Safety Skills Fair-SMC*. Rochester, MN. October 13.
 24. Hallbeck, S. (co-presenter), Forsman, M., Lowndes, B., Morrow, M., McCrory, B., Kaufman, K., **Yu, D. (co-presenter)**, & Bingener, J. (2014). Preventing surgeon musculoskeletal injuries and pain: Measurement of intraoperative surgeon posture and workload. *20th Annual Mayo Clinic-Karolinska Institutet Conference*. Rochester, MN. September 11-12. (poster)
 25. **Yu, D.** (presenter), Kasten, S., & Armstrong, T. (2013). Improving postures during microsurgery: The effect of flat-panel heads-up display on sustained exertions and posture loads. *14th Annual Human Factors Engineering Inter-University Workshop*. Waterloo, ON Canada. November.
 26. **Yu, D.** (presenter), Frischknecht, A., Kasten, S. J., Minter, R., & Armstrong, T. J. (2013). Technique variations among different surgeons and conditions: Using a hierarchical taxonomy to describe techniques that impact outcomes. *University of Michigan Engineering Graduate Symposium*. Ann Arbor, MI. November. (poster)
 27. **Yu, D.** (presenter). Human Factors in Surgery (2013). *Alpha Pi Mu*. Berkeley, CA. October. **(invited talk)**
 28. **Yu, D.** (presenter), Sena, M., Lotz, J., & Cheng, L. (2013). Sensitivity of Biomechanical Strength Analysis Software - Impact of Inaccuracies in Posture Inputs. *Applied Ergonomics Conference*. Dallas, TX. March.
 29. Sena, M. (presenter), **Yu, D.**, Lotz, J., & Cheng, L. (2013). Motion Tracking for Ergonomics? Rapid, Portable, and Low Cost? *Applied Ergonomics Conference*. Dallas, TX. March.

30. **Yu, D.** (presenter), Woolley C., Kasten, S., & Armstrong, T. (2013). Using perceived efforts and qualitative analysis to compare microsurgery displays. *International Symposium on Human Factors and Ergonomics in Health Care: Advancing the Cause*. Baltimore, MD. March. (poster)
 31. **Yu, D.** (presenter), Frischknecht, A., Kasten, S. J., Minter, R., Andreatta, P., & Armstrong, T. J. (2012). Towards standardization of surgical procedures: Best techniques for improving patient outcomes. *University of Michigan Engineering Graduate Symposium*. Ann Arbor, MI. November. (poster)
- First place, Oral presentation competition in Industrial and Operations Engineering and Financial Engineering**
32. **Yu, D.** (presenter). Improving surgical procedures with ergonomics (2012). *Liberty Mutual Research Institute for Safety*. Hopkinton, MA. October. **(invited talk)**
 33. **Yu, D.** (presenter), Frischknecht, A., Armstrong, T., Minter, R. & Kasten, S. (2012). Modeling technique in surgical procedures: A descriptive taxonomy for quantifying variations in surgical methods. *4th International Conference on Applied Human Factors and Ergonomics*. San Francisco, CA. July. (poster)
 34. **Yu, D.** (presenter), Sackllah, M., Woolley C., Kasten, S., & Armstrong, T. (2012). Evaluating equipment constraints in surgery. *XII International Symposium on 3D Analysis of Human Movement*. Bologna, Italy. July.
 35. **Yu, D.** (presenter), Frischknecht, A., Kasten, S.J., & Armstrong, T.J. (2012). Linking surgical technique to patient outcomes with ergonomics. *NSF Engineering Innovations Fellows Poster Session*. Washington, DC. May. (poster)
 36. **Yu, D.**, Frischknecht, A., Kasten, S., & Armstrong, T.J. (2012). Standardizing surgeon technique: finding critical variations for training and assessment. *Symposium on Human Factors and Ergonomics in Health Care: Bridging the Gap*. Baltimore, MD. March. (poster)
 37. Frischknecht, A. (presenter), **Yu, D.**, Armstrong, T.J., Minter, R., & Kasten, S. (2012). Linking Surgical Education and Patient Outcomes Using Video Analysis and Hierarchical Task Analysis of Surgical Technique. *Surgical Education Week*. San Diego, CA. March.
 38. **Yu, D.** (presenter), Kasten, S. J., & Armstrong, T. J. (2011). Applying Hierarchical Taxonomy for Methods Analysis of Microsurgery. *Applied Ergonomics Conference*. Orlando, FL. March.
 39. **Yu, D.** (presenter), Kasten, S.J., & Armstrong, T.J. (2011). Developing a hierarchical taxonomy for microvascular surgery. *University of Michigan School of Medicine Medical Education Day*. Ann Arbor, MI. June. (poster)
 40. **Yu, D.** (presenter), Frischknecht, A., Kasten, S. J., Minter, R., Andreatta, P., Green, C., & Armstrong, T. J. (2011). Standardizing surgeon technique: finding critical variations for training and assessment. *University of Michigan Engineering Graduate Symposium*. Ann Arbor, MI. November. (poster)
 41. **Yu, D.** (presenter), Kasten, S. J., & Armstrong, T. J. (2010). Hierarchical taxonomy for standardization of microvascular surgery. *4th Annual Engineering Graduate Symposium*. Ann Arbor, MI. November. (poster)

Features and White-papers

1. "ASSEF Fellows Conduct Biomechanics Investigations Related to Obesity and One-Handed Pulling." *From Research to Reality*. Volume 16, Number 2. Print.
2. "Graying Workplace." *Inside E Street*. American Association of Retired Persons (AARP). April 9, 2012. Television.

Teaching

Guest Lecturer – IE 4511/5511 Human Factors

University of Minnesota, Twin Cities, MN
Fall 2014, Fall 2015

Guest Lecturer – Ergonomics Principle Continuing Education Course

University of Michigan, Ann Arbor, MI
Summer 2014

Guest Lecturer – IOE836 Seminar in Human Performance

Department of Industrial and Operations Engineering, University of Michigan, Ann Arbor, MI
Fall 2013 and Fall 2011

Panel Chair – Preparing for the Qualifying Examinations Seminar, IOE 800 First-Year Doctoral Seminar,

Department of Industrial and Operations Engineering, University of Michigan
Fall 2013 and Fall 2012

Guest Lecturer – IOE463 Measurement and Design of Work

Department of Industrial and Operations Engineering, University of Michigan, Ann Arbor, MI
Winter 2012 and Winter 2011:

- ◊ Student Evaluations, Winter 2012 (5=excellent, 1=poor) = **4.52/5.00**

Panelist – Preparing for the Qualifying Examinations Seminar, IOE 800 First-Year Doctoral Seminar,

Department of Industrial and Operations Engineering, University of Michigan
Fall 2011

Certifications

2015-Present **Board of Certification in Professional Ergonomics (BCPE)**

- ◊ Associate Ergonomics Professional (AEP)

2014-Present **Mayo Clinic Quality Academy**

- ◊ Mayo Clinic Quality Fellow: Bronze Level Certification

Professional Affiliations

2011-Present **Human Factors and Ergonomics Society (HFES)**

- 2012-Present
 - ◊ Health Care Technical Group, Committee Member
 - ◊ Product Design Technical Group, Member
 - ◊ Industrial Ergonomics Technical Group, Member

- 2014-Present **Academy Health**, Member
- 2015-Present **Institute of Industrial Engineers**, Member
- 2012-2013 **International Society of Biomechanics**, Member

Leadership and Service Activities

- 2014-Present **Symposium on Human Factors and Ergonomics in Healthcare**
Committee Member for Clinical Care Settings Track
Session Chair: Teamwork and Performance
- 2011-Present **Journal and Proposal Reviewer**
- ◊ Applied Ergonomics
 - ◊ Ergonomics
 - ◊ Journal of Human Performance in Extreme Environments
 - ◊ Journal of Medical Devices
 - ◊ Human Factors
 - ◊ Human Factors and Ergonomics Society Annual Meeting
 - ◊ Symposium on Human Factors in Healthcare
 - ◊ International Journal of Human-Computer Studies
- 2012-2014 **OR/MS Tomorrow**, Informs Student Magazine
Editorial board member
- 2012-2014 **Department of Industrial and Operations Engineering**, University of Michigan
Graduate Student Co-coordinator
- ◊ Coordinate graduate student activities (i.e. Orientation, Welcome Picnic, Year-end Banquet)
 - ◊ Provide a direct link between the department administration and the graduate student body and communicate student body concerns to the department
 - ◊ Coordinate graduate students recruiting weekend with the department administration
- 2013-2014 **Department of Industrial and Operations Engineering**, University of Michigan
Graduate Student Advisory Committee
- 2014 **Symposium on Human Factors and Ergonomics in Healthcare**
Student Volunteer
- 2009-2014 **Human Factors and Ergonomics Society**, University of Michigan Student Chapter
 2013 **Professional Committee**
 2009-2010 **Treasurer**
- 2011-2013 **Human Factors and Ergonomics Society Annual Meeting**
 2013 **Session Chair: Product Design Wearables**
 2012, 2013 **Student Volunteer**

- 2012 and 2013 **Recruit-at-home**, University of Michigan College of Engineering
Recruiter
- ◊ Organized and staffed recruitment booth at University of California, Berkeley graduate school fair
 - ◊ Organized and presented university-wide information sessions
- 2013 **Applied Ergonomics Conference**, Institute of Industrial Engineers
Student Volunteer
- 2012 **Engineering Graduate Symposium**, University of Michigan College of Engineering
Session Chair: Industrial and Operations Engineering and Financial Engineering
- 2012 **I-Connect Program**, University of Michigan
Ambassador
- ◊ I-Connect Program offers assistance to incoming international graduate students and provides opportunities for cross-cultural exchange.
- 2010-2011 **Teaching Fellow**, University of Michigan
Fellow
- ◊ Provide supervisory help to Ypsilanti high school students to reinforce traditional learning pedagogy and present real-world examples of engineering
 - ◊ Design and teach physics laboratory experiments to incorporate engineering principles