Hailey L Johnson

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Education

University of Wisconsin-Madison   **Sept. 2021-Current**
Doctor of Philosophy in Computer Science (NSF Fellow)   *Madison, WI*

University of Idaho   **May 2019**
Bachelor of Science in Computer Engineering   *Moscow, ID*

Research Experience

People and Robots Laboratory   **May 2022 - Current**
Research Assistant | Advisor: Dr. Bilge Mutlu   *Madison, WI*
- Conducted interviews, transcribed audio, and analyzed qualitative and quantitative data to explore user experiences with conversational agents and social media for individuals with traumatic brain injury.
- Conducted semi-structured interviews with adults with Down syndrome, parents/guardians, and experts to investigate personal and occupational challenges.
- Completed a systematic literature review on assistive technologies for adults with Down syndrome using PRISMA methods.
- Co-designed and developed assistive technologies, including gamified and AR tablet applications and a tangible interface using Raspberry Pi systems.
- Designed a privacy and security study for adults with Down syndrome, developing usability tasks and analyzing interactions with notifications.
- Collaborated on a speech recognition tool for researchers, optimizing models for individuals with Down syndrome and integrating qualitative analysis features.

Wisconsin Wireless and NetworkinG Systems (WiNGS) Laboratory   **Nov. 2021 - May 2022**
Graduate Student | Lab Professor: Dr. Suman Banerjee   *Madison, WI*
- Constructed nonlinear chirp waveform models for low-power LoRa (Long Range) communication systems to increase the possible number of connected devices in a network.
- Simulated nonlinear chirp waveform implementations in MATLAB and Python for future real-world testing and data collection.

Speech Pathology Application (Sponsored by Micron)   **Aug. 2018 – May 2019**
Project Manager | Project PI: Dr. Feng Li   *Moscow, ID*
- Developed a portable MySQL database with Java API to store child speech audio data for speech therapists and future artificial intelligence research.
- Scheduled milestones, monitored reporting, communicated with clients, and performed technical design review presentations.

NASA Undergraduate Student Instrument Project   **Nov. 2015 – May 2018**
Project Manager and Technical Lead | Project PI: Dr. Joseph Law   *Moscow, ID*
- Managed a team of multi-disciplinary undergraduate students to design, build, test, and fly three payload systems on high-altitude and low-altitude balloon platforms.
- Developed and tested atmospheric data collection, sensor communication, and data storage software for post-flight analysis.
- Created and maintained research schedules that met NASA design review standards while overseeing a $200K budget.

Work Experience

University of Wisconsin - Madison   **Sept 2021 - May 2023**
Teaching Assistant   *Madison, WI*

- Created, edited, and graded labs, assignments, quizzes, and tests for CS640: Introduction to Computer Networking in Fall 2021 and Spring 2022. Provided Java debugging support for assignments and labs.
- Created, edited, and graded labs, assignments, quizzes, and tests for CS220: Data Science Programming 1, in fall 2022. Provided Python debugging support for assignments and labs.
- Held weekly office hours for students to ask questions on class materials and assignments.

DCS Corporation   **Aug. 2019 - Aug. 2021**
Computer Engineer II and Lab Manager   *Aberdeen, MD*
- Designed and developed a multiplayer game in QT/C++ for human-agent teaming research to study how reaction time differences occur under situations of risk and ambiguity.
- Developed and tested a quantified uncertainty study in Qualtrics and Javascript to understand how information framing can enhance performance in computer-based training.
- Developed a human teaming virtual environment task in Unreal Engine/C++ to gain insight into remote human teaming communication through stressful situations.
- Managed the Innovation Commons lab space operations for Army Research Laboratories (ARL).

Hewlett-Packard Incorporated   **June 2018 - May 2019**
Firmware Engineering Intern   *Boise, ID*
- Developed and tested memory configuration file generation command line tool for future print devices, increasing engineer productivity.
- Performed unit, system, and engine testing on various developed printer firmware drivers.

NASA Ames Summer Intern   **June 2017 - Aug. 2017**
Engineering Intern on TechEdSat project   *Moffett Field, CA*
- Practiced Cube Satellite design, integration, and NASA's quality assurance procedures.
- Participated in two professional presentations and published a scientific poster on the TechEdSat passive Exo-Brake for cube satellite atmosphere reentrance.

Publications and Presentations

<u>Hailey Lynn Johnson</u>, Audra Sterling, and Bilge Mutlu. 2024. "It Is Easy Using My Apps:" Understanding Technology Use and Needs of Adults with Down Syndrome. In Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI '24). Association for Computing Machinery, New York, NY, USA, Article 913, 1–17. <u>https://doi.org/10.1145/3613904.3642950</u>   Oct. 2024

Yaxin Hu, Hajin Lim, Lisa Kakonge, Jade T. Mitchell, <u>Hailey L. Johnson</u>, Lyn S. Turkstra, Melissa C. Duff, Catalina L. Toma, and Bilge Mutlu. 2024. *SMART-TBI: Design and Evaluation of the Social Media Accessibility and Rehabilitation Toolkit for Users with Traumatic Brain Injury*. In Proceedings of the 26th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '24). Association for Computing Machinery, New York, NY, USA, Article 37, 1–19. https://doi.org/10.1145/3663548.3675641   Oct. 2024

Yaxin Hu, Hajin Lim, <u>Hailey L Johnson</u>, Josephine M. O'Shaughnessy, Lisa Kakonge, Lyn Turkstra, Melissa Duff, Catalina Toma, and Bilge Mutlu. 2023. *Investigating Day-to-day Experiences with Conversational Agents by Users with Traumatic Brain Injury*. In Proceedings of the 25th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '23). Association for Computing Machinery, New York, NY, USA, Article 54, 1–15. <u>https://doi.org/10.1145/3597638.3608385</u>   Oct. 2023

<u>Hailey Johnson</u>, Jordan Cates, Wei Zhao, *"Speech Pathology Application."* University of Idaho Engineering Design Expo, Moscow, ID, USA.   April 2019

Bethany Kersten, <u>Hailey Johnson</u>, Emily Chambers, Archana Dahal, *"New Age Hydration."* 2018 PepsiCo/Society of Women Engineers Student Engineering Challenge WE18-The World's Largest Conference for Women Engineers, Minneapolis, MN, USA.   Oct. 2018

Hailey Johnson, Sarah Chu, Marcus Murbach, Ali Guarneros Luna, *"Technical Education Satellite."* NASA Ames Research Center Internship Poster Symposium, Moffett Field, CA, USA.

Aug. 2017

Hailey Johnson, Bethany Kersten, Jonathan Preheim, Mareyna Karlin, William Miller, Avery Brock, Richard Baptista, *"Training in Advanced Technology and Exploration Research to Optimize Teamwork in Space (TATERTOTS)"* 2017 Exploration Science Forum, Moffett Field, CA, USA.

Aug. 2017

Grants and Awards

ACM ASSETS 2024 Doctoral Consortium	Oct. 2024
National Science Foundation Graduate Research Fellowship Program	**April 2023**
University of Wisconsin-Madison Fall Competition Grant	Dec. 2023
Outstanding Senior, University of Idaho Department of Electrical and Computer Engineering	May 2019
2018 PepsiCo/Society of Women Engineers Student Engineering Challenge, 2nd place award	Oct. 2018
Computer Engineer of the Year, University of Idaho Department of Electrical and Computer Engineering	May 2018
NASA Undergraduate Student Instrument Project (USIP) Grant, $200,000	May 2016

Volunteer Experience

Gigi's Playhouse Madison　　　　　　　　　　　　　　**June 2022-Sept.2023**
Volunteer　　　　　　　　　　　　　　　　　　　　　　　　*Madison, WI*
- Participate in the weekly social group, Fantastic Friends, for adults with Down syndrome.
- Plan weekly activities to teach social group members new topics.

College of Engineering Ambassador　　　　　　　　**Oct. 2017 - May 2019**
University of Idaho, College of Engineering　　　　　　　　　　　*Moscow, ID*
- Participated in the University of Idaho recruitment events on campus and in Idaho state.
- Elected as Director of Training in March 2018.
- Planned training events to update a team of 22 students on University of Idaho engineering programs and admissions.

Society of Women Engineers　　　　　　　　　　　　**Aug. 2016 - May 2019**
University of Idaho, College of Engineering　　　　　　　　　　　*Moscow, ID*
- Elected as Vice President in April 2018.
- Established a mentorship program between first- and second-year undergraduate engineering students with upper-level students.
- Performed STEM research for children, including Girl Scouts, and preschool students.

Special Friends Camp　　　　　　　　　　　　　　　**June 2009-Aug. 2015**
Volunteer Camp Counselor　　　　　　　　　　　　　　　　　*Stanwood, WA*
- Provided support, assistance, social interaction, and encouragement to campers with disabilities during daily camp activities over six summer seasons.
- Planned and participated in camp events for the 50-60 weekly campers with various disabilities.