Kyla A. McMullen

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Education

- **The University of Michigan** — Ann Arbor, MI
  Ph.D Computer Science and Engineering — *May 2007 - May 2012*
  - Dissertation: Interface Design Implication for Recalling the Spatial Configuration of Virtual Auditory Environments
    Advisor: Gregory H. Wakefield, Ph.D.
- **The University of Michigan** — Ann Arbor, MI
  M.S. Computer Science and Engineering — *2005 - 2007*
  - Concentration: Interactive Systems
- **The University of Maryland, Baltimore County** — Catonsville, MD
  B.S. Computer Science — *2001 - 2005*
  - Graduated Magna Cum Laude
  - Major GPA - 4.0

Research Interests

- Utilizing spatial audio rendering techniques to sonify positional data for aiding situational awareness
- Discovering critical interface design techniques for developing virtual auditory environments
- Assessing the usability of Head-Related Transfer Functions using psychoacoustic experiments
- Using virtual spatial audio to augment assistive technology for persons with visual impairments
- Enhancing immersion and realness in virtual worlds using spatial audio

Research Experience

- **Air Force Research Lab (AFRL)**
  Visiting Faculty — *May 2015 - July 2015*
  - Created psychoacoustic experiments to assess HRTF subjective selection performance, in various interfaces
  - Validated subjective selection behavior using ALF (Auditory Localization Facility)
- **Naval Submarine Medical Research Laboratory (NSMRL)**
  Psychoacoustics Summer Intern — *July 2009 - August 2009*
  - Created experiments to assess dual task performance for submarine operators
  - Implemented analysis tools to assess dual task performance
  - Explored the use of a spatial audio interface for sonar navigation

Publications

- **McMullen, K.**, Wakefield, G.H. (2017 - in press). The Effects of Training on Real-Tome Localization of Headphone-Rendered, Spatially Processed Sounds. 2017 Human Factors and Ergonomics Society Annual Meeting.
- Arce, T.,**McMullen, K.**. (2017 - in press). The Effects of 3D Audio on Hologram Localization in Augmented Reality Environments. 2017 Human Factors and Ergonomics Society Annual Meeting.
- Celepkolu, M., Wiggins, J. B., Boyer, K. E., **McMullen, K.** (2017). Think First: Fostering Substantive Contributions in Collaborative Problem-Solving Dialogues. Philadelphia, PA: International Society of the Learning Sciences.
- Arce, T., **McMullen, K.** (2017). Hearing biochemical structures: molecular visualization with spatial audio. ACM SIGACCESS Accessibility and Computing, (117), 9-13.
- Fan, Z., Wan. Y., **McMullen, K.** (2016). Quantitatively Validating Subjectively Selected HRTFs for Elevation and Front-Back Distinction. In Proceedings of the 22nd International Conference on Auditory Display. Canberra, Australia.
- Ranjan, S., **McMullen, K.** (2015). Gesture-based Sound Localization and Manipulation. In Proceedings of the 3rd ACM Symposium on Spatial User Interaction. Los Angeles, California, USA.
- Wan, Y., Fan, Z., **McMullen, K.** (2015) Temporal Reliability of Subjectively Selected Head-Related Transfer Functions (HRTFs) in a Non-Eliminating Discrimination Task. Audio Engineering Society (AES), October 2015, New York, NY, USA.
- Jackson, F., Solomon, A., **McMullen, K.**, Gilbert, J. (2015) To start voting, say vote: Establishing a threshold for ambient noise for a speech recognition voting system. The Proceedings of the 6th International Conference on Applied Human Factors and Ergonomics, 26-30 July 2015, Las Vegas, Nevada, USA.
- Ongsarte, A., Jiang, Y., **McMullen, K.** (2015) Assessment of Electronic Write-In Voting Interfaces for Persons with Visual Impairments. The Proceedings of HCI International 2014, 17th International Conference on Human-Computer Interaction, 2-7 August 2014, Los Angeles, California, USA.
- Wan, Y., Zare, A., **McMullen, K.** (2014). Evaluating the Consistency of Subjectively Selected Head-Related Transfer Functions (HRTFs) Over Time. AES Conference on Spatial Audio, 27 August 2014, Helsinki, Finland.
- **McMullen, K.** (2014). The Potential for Spatial Audio to Convey Information in Virtual Environments. In IEEE VR Workshop on Sonic Interactions for Virtual Environments, 29 March 2014, Minneapolis, MN.
- Zare, A., **McMullen, K.**, Gardner-McCune, C. (2014). Design of an Accessible and Portable System for Soccer Players with Visual Impairments. In CHI'13 Extended Abstracts on Human Factors in Computing Systems, 26 April - 1 May 2014, Toronto, Ontario. ACM.
- **McMullen, K.**, Wakefield, G. (2014). 3D Sound Memory in Virtual Environments. IEEE Symposium on 3D User Interfaces (3DUI), 29-30 March 2014, Minneapolis, Minnesota.
- **McMullen, K.**, Wakefield, G. (2013). The Effects of Attenuation Modeling on Spatial Sound Search. The Proceedings of the International Conference on Auditory Displays (ICAD), 6-10 July 2013, Lodz University of Technology, Poland.
- **McMullen, K.**, Wakefield, G. (2013). Effects of Plane Mapping on Sound Localization in a Virtual Auditory Environment. The Proceedings of HCI International 2013, 15th International Conference on Human-Computer Interaction, 21-26 July 2013, Las Vegas, Nevada, USA.
- Daily, S., Gilbert, J., Eugene. W., Gardner-McCune, C., **McMullen, K.**, Hall, P., Remy, S., Woodard, D., Roy, T.(2013), Alternate Pathways to Careers in Computing: Recruiting and Retaining Women Students. American Society of Engineering Education: Computing & Information Technology Division.

- **McMullen, K.**, Roginska, A., Wakefield, G. (2012). Subjective Selection of Head-Related Transfer Functions (HRTFs) based on Spectral Coloration and Interaural Time Differences (ITD) Cues. Audio Engineering Society (AES), 26-29 October 2012, San Francisco, USA.
- Roginska, A., Wakefield, G., **McMullen, K.** (2011). Searching for Sources from a Fixed Point in a Virtual Auditory Environment. The Proceedings of the International Conference on Auditory Displays (ICAD), 20-24 June 2011, Budapest, Hungary.
- Roginska, A., Wakefield, G., Santoro, T., **McMullen, K.**(2010). Effects of Interface Type on Navigation in a Virtual Spatial Auditory Environment. The Proceedings of the International Conference on Auditory Displays (ICAD), 9-15 June 2010, Washington, DC.
- **McMullen, K.**, Wakefield, G. (2009). Relationship Learning Software: Design and Assessment. The Proceedings of HCI International 2009, 13th International Conference on Human-Computer Interaction, 19-24 July 2009, San Diego, CA, USA. Heidelberg, Germany: Springer.
- Eugene, W., Hatley, L., **McMullen, K.**, Brown, Q., Rankin, Y., & Lewis, S. (2009). This Is Who I Am and This Is What I Do: Demystifying the Process of Designing Culturally Authentic Technology. The Proceedings of HCI International 2009, 13th International Conference on Human-Computer Interaction, 19-24 July 2009, San Diego, CA, USA. Heidelberg, Germany: Springer.

External Funding

- **McMullen, K.**, The Effect of MindTap for Programming on Student Learning outcomes in Pair Programming and Active Learning Scenarios, Cengage Learning Company, 12/21/2016 - 05/30/2017, $24,879.
- **McMullen, K.**, Brain-Computer Interfaces for Persons with Physical Impairments, Lenovo, 11/14/2016 - 04/13/2017, $56,141.
- **McMullen, K.**, Corporate Gift, Bit Cauldron Corporation, 2/5/15, $16,433.92.
- Gilbert, J.E., **McMullen, K.**, Remy, S.L., & Eugene, W., 4D Interactions for Cable Television, CableLabs, 7/1/2013 - 6/30/2014, $80,000.
- Gilbert, J.E., **McMullen, K.**, & Martin, J., User Experiences with Streaming Video, 3D Audio and Holistic Usability, Intel IXR, 6/1/2013 - 5/31/2014, $50,000.

Invited Talks

- **Open Source Convention (OSCON)** — May 18, 2016
  Austin Convention Center — *Austin, TX*
  - Title: How did I "git" here?: A tale of a CS Professor (Keynote)
- **NextProf Workshop** — May 12, 2015
  The University of Michigan — *Ann Arbor, MI*
  - Title: Life in Academia: The First Five Years (Panelist)
- **Congressional Black Caucus Annual Legislation Conference** — September 26, 2014
  Washington Convention Center — *Washington, DC*
  - Title: STEM Education and Employment for African Americans(Panelist)
- **NextProf Conference** — September 25, 2013
  The University of Michigan — *Ann Arbor, MI*
  - Title: Life in Academia (Panelist)
- **Youth Technology Camp** — August 14, 2013
  Black Data Processing Associates National Conference — *Washington, DC*
  - Title: A Matter of National Security (Keynote)

- **High School Computer Competition** June 8, 2013
  Black Data Processing Associates *Columbia, SC*
  - Title: Winning the Future: Education and Innovation (Keynote)
- **Willie Hobbs Moore Luncheon** April 4, 2013
  The University of Michigan *Ann Arbor, MI*
  - Title: Nobody told me the road would be easy (Keynote)
- **AGEP 2013 Research Symposium** April 6, 2013
  The University of Michigan *Ann Arbor, MI*
  - Title: Winning the Future: Education, Innovation, and Transparency (Keynote)
- **Undergraduate Research Conference** February 22, 2013
  Wayne State University *Detroit, MI*
  - Title: Research that Drives Innovation (Keynote)

Teaching and Mentorship Activities

- **Computer and Information Science and Engineering, University of Florida**
  Assistant Professor *August 2014 to present*
  - Designed a course to be taught on virtual spatial audio
  - Developed a research program
  - Recruited and encouraged under-represented students to pursue PhDs in Computer Science
- **School of Computing, Clemson University**
  Assistant Professor *January 1, 2013 to July 31, 2014*
  - Designed and instructed a course on virtual spatial audio
  - Taught introduction to programming to students with computer science and nontechnical majors
  - Developed a research program
  - Recruited and encouraged under-represented students to pursue PhDs in Computer Science
- **The College of Engineering, Wayne State University**
  Lecturer *Fall 2011, Winter 2012*
  - Designed and instructed a required Computer Literacy course (1100 students)
  - Designed and instructed a Human-Computer Interaction course
  - Managed Graduate Teaching Assistants to aid in instruction
- **The College of Engineering, University of Michigan**
  Graduate Student Instructor *Winter, 2011, Fall 2010, Fall 2009*
  - Created lab lesson plans and PowerPoint slides, reinforcing programming concepts
  - Taught three lab sessions each week (6 hours total)
  - Met with students in office hours (6) each week to help with programming assignments and concepts
- **Rackham Graduate School, University of Michigan**
  Summer Institute Graduate Student Mentor *May 2010 - August 2010*
  - Mentored 1st year PhD students in Engineering and Physical Science
  - Created and ran seminars and workshops geared towards graduate student success
  - Met with students to address individual needs concerning their transition into graduate school
- **Rackham Graduate School, University of Michigan**
  AGEP Peer Mentor *2008 - 2009*
  - Assisted first year Ph.D students with their transition into graduate school
  - Helped first year Ph.D students identify skills and resources critical to their success in graduate school
  - Met monthly with students to address their issues or concerns regarding graduate school
- **Women in Science and Engineering, University of Michigan**
  WISE *2007 - 2008*

- Assisted first and second year women Ph.D students in the Computer Science Division
- Met monthly with students to address their issues or concerns regarding concerns specific to the department

Industry Experience

- **IBM Inc. Research Triangle Park, NC**
  WPLC Performance Analyist *June - August 2005*
  - Ran analyses using LoadRunner software to determine the throughput, resource usage, bottlenecks, and transaction response time of the Portal Document Manager.
  - Debugged scripts used to simulate virtual users.
  - Performed Data Table Verification.
  - Created Graphs and Data Tables included in IBM Confidential Reports.
  - Documented various procedures and practices (setting up servers, running scenarios, etc) performed by my team for future reference.
  - Made a flow chart that modeling Virtual User Scenarios
- **eOriginal Inc.**
  Plug-Ins Team - Software Engineering Intern *February 2005 - May 2005*
  - Designed Message Center Interface that allows Administrators to confirm or reject a certified print request from a client
  - Conducted an analysis of code from previous software release and made necessary changes to be put in the new release to conform with Software Engineering principles
  - Identified and corrected bugs in Command Center Software
- **IBM Research Thomas J Watson Center**
  Mathematical Analysis Department Intern *May - August 2004*
  - Developed a Java tool that parses the daily web logs to derive "Deep Thunder" website statistics. This tool traces each visitor's IP address and location and stores it along with other data used in statistical analysis.
  - This data was then converted into several Gnuplot graphs according to the geographic region of interest. It is currently being used to identify potential clients.
- **General Electric Financial Assurance**
  Information Technology Intern *June - August 2002*
  - Received Six Sigma Quality Training
  - Designed and Produced a webpage to retrieve information in a Microsoft Access Database as well as an SQL database which is now being used to shorten the amount of time developers spend asking Change Control Workers what jobs, procedures, and programs to include in their Pan APT Move request when changes are made in the system.
  - Designed the Monthly Statistics Webpage for the Lynchburg IT Department, which included graphs as well as information concerning the Six Sigma Quality that was achieved for the month.

Honors & Awards

Diverse Issues In Higher Education - 2015 Emerging Scholar 2015
Google Inc. - Travel Grant to Attend Grace Hopper 2014 2014
National Black Data Processing Associates - Professional Achievement Award 2013
The MUSES and GradSWE - Trailblazer Award for Achievement 2013
Center for Engineering Diversity and Outreach (CEDO) - PhD Conferred Achievement Award 2013
College of Engineering - Outstanding Graduate Student Instructor Award 2011
Edward A. Bouchet Graduate Honor Society 2011
Scholar Power PhD Student Achievement Award 2009
The Office of Naval Research(ONR) Future Engineering Faculty Fellow 2006

University and Academic Community Service

Presence: Teleoperators and Virtual Environments - reviewer . . . . . 2017 - present
National Society of Blacks in Computing Conference Chair . . . . . 2016 - present
CISE Recruitment Committee Chair . . . . . 2015 - present
NSF Panelist . . . . . 2013 - present
Alliance for Graduate Education and the Professoriate - Peer Mentor 2008-2009
Society of Minority Engineers and Scientists - Graduate Component - President 2007-2008
Women in Science and Engineering - Peer Mentor 2007-2008
IBM STEM Entry Point Camp - Volunteer Teacher 2007
Detroit Area Pre-College Engineering Program - Teaching Aid 2007
Movement of Underrepresented Sisters in Engineering and Science - Vice President 2006-2007
Society of Minority Engineers and Scientists - Graduate Component - Vice President 2006-2007
The Office of Naval Research Future Engineering Faculty Fellow 2006

Non-scholarly Publications

- "Beautiful, Black, and Brainy" June 2014 - http://www.kylamcmullen.com/Articles/black-female-scientists.html
- "Brilliant is the New Black" October 2014 - http://www.kylamcmullen.com/Articles/brilliant-is-the-new-black.html