

# SCOTT A. KUHL

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Department of Computer Science · 1400 Townsend Drive · Houghton, MI 49931

## EDUCATION

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**University of Utah**, School of Computing, Salt Lake City, UT  
*Ph.D. in Computer Science* August 2009  
**Augsburg College**, Minneapolis, MN  
*B.S. in Computer Science* May 2004  
*B.A. in Mathematics* May 2004  
Magna cum laude, Honors Program graduate, Computer Science departmental honors

## PROFESSIONAL EXPERIENCE

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**Associate Professor** May 2015 – Present  
*Department of Computer Science, Michigan Technological University, Houghton, MI*

**Affiliated Associate Professor** May 2015 – Present  
*Department of Cognitive and Learning Sciences, Michigan Technological University, Houghton, MI*

**Participating Faculty** Spring 2015 – Present  
*ACIA Research Institute of Computing and Cybersystems (ICC), Michigan Technological University, Houghton, MI*

**Assistant Professor** August 2009 – May 2015  
*Department of Computer Science, Michigan Technological University, Houghton, MI*

**Affiliated Assistant Professor** Fall 2010 – May 2015  
*Department of Cognitive and Learning Sciences, Michigan Technological University, Houghton, MI*

**Research Assistant** July 2004 – August 2009  
*School of Computing, University of Utah, Salt Lake City, UT*  
Under the guidance of Prof. William B. Thompson and Prof. Sarah H. Creem-Regehr

**Research Assistant** May 2001 – July 2004  
*Augsburg College, Minneapolis, MN*

## RESEARCH INTERESTS

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Immersive virtual environments, human-computer interaction, computer graphics, visual perception

## PUBLICATIONS

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Some publications are available at <https://pages.mtu.edu/~kuhl/>. Citation counts are from Google Scholar. Key: Advised graduate student, Advised undergraduate student.

### Refereed Journal Publications:

- Aleksandr Sergeev, Nasser Alaraje, **Scott Kuhl**, Michael Meyer, Mark Kinney, and Mark Highum. A university, community college, and industry partnership: Revamping robotics education to meet 21st century workforce needs and technology programs. *The Technology Interface International Journal (TIIJ)*, 16(1):59–69, Fall/Winter 2015
- Aleksandr Sergeev, Nasser Alaraje, **Scott Kuhl**, Kurt Kalenauskas, and Bochao Li. Open source, multi-level, interactive programmable logic controller software development for high school students, two and four year colleges, and displaced workers. *The Technology Interface International Journal (TIIJ)*, 15(1), Fall/Winter 2014. Also presented at the 2014 IAJC/ISAM Joint International Conference (acceptance rate: 22%).
- Ruimin Zhang, Anthony Nordman, James Walker, and **Scott A. Kuhl**. Minification affects verbal and action-based distance judgments differently in head-mounted displays. *ACM Transactions on Applied Perception*, 9(3), 2012. doi:10.1145/2325722.2325727. Presented at the 2012 ACM Symposium on Applied Perception. (Conference acceptance rate: 52%; Approximately a quarter of the papers accepted at the conference were published as journal articles). *Cited by 17*.
- Frank Steinicke, Gerd Bruder, and **Scott Kuhl**. Realistic perspective projections for virtual objects and environments. *ACM Transactions on Graphics*, 30(5):112:1–112:10, October 2011. doi:10.1145/2019627.2019631. Presented at SIGGRAPH 2012. *Cited by 20*.
- Frank Steinicke, Gerd Bruder, **Scott Kuhl**, Pete Willemsen, Markus Lappe, and Klaus H. Hinrichs. Natural perspective projections for head-mounted displays. *IEEE Transactions on Visualization and Computer Graphics*, 17(7):888–899, July 2011. doi:10.1109/TVCG.2010.248. *Cited by 21*.
- **Scott A. Kuhl**, William B. Thompson, and Sarah H. Creem-Regehr. HMD calibration and its effects on distance judgments. *ACM Transactions on Applied Perception*, 6(3):19:1–19:20, 2009. doi:1577755.1577762. *Cited by 90*.
- **Scott A. Kuhl**, Sarah H. Creem-Regehr, and William B. Thompson. Recalibration of rotational locomotion in immersive virtual environments. *ACM Transactions on Applied Perception*, 5(3): 17:1–17:11, 2008. doi:10.1145/1402236.1402241. *Cited by 13*.

### Refereed Conference Publications:

- Joshua B. Hooker, Vincent Druschke, **Scott A. Kuhl**, Aleksandr Sergeev, Siddharth Yogesh Parmar, Mark Bradley Kinney, Nasser Alaraje, and Mark Highum. Enhancing Industrial Robotics Education with Open-source Software. *ASEE Annual Conference & Exposition*. 2017. (in press)
- Aleksandr Sergeev, A. Nasser Alaraje, **Scott A. Kuhl**, Siddharth Parmar, Vincent Druschke, Joshua Hooker. Promoting Industrial Robotics Education by Curriculum, Robotic Simulation Software, and Advanced Robotic Workcell Development and Implementation. *IEEE International Systems Conference (SysCon)* 2017. (In press).

- James Walker, Bochao Li, Keith Vertanen, and **Scott Kuhl**. Efficient typing on a visually occluded physical keyboard. In *Proc. 2017 ACM CHI Conference on Human Factors in Computing Systems*, CHI '17, pages 5457–5461, New York, NY, USA, 2017. ACM. ISBN 9781-450-3465-5-9. doi:10.1145/3025453.3025783. URL <http://doi.acm.org/10.1145/3025453.3025783>
- Bochao Li, Anthony Nordman, James Walker, and **Scott A. Kuhl**. The effects of artificially reduced field of view and peripheral frame stimulation on distance judgments in HMDs. In *Proceedings of the ACM Symposium on Applied Perception*, SAP '16, pages 53–56, New York, NY, USA, 2016. ACM. ISBN 9781-450-3438-3-1. doi:10.1145/2931002.2931013. URL <http://doi.acm.org/10.1145/2931002.2931013>
- Aleksandr Sergeyev, A. Nasser Alaraje, **Scott A. Kuhl**. Filling the Gap between Industry and Academia: Teaching Critical Skills in Automation and Control using Developed, Open-Source Programmable Logic Controller Software. *Proc. ATMAE Annual Conference 2016*. Orlando, Florida. November 2016. **Best ATMAE Conference Proceedings Paper**.
- **Scott A Kuhl**, Aleksandr Sergeyev, James Walker, Shashank Barkur Lakshmikanth, Mark Highum, Nasser Alaraje, Ruimin Zhang, and Mark Bradley Kinney. Enabling affordable industrial robotics education through simulation. In *2016 ASEE Annual Conference & Exposition*, New Orleans, Louisiana, June 2016. ASEE Conferences. doi:10.18260/p.26949
- Aleksandr Sergeyev, Nasser Alaraje, **Scott A Kuhl**, and Bochao Li. Culminating phase of open source programmable logic controller software development initiative for high school students, two- and four-year colleges, and displaced workers. In *2016 ASEE Annual Conference & Exposition*, New Orleans, Louisiana, June 2016. ASEE Conferences. doi:10.18260/p.26617
- Mark Bradley Kinney, Aleksandr Sergeyev, **Scott A Kuhl**, and Mark Norman Highum. Creating pathways to stackable credentials in robotics: Meeting industry needs by manufacturing a community college and university partnership. In *2016 ASEE Annual Conference & Exposition*, New Orleans, Louisiana, June 2016. ASEE Conferences. doi:10.18260/p.26605
- Aleksandr Sergeyev, Nasser Alaraje, **Scott Kuhl**, Michael Meyer, Mark Kinney, Mark Highum. Innovative Curriculum Model Development in Robotics Education to Meet 21st Century Workforce Needs. *ASEE Zone III Meeting 2015*.
- Bochao Li, Ruimin Zhang, Anthony Nordman, and **Scott A. Kuhl**. The effects of minification and display field of view on distance judgments in real and HMD-based environments. In *Proceedings of the ACM SIGGRAPH Symposium on Applied Perception*, SAP '15, pages 55–58, New York, NY, USA, 2015. ACM. ISBN 9781-450-3381-2-7. doi:10.1145/2804408.2804427 (Acceptance rate: 48%).
- Ruimin Zhang and **Scott A. Kuhl**. Human sensitivity to dynamic rotation gains in head-mounted displays. In *Proc. ACM Symposium on Applied Perception*, SAP '13, pages 71–74, New York, NY, USA, 2013. ACM. ISBN 9781-450-3226-2-1. doi:10.1145/2492494.2492514 (Paper acceptance rate: 29%).
- Bochao Li, Ruimin Zhang, and **Scott Kuhl**. Minification affects action-based distance judgments in Oculus Rift HMDs. In *Proc. of the ACM Symposium on Applied Perception*, SAP '14, pages 91–94, New York, NY, USA, 2014. ACM. ISBN 9781-450-3300-9-1. doi:10.1145/2628257.2628273. URL <http://doi.acm.org/10.1145/2628257.2628273> (Acceptance rate: 46%)

- **Scott A. Kuhl**, Robert Pastel, Ryan George, Chad M. Meyers, Matthew L. Freitag, Jacob M. Lund, and Michael Paul Stefaniak. Teaching interdisciplinary teamwork through hands-on game development. In *ASEE Annual Conference*. American Society for Engineering Education, 2014. URL <http://www.asee.org/public/conferences/32/papers/9626/view>
- Jun Ma, James Walker, Chaoli Wang, **Scott Kuhl**, and Ching Kuang Shene. FlowTour: An automatic guide for exploring internal flow features. In *Pacific Visualization Symposium (PacificVis)*, 2014 IEEE, pages 25–32, March 2014. doi:10.1109/PacificVis.2014.14 (Acceptance rate: 29.3%) Cited by 7.
- Myoungsoon Jeon, Michael T. Smith, James W. Walker, and **Scott A. Kuhl**. Constructing the immersive interactive sonification platform (iISoP). In Norbert Streitz and Panos Markopoulos, editors, *Distributed, Ambient, and Pervasive Interactions*, volume 8530 of *Lecture Notes in Computer Science*, pages 337–348. Springer International Publishing, 2014. ISBN 978-3-319-07787-1. doi:10.1007/978-3-319-07788-8\_32 (Accepted for presentation at HCI International 2014.) Cited by 6.
- Ruimin Zhang and **Scott A. Kuhl**. Human sensitivity to dynamic rotation gains in head-mounted displays. In *Proc. ACM Symposium on Applied Perception, SAP '13*, pages 71–74, New York, NY, USA, 2013. ACM. ISBN 9781-450-3226-2-1. doi:10.1145/2492494.2492514 Cited by 5. (Conference acceptance rate: 41%)
- Frank Steinicke, Gerd Bruder, Klaus Hinrichs, **Scott Kuhl**, Markus Lappe, and Pete Willemsen. Judgment of natural perspective projections in head-mounted display environments. In *Proc. 16th ACM Symposium on Virtual Reality Software and Technology (VRST)*, pages 35–42, 2009. doi:10.1145/1643928.1643940. **Award: Best full paper.** (Conference acceptance rate: 28%). Cited by 18.
- **Scott A. Kuhl**, William B. Thompson, and Sarah H. Creem-Regehr. HMD calibration and its effects on distance judgments. In *Proc. ACM SIGGRAPH Symposium on Applied Perception in Graphics and Visualization*, pages 15–22, August 2008. doi:10.1145/1394281.1394284. (Conference acceptance rate: 37%).
- **Scott A. Kuhl**, William B. Thompson, and Sarah H. Creem-Regehr. Minification influences spatial judgments in virtual environments. In *Proc. ACM SIGGRAPH Symposium on Applied Perception in Graphics and Visualization*, pages 15–19, New York, NY, 2006. ACM. doi:10.1145/1140491.1140494. (Conference acceptance rate: 44%) Cited by 25.
- **Scott A. Kuhl**. Recalibration of rotational locomotion in immersive virtual environments. In *Proc. ACM SIGGRAPH Symposium on Applied Perception in Graphics and Visualization*, pages 23–26, August 2004. doi:10.1145/1012551.1012555. (Conference acceptance rate: 55%) Cited by 6.
- **Scott A. Kuhl** and Karen T. Sutherland. Self localization in virtual environments using visual angles. In *Proc. ACM SIGGRAPH International Conference on Virtual Reality Continuum and its Applications in Industry*, pages 472–475, 2004. doi:10.1145/1044588.1044692.

#### Refereed Abstracts & Posters:

- Ruimin Zhang, James Walker, **Scott Kuhl**. “Improving Redirection with Dynamic Reorientations and Gains.” *Proc. ACM Symposium on Applied Perception*. September 2015.

- James Walker, Jun Ma, **Scott A. Kuhl** and Chaoli Wang. “An Evaluation of Flow Field Visualization with Internal Views.” *ACM Symposium on Applied Perception*. August 2013.
- Ruimin Zhang and **Scott Kuhl**. “Flexible and general redirected walking for head-mounted displays.” *IEEE Virtual Reality conference 2013*. pp. 127–128. March 2013.
- James Walker, Ruimin Zhang, and **Scott A. Kuhl**. Minification and gap affordances in head-mounted displays. In *Proc. ACM SIGGRAPH Symposium on Applied Perception*, pages 124–124, New York, NY, 2012. ACM. doi:10.1145/2338676.2338706. Ranked 3rd best poster out of 13.
- Frank Steinicke, Gerd Bruder, and **Scott Kuhl**, “Perception of Perspective Distortions for Man-Made Virtual Objects,” Presented as a poster at *ACM SIGGRAPH (International Conference on Computer Graphics and Interactive Techniques)*. Los Angeles, CA. July 2010.
- **Scott A. Kuhl**, William B. Thompson, and Sarah H. Creem-Regehr, “Angle of declination manipulations and their effects on distance judgments in virtual environments,” Presented as a poster at *Vision Sciences Society*, published in *Journal of Vision* 8(6), p. 751. May 2008.
- **Scott A. Kuhl**, Sarah H. Creem-Regehr, and William B. Thompson, “Individual differences in accuracy of direct blind walking to targets on the floor,” Presented as a poster at *Vision Sciences Society*, published in *Journal of Vision* 6(6), p. 726. May 2006.

**Non-refereed Conference, Workshop, and Poster Papers or Abstracts:**

- Mark Bradley Kinney, Aleksandr Sergeyeve, **Scott A. Kuhl**, and Mark Norman Highum. Creating Pathways to Stackable Credentials in Robotics: Meeting Industry Needs by Manufacturing a Community College and University Partnership: Year Two Progress. *ASEE Annual Conference & Exposition*. 2017. (in press)
- Aleksandr Sergeyeve, Nasser Alaraje, **Scott Kuhl**, Mark Highum, Mark Bradley Kinney, James Walker. “Revamping Robotics Education via University, Community College and Industry Partnership - Year 1 Project Progress,” ASEE Annual Conference & Exposition, NSF Grantees Poster Session. New Orleans, Louisiana. June 2016.
- Ruimin Zhang and **Scott Kuhl**. “Flexible and general redirected walking for head-mounted displays.” Poster at *Michigan Celebration of Women In Computing (MICWIC) conference*. Grand Rapids, MI. March 2013.
- Anthony Nordman, James Walker, and **Scott Kuhl**, “The Effects Of Minification On Gap Affordance Judgments As Measured By Hand Spread,” Presentation at *The Mid-West Graphics Workshop (MIDGRAPH)*. Chicago. December 2012.
- Ruimin Zhang and **Scott Kuhl**, “Flexible and general redirected walking for head-mounted displays” Presentation at *The Mid-West Graphics Workshop (MIDGRAPH)*. Chicago. December 2012.
- **Scott Kuhl** and Ruimin Zhang, “Why does minification influence distance judgments in HMDs?” Presentation at *The Mid-West Graphics Workshop (MIDGRAPH)*. Iowa City, Iowa. December 2011.

- Ruimin Zhang, Harriet King, and **Scott Kuhl**, “A webcam based face tracking game,” Presented as a poster at *Michigan Celebration of Women In Computing (MICWIC) conference*. Auburn Hills, MI. April 2011.
- Gerd Bruder, Frank Steinicke, Klaus Hinrichs, Markus Lappe, **Scott Kuhl**, Pete Willemsen, “How Would Users Adjust the Perspective in Head-Mounted Display Environments?” In *Proceedings of the 2nd IEEE VR 2010 Workshop on Perceptual Illusions in Virtual Environments*, Singapore. March 2010.

## FUNDING

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### Funded proposals & projects

- Aleksandr Sergeyev (PI), Mark Highum (Co-PI), Mark Kinney (Co-PI), **Scott Kuhl** (Co-PI), Abdunnasser Alaraje (Co-PI), “University, Community College and Industry Partnership: Revamping Robotics Education to Meet 21st Century Workforce Needs,” National Science Foundation (Division Of Undergraduate Education); DUE-1501335; June 2015 – May 2018; \$702,324.
- **Scott Kuhl** (PI), Nilufer Onder (Co-PI), Laura Brown (Co-PI). Jackson National Life Insurance Company Sponsorship of the Computer Science Department’s BonzAI Brawl 2014. \$2,000.
- **Scott Kuhl** (PI), Aleksandr Sergeyev (Co-PI) and A. Nasser Alaraje (Co-PI), “PLC education through simulation and games,” Subcontractor to Bay College of Escanaba as a part of Department of Labor Trade Adjustment Assistance Community College and Career Training Grants Program. Michigan Tech’s subcontract: \$246,173; entire award to community colleges in the consortium: \$24,999,863. <http://www.dol.gov/opa/media/press/eta/eta20131932.htm>
- **Scott Kuhl** (PI), Rick Berkey (Co-PI). “RAM Truck Towing Simulation for K-12 Outreach,” Chrysler. September 9, 2013–May 4, 2014. \$26,022. This project supported a team of Husky Game Development Enterprise students who developed an Android-based tablet game featuring RAM trucks that would be used for K-12 STEM outreach.
- Nilufer Onder (PI), Laura Brown (Co-PI), **Scott Kuhl** (Co-PI). Jackson National Life Insurance Company Sponsorship of the Computer Science Department’s BonzAI Brawl 2013. \$2,000.
- Saeid Nooshabadi (PI), Chaoli Wang (Co-PI), **Scott Kuhl** (Co-PI), “MRI: Development of Infrastructure for Research in Multi-View Video, Graphics, Visualization and Immersive Virtual Environment Systems,” National Science Foundation (Division of Computer and Network Systems); CNS-1229297; September 1, 2012–August 31, 2013; \$300,000. <http://www.nsf.gov/awardsearch/showAward.do?AwardNumber=1229297>.
- **Scott Kuhl** (PI), “Enhancing interdisciplinary research in virtual environments and human perception through mentoring,” Michigan Technological University Research Excellence Fund (Mentoring Grant). July 2011–August 2012.

## INVITED TALKS & PANELS

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- Panel: “Perception and Action in Virtual Reality with New Commodity Level Equipment: What is New and Different?” IEEE VR 2017. (Invited panelist).
- “Improving Human-Computer Interaction in Head-Mounted Displays.” SAE 2016 World Congress and Exhibition. Detroit, Michigan. April 13, 2016.
- “Improving spatial judgments in head-mounted displays with minification.” Vanderbilt University. August 29, 2012.
- Friday Colloquium at Max Planck Institute for Biological Cybernetics. “Geometric distortions and distance judgments in virtual environments.” Tübingen, Germany. August 2011.
- Center for Computer Systems Research seminar at Michigan Tech. “Immersive virtual environments: Limitations and solutions.” April 2011.
- NSF Computer Science, Engineering, and Mathematics (CSEM) Scholarship Seminar at Augsburg College. “Human Perception and Improving Virtual Environments” and “Why you should (and shouldn’t) go to graduate school.” Minneapolis, MN. February 2006.

## TEACHING EXPERIENCE

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*Department of Computer Science, Michigan Technological University, Houghton, MI* Fall 2009–Present  
Undergraduate directed studies and graduate research credits are not included in the course listing below.

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|--|--------------------------------|
| ○ <b>Husky Game Development</b>  | Fall 2017 ( <b>scheduled</b> ) |
| ○ CS4611 - <b>Computer Graphics</b>  | Fall 2017 ( <b>scheduled</b> ) |
| ○ CS5641 - <b>Immersive Virtual Environments</b>   | Spring 2017                    |
| ○ <b>Husky Game Development</b><br>ENT1960,2950,2960,3950,3960,4900,4910,4950,4960,5950,5960 | Spring 2017                    |
| ○ CS4611 - <b>Computer Graphics</b>  | Fall 2016                      |
| ○ <b>Husky Game Development</b><br>ENT1960,2950,2960,3950,3960,4900,4910,4950,4960,5950,5960 | Fall 2016                      |
| ○ CS3411 - <b>Systems Programming</b>  | Spring 2016                    |
| ○ CS5641 - <b>Immersive Virtual Environments</b>   | Spring 2016                    |
| ○ <b>Husky Game Development</b><br>ENT1960,2950,2960,3950,3960,4900,4910,4950,4960,5950,5960 | Spring 2016                    |
| ○ CS4611 - <b>Computer Graphics</b>  | Fall 2015                      |
| ○ <b>Husky Game Development</b><br>ENT1960,2950,2960,3950,3960,4900,4910,4950,4960,5950,5960 | Fall 2015                      |
| ○ CS4461 - <b>Computer Networking</b>  | Spring 2015                    |
| ○ CS5641 - <b>Immersive Virtual Environments</b>   | Spring 2015                    |

- **Husky Game Development** Spring 2015  
ENT1960,2950,2960,3950,3960,4900,4910,4950,4960,5950,5960
- CS4611 - **Computer Graphics** Fall 2014  
Removed all deprecated OpenGL material from the course curriculum and focused the course solely on OpenGL 3.0 and higher. Developed a new software framework that students can use in the course which allows them to write traditional OpenGL programs for desktops and laptops but to also run their software on the Immersive Visualization Studio display wall and head-mounted displays with little additional effort. Code is available at <https://github.com/skuhl/opengl-examples>.
- **Husky Game Development** Fall 2014  
ENT1960,2950,2960,3950,3960,4900,4910,4950,4960,5950,5960  
Nine teams began work on a variety of new and continuing projects. Sponsored projects from Chrysler and Bay College/Department of Labor will be continued. We also began seven new projects including development for the BonzAI 2015 programming competition, a tablet game for an alumnus, and a game utilizing the Oculus Rift and the Immersive Visualization Studio display wall.
- CS4461 - **Computer Networking** Spring 2014
- CS5641 - **Immersive Virtual Environments** Spring 2014
- **Husky Game Development** Spring 2014  
ENT1960,2950,2960,3950,3960,4900,4910,4950,4960
- CS3411 - **Systems Programming** Fall 2013  
I developed new lecture materials to supplement materials that other faculty had developed for the course previously. I developed numerous simple C programs to demonstrate different topics to students in the course (available at <https://github.com/skuhl/sys-prog-examples>). I also developed an automatic grading system from scratch in Python to test the C programs students submitted (available at <https://github.com/skuhl/autograder>).
- **Husky Game Development** Fall 2013  
ENT1960,2950,2960,3950,3960,4900,4910,4950,4960  
We began work on several notable projects: A team of students began developing the software to be used in BonzAI Brawl 2014; we began organizing a team of students to work on an educational PLC website as a part of a project with Bay College and the Department of Labor; a team of students began development of game for the display wall in the Immersive Visualization Studio; a team documented methods to both record 3D movement using the Immersive Visualization Studio tracking system and use the movements to drive characters in a game; and a team began a game based on copper mining in the area for the Keweenaw Heritage Center in Calumet, MI.
- CS4461 - **Computer Networking** Spring 2013
- CS5090 - **Special Topics: Virtual Environments** Spring 2013
- **Husky Game Development** Spring 2013  
ENT1960,2950,2960,3950,3960,4900,4910,4950,4960
- CS4611 - **Computer Graphics** Fall 2012  
Changed to a more modern textbook, removed a large amount of deprecated OpenGL material from the curriculum, added a basic raytracing assignment, increased emphasis on GPU shaders.

- **Husky Game Development** Fall 2012  
ENT1960,2950,2960,3950,3960,4900,4910,4950,4960 · With over 40 students, Husky Game Development has become one of the larger Enterprises on campus. Students began work on seven different projects including the software infrastructure necessary for the BonzAI programming contest. Released games developed in the previous year on <http://huskygames.com>.
- CS4461 - **Computer Networking** Spring 2012  
Changed the course to a different textbook.
- CS5090 - **Special Topics: Virtual Environments** Spring 2012
- **Husky Game Development** Spring 2012  
ENT1960,2950,2960,3950,3960,4900,4910,4950,4960
- **Husky Game Development** Fall 2011  
ENT1960,2950,2960,3950,3960,4900,4910,4950,4960
- **Husky Game Development** Spring 2010  
ENT1960,2950,2960,3950,3960,4900,4910,4950,4960 · Released a game on the XBox Live Marketplace; Co-advised with Robert Pastel
- CS4461 - **Computer Networking** Spring 2011  
Added additional coverage of IPv6
- CS5090 - **Special Topics: Virtual Environments** Spring 2011  
Developed all of the materials for the course
- CS4611 - **Computer Graphics** Fall 2010
- CS4461 - **Computer Networking** Spring 2010
- CS4611 - **Computer Graphics** Fall 2009

### Other Teaching Experience

- CS1021 - **Introduction to Java** - Instructor Fall 2008  
*School of Computing, University of Utah, Salt Lake City, UT*  
Lectured and held labs for Introduction to Java for non-CS majors; graded assignments, held office hours, and developed assignments and lectures
- **Learning in Style Adult Immigration Education Center** September 2003 – December 2003  
Helped adult immigrants learn basic English and computer skills

## ADVISING

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### Ph.D. students advised:

- Bochao Li Completed April 2017
- James Walker Completed April 2017
- Ruimin “Judy” Zhang Completed April 2016
- Andrew Korzeniewski Fall 2010–Spring 2011

### Ph.D. committees:

- Ridwan Ahmed Khan Spring 2016–present
- Yifei Li Completed Dec. 2015
- Margo M. Woller-Carter, *Applied Cognitive Science and Human Factors* Completed Dec. 2015
- Jun Ma Completed May 2015

**M.S. committees:**

- Siddharth Parmar, *Mechanical Engineering* Completed April 2017
- Shashank Barkur Lakshmikanth, *Mechanical Engineering* Completed Dec. 2015
- Huan Zhang Completed April 2012

**SOFTWARE**

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- **OpenGL examples** · A collection of OpenGL programs which includes support for loading 3D models, tracking systems, and HMDs. This software was originally developed for use in both OpenGL graphics courses and for research. <https://github.com/skuhl/opengl-examples>
- **makelatem** · A set of Python scripts which simplifies compilation of  $\LaTeX$  documents. <https://github.com/skuhl/makelatem>
- **autograder** · A set of Python scripts which downloads student submissions from Instructure Canvas, automatically compiles and grades programs, and emails reports back to students. <https://github.com/skuhl/autograder>
- **Pincushion correction software** · This software was developed as a part of my Ph.D. research and has served as a basis for other implementations of pincushion correction software.

**SERVICE**

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- **Computer Science TPR Committee** Fall 2015–present
- **BonzAI Programming Contest, faculty co-advisor** 2012–present  
<http://bonzai.cs.mtu.edu>
- **Advisor to Husky Game Development Enterprise** Spring 2011–present  
*Pavlis Honors College at Michigan Tech*  
Husky Game Development (HGD) Enterprise is one of the first Enterprises on campus to sell a product and one of the largest of the 25 Enterprises on campus. We've grown from nearly 30 students in Fall 2011 and have had over 50 students enrolled every semester since Fall 2013. In recent semesters, approximately 1 out of 7 CS students at Michigan Tech have elected to enroll in HGD. HGD is a truly interdisciplinary environment which includes non-CS majors who focus on art, sound design, or other areas. All students enrolled are assigned to small teams and attempt to create a video game over the course of a school year. Student managers in HGD take an active role and work with the advisor to ensure the overall success of HGD. HGD teams have worked on sponsored projects from Chrysler and the Department of Labor (via Bay College) while also significantly contributing to the annual BonzAI programming contest event (<http://bonzai.cs.mtu.edu>). For more information about HGD, visit <http://www.huskygames.com> or read our paper published in ASEE 2014.
- **Summer Youth Program** 2011–present  
Created and implemented an annual week-long, on-campus educational program for high school students. I helped develop the material for the program and oversaw graduate students teachers to provide high school students with exciting, hands-on activities related to virtual reality. This program has been offered annually since 2011 and reaches approximately 20 students each summer from around the country.

- **Student organization faculty advisor:** Lutheran Campus Ministry                      Fall 2016–present
- **Computer Science Chair Evaluation Committee, *Chair***                                      Fall 2016–Spring 2017
- **Michigan Tech Senate Alternate**    Fall 2015–Spring 2016
- **Michigan Tech Information Technology Committee**    Fall 2015–Spring 2016
- **Created Game Development concentration**    Fall 2013 – Spring 2016  
Successfully developed and proposed a Computer Science B.S. degree concentration with an emphasis on Game Development.
- **Computer Science Faculty Search Committee**    Fall 2014–Spring 2015
- **Computer Science Graduate Committee**    Summer 2014–Fall 2014
- **Computer Science lecturer search committee**    Spring 2013
- **Women in Engineering and Engineering Scholars Program**                                      Summer 2011  
Developed five hours of hands-on virtual reality activities for traditionally underrepresented high school students. The course was offered time over the summer and reached approximately 35 students.
- **Computer Science chair search steering committee**    Summer 2010–Spring 2011
- **Computer Science faculty hiring: Artificial Intelligence subcommittee**                      Spring 2010

## PROFESSIONAL ACTIVITIES

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### Chair for Conferences:

- IEEE-VR (Virtual Reality) conference; Publications Co-Chair                                      2018
- ACM Symposium on Applied Perception; Program Co-chair                                      2015
- ACM Symposium on Applied Perception; Conference Co-chair                                      2014
- IEEE-VR (Virtual Reality) conference; Workshops Co-Chair                                      2014
- ACM Symposium on Spatial User Interaction; Publications Co-Chair                              2013, 2014

### Reviewer for Conference Proceedings:

- ACM CHI Conference on Human Factors in Computing Systems reviewer                      2012–present
- ACM Symposium on Applied Perception reviewer    2010–present
- IEEE VR (Virtual Reality) conference    2008, 2012–2017
- IEEE 3DUI conference reviewer    2017
- ASEE Annual Conference - Computing & Information Technology Division                      Spring 2014
- ACM Symposium on Spatial User Interaction (SUI) Program Committee                      2014
- ACM Special Interest Group on Computer Human Interaction (SIGCHI)                      Fall 2012
- Eurographics Symposium on Virtual Environments (EGVE)                                      2008

### Reviewer for Journals:

- ACM Transactions on Applied Perception    2011–present
- Perceptual and Motor Skills    Fall 2014
- Presence    Fall 2013

- IEEE Transactions on Graphics and Visualization Fall 2012
- Journal of Virtual Reality and Broadcasting July 2012

**Grant proposal panelist:**

- National Science Foundation 2013, 2014

**AWARDS**

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- Best paper in ATMAE Conference Proceedings November 2016
- Dean's Teaching Showcase at Michigan Tech January 2015
- Michigan Tech Design Expo: Husky Game Development was awarded 3rd place out of the 21 Enterprises represented at the Expo. April 2014
- Best paper award at the ACM Symposium on Virtual Reality Software and Technology (VRST) conference September 2009
- NSF Graduate Research Fellowship Honorable Mention 2005
- Wayne Brown Fellowship, College of Engineering, University of Utah 2004–2005
- NSF Computer Science, Engineering, and Mathematics (CSEM) Scholarship 2002–2004
- Regents' Scholarship, Augsburg College 2000–2004