Howard Chen

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Education

2017	Ph.D.	Industrial Engineering, University of Iowa
2012	M.S.	Industrial Engineering, University of Iowa
2010	B.S.	Mechanical Engineering, (*with Honors*) University of Iowa

Professional and Academic Positions

2019–Present	Assistant Research Professor, Department of Mechanical Engineering, Samuel Ginn College of Engineering, Auburn University
2017–2019	Postdoctoral Fellow, Department of Mechanical Engineering, Samuel Ginn College of Engineering, Auburn University
2013–2017	Graduate Research Assistant, Department of Occupational and Environmental Health, College of Public Health, University of Iowa
2011	Corporate Intern, Andersen Corporation, Bayport MN
2009–2013	Teaching Assistant, Department of Mechanical and Industrial Engineering, College of Engineering, University of Iowa
2008–2008	Corporate Intern, Caterpillar Inc., Peoria IL
2007–2013	Research Assistant, University of Iowa, Mechanical and Industrial Engineering, College of Engineering, University of Iowa
2007	Engineering Intern, Natural Source Energy Systems Inc., Northbrook, IL

Honors and Awards

2017	Harvard/Liberty Mutual Postdoctoral Fellowship in Occupational Safety and Health
2013–2017	NIOSH Fellow, Heartland Education and Research Center, University of Iowa
2013	Outstanding Graduate Student- Center for Computer-aided Design
2010	Outstanding Teaching Assistant- Univ. Iowa IIE Student Chapter

Teaching Assignments

MECH 6970: Software for Systems and Sensors (Instructor- S19, Co-instructor Su18)
-Instructed undergraduate and graduate Mechanical Engineering students on the basics of C++ Programming, Software repository, and Robot Operating System (ROS)
-Develop course materials and final project (new course development)

OEH:4310 Occupational Ergonomics I (Guest Lecture- F14, F15)
-Develop course materials for laboratory sessions
-Lead laboratory sessions for bio-instrumentation

ENGR:2760 Design for Manufacturing (Teaching Assistant- F09, S10, F10, S11, S12, F12, S13)
-Lead laboratory sessions pertaining to basic manufacturing processes and computer-aided design (Creo)
-Develop and revise course materials
-Facilitate final course project
-Grade written assignments, tests and projects
-Provide office hours for additional assistance
-Maintained machine shop equipment and inventory (CNC mills, lathes, sheet metal equipment)

IE:3400 Human Factors (Teaching Assistant- F11)
-Develop and revise course materials
-Grade weekly homework assignments, course projects, and tests

Peer-Reviewed Journal Articles

1. Fethke, N. B., Schall, M. C., Merlino, L. A., **Chen, H.**, Branch, C. A., & Ramaswamy, M. (2018). Whole-Body Vibration and Trunk Posture During Operation of Agricultural Machinery. *Annals of work exposures and health, 62*(9), 1123-1133.

2. **Chen, H.**, Schall Jr., M.C., & Fethke, N.B. (2018). Accuracy of Angular Displacements and Velocities from Inertial-based Inclinometers. *Applied Ergonomics, 67C,* 151-161.

3. Granzow, R. F., Schall Jr, M. C., Smidt, M. F., **Chen, H.**, Fethke, N. B., & Huangfu, R. (2018). Characterizing exposure to physical risk factors among reforestation hand planters in the Southeastern United States. *Applied Ergonomics, 66,* 1-8.

4. Schall Jr, M. C., Cullen, L., Pennathur, P., **Chen, H**., Burrell, K., & Matthews, G. (2017). Usability Evaluation and Implementation of a Health Information Technology Dashboard of Evidence-based Quality Indicators. *Cin: Computers, Informatics, Nursing, 35*(6), 281-288.

5. Schall Jr., M.C., Fethke, N.B., **Chen, H.** (2016). Working Postures and Physical Activity among Registered Nurses. *Applied Ergonomics*. 54, 243-250.

6. Schall Jr., M.C., Fethke, N.B., **Chen, H.** (2016). Evaluation of four sensor locations for physical activity assessment. *Applied Ergonomics*. 53, 103-109.

7. Schall Jr., M.C., Fethke, N.B., **Chen, H.**, Oyama, S., Douphrate, D.I. (2015). Accuracy and repeatability of an inertial measurement unit system for field-based occupational studies. *Ergonomics*. 59(4), 591-602.

8. Schall Jr., M.C., Fethke, N.B., **Chen, H.**, Gerr, F. (2015). A comparison of instrumentation methods to estimate thoracolumbar motion in field-based occupational studies. *Applied Ergonomics*. 48, 224-231.

9. Schall Jr., M.C., Fethke, N.B., **Chen, H.**, Kitzmann, A.S. (2014). A comparison of examination equipment used during common clinical ophthalmologic tasks. *IIE Transactions on Occupational Ergonomics and Human Factors*, 2 (2), 105-117.

10. Ozbolat, I.T., **Chen, H.**, Yu, Y. (2014) Development of 'Multi-arm Bioprinter' for Hybrid Biofabrication of Tissue Engineering Constructs. *Robotics and Computer-integrated Manufacturing*, 30(3), 295-304

11. Zhang, Y., Yu, Y., **Chen, H.**, & Ozbolat, I. T. (2013). Characterization of printable cellular micro-fluidic channels for tissue engineering. *Biofabrication*,*5*(2), 025004.

Peer-Reviewed Conference Proceedings and Published Abstracts

1. Garnett, R. F., Davis, G. A., Sesek, R. F., Gallagher, S., Schall, M. C., & **Chen, H**. Evaluating an Inertial Measurement Unit Based System for After-Reach Speed Measurement in Power Press Applications. *Proceedings of the AHFE 2018 International Conferences on Human Factors and Wearable Technologies, and Human Factors in Game Design and Virtual Environments*. 2018 July 21-25; Orlando, FL.

2. **Chen, H**., Schall Jr., M.C., Fethke, N.B. Effects of Movement Speed and Magnetic Disturbance on the Accuracy of Inertial Measurement Units. *Proceedings of the Human Factors and Ergonomics Society* 61*th Annual Meeting.* 2017 October 9-13; Austin, TX.

3. Granzow, R., Schall Jr., M.C., Smidt, M., **Chen, H.**, Fethke, N.B. Full Shift Physical Activity among Reforestation Hand Planters: A Feasibility Study. *Proceedings of the Human Factors and Ergonomics Society* 60*th Annual Meeting.* 2016 September 19-23; Washington, DC.

4. Schall Jr., M.C., Fethke, N.B., **Chen, H.** Comparing Fatigue, Physical Activity, and Posture among Nurses in Two Staffing Models. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. 2015 October 26-30; Los Angeles, CA. (pp. 1269- 1273).

5. Schall Jr., M.C., **Chen, H.**, Pennathur, P., Cullen, L. Development and Evaluation of a Health Information Technology Dashboard of Quality Indicators. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. 2015 October 26-30; Los Angeles, CA. (pp. 461-465).

6. Schall Jr., M.C., Cullen, L., Pennathur, P., **Chen, H.**, Burrell, K., Matthews, G. Implementing Evidence-based Quality Indicators into a Health Information Technology Dashboard. *4th Annual Improving Primary Care Through Industrial and Systems Engineering (I-PrACTISE) Conference*; 2016 April 24-26; Madison, WI.

7. **Chen, H.**, Ozbolat, I. T. Development of a Multi-Arm Bioprinter for Hybrid Tissue Engineering. *ASME 2013 International Manufacturing Science and Engineering Conference*. 2013 June 10-14; Madison, WI. (pp. V001T01A005-V001T01A005).

8. **Chen, H.**, Ozbolat, I. T. A multi-material bioprinting platform towards stratified articular cartilage tissue fabrication. *Proceedings of the Industrial and Systems Engineering Research Conference*. 2013 May 18-22; San Juan, Puerto Rico. (pp. 2246-2252).

9. Zhang, Y., **Chen, H.**, Ozbolat, I.T. Characterization of Printable Micro-fludic Channels for Organ Printing. *International Mechanical Engineering Congress & Exposition*. 2012 Nov 9-15, Houston, TX. (pp. 553-558).

10. Thomas, G., Polgreen, P., Herman, T., Sharma, D., Johns, B., **Chen, H.**, ... & Decker, T. Improving patient safety with hand hygiene compliance monitoring. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. 2011 Sep 19-23, Las Vegas, NV. (pp. 823-827).

Conference Presentations/Posters and Invited Lectures

1. **Chen H**, Schall Jr MC, Fethke NB. Identification of Magnetically-disturbed Data Segments Using Inertial Measurement Units. (2018). *20th Congress International Ergonomics Association*. 2018 August 26-30; Florence, ITA

2. **Chen, H**., Schall Jr., M.C., Fethke, N.B. Effects of Movement Speed and Magnetic Disturbance on the Accuracy of Inertial Measurement Units. *Proceedings of the Human Factors and Ergonomics Society* 61*th Annual Meeting.* 2017 October 9-13; Austin, TX.

3. **Chen, H.**, Schall Jr., M.C., Fethke, N.B. Characterizing Errors of Inertial Measurement Units. *National Occupational Research Agenda (NORA) Symposium*; 2016 May 4, Minneapolis, MN.

4. **Chen, H.**, Schall Jr., M.C., Fethke, N.B. Characterizing Operable Conditions of Inertial Measurement Units: Preliminary Results. *1st Annual Occupational Health and Safety Research Conference*. 2016 April 1; Iowa City, IA.

5. Schall Jr., M.C., Fethke, N.B., Ramaswamy, M., **Chen, H.**, Branch, C., Merlino, L., Watabe, J., Gerr, F. Whole-body vibration among agriculture workers performing common agricultural activities. *International Society for Agricultural Safety and Health*; 2015 June 21-24; Normal, IL.

6. **Chen, H.**, Merlino, L., Branch, C., Schall Jr., M.C., Gerr, F., Fethke, N.B. Seasonal effects of common farm tasks on the experience of low back pain. *International Society for Agricultural Safety and Health*; 2015 June 21-24; Normal, IL.

7. Schall Jr., M.C., **Chen, H.**, Cullen, L., Pennathur, P., Matthews, G., Burrell, K., May, N. Human Factors Considerations for a Health Information Technology Dashboard of Evidence-Based Quality Indicators. *22nd National Evidence-Based Practice Conference: Nursing Workload Balance—Quality Care and Staff Wellness*; 2015 April 23-24; Coralville, IA.

8. **Chen, H.**, Schall Jr., M.C., Fethke, N.B., Oyama, S., Douphrate, D. Inertial Measurement Units for Wrist Posture Measurement: A Pilot Study. *13th Annual National Occupational Research Agenda (NORA) Young/New Investigators Symposium*; 2015 April 16-17; Salt Lake City, UT.

9. Schall Jr., M.C., **Chen, H.**, Merlino, L., Gerr, F., Fethke, N.B. A prospective study of musculoskeletal symptoms among agricultural workers in the Midwest region of the United States. *7th International Symposium: Safety & Health in Agricultural & Rural Populations: Global Perspectives (SHARP)*; 2014 October 19-22; Saskatoon, Saskatchewan.

10. Douphrate, D.I., Fethke, N.B., Hagevoort, R., Nonnennmann, M., Gimeno, D., Marshall, A., Schall Jr., M.C., **Chen, H.**, Mixco, A., Reynolds, S. Task-specific & full-shift sampling of upper extremity muscle activity among US large-herd dairy parlor workers. *7th International Symposium: Safety &*

Health in Agricultural & Rural Populations: Global Perspectives (SHARP); 2014 October 19-22; Saskatoon, Saskatchewan.

11. **Chen, H.** "Graduate Research & Continuing Education" Invent Your Future Symposium (Hosted by Alpha Pi Mu IE Honor Society). University of Iowa. 2014 May 1; Iowa City, IA

12. **Chen, H.**, Ozbolat, I. T. Development of a Multi-Arm Bioprinter for Hybrid Tissue Engineering. *ASME 2013 International Manufacturing Science and Engineering Conference*. 2013 June 10-14; Madison, WI. (pp. V001T01A005-V001T01A005).

Patents

1. Ozbolat, I.T., **Chen, H.**, Yin, Y., Zhang, Y., Zavazava, Hong, L., Salaam, A.K., Akkouch, A., Moncal, K.K. (2016). Bioprinter and Methods of using Same, Patent Number: 15034004. Academic, United States of America. (assignee: University of Iowa)

Sponsored Research

Characterizing Operable Conditions for Inertial Measurement Units 07/01/2015–06/30/2016
CDC/NIOSH Heartland Education and Research Center *$15,000*
Role: Principal Investigator

Inertial Measurement Unit as a Tool for Simultaneous Worker Health Protection and Promotion 07/01/2014–06/30/2015 *$29,108*
CDC/NIOSH Healthier Workface Center for Excellence
Role: Co-Investigator PI: Schall Jr., Mark

Service

Referee for Peer-Reviewed Journals
-Applied Ergonomics
-Sensors
-Annals of Work Exposures and Health
-Journal of Biomechanics

Referee for Peer-Reviewed Grant Applications
-Pilot Projects Research Training Program, NIOSH Southwest Center for Occupational and Environmental Health (2018-Present)