

**Job Title:**

Postdoctoral Fellow, Intern, Software Engineer for Human-Robot Interaction Research on Assistive Navigation Robot

**Job Description:**

We are seeking a researcher to contribute to the exploration of a new assistive indoor navigation robot for visually impaired people. The qualified job applicant should have expertise in accessibility, human-computer interaction and/or human-robot interaction, while computer vision, and machine learning skills are also valued. The researcher will work on developing the robot vision system and developing an interactive system for visually impaired people as a member of our team in order to revolutionize mobility for blind people.

**Work Environment:**

You will be collaborating with an experienced R&D team of graduate and post-graduate researchers on solving challenging robotic design and implementation problems. We foster a rewarding work environment that supports growth and development in one of the top robotics institutions in the world, located in beautiful Pittsburgh. We publish often in top robotics, computer vision, and HCI conferences, and are passionate about tackling real-world robotics problems that can improve the lives of millions. If you would like to be part of this exciting research team that works on meaningful and impactful research, please contact us!

**Roles and Responsibilities:**

You will be working on designing, implementing, testing, and/or evaluating autonomous mobile robots interacting with visually impaired people to help them walk around unfamiliar large public spaces such as airports, hospitals, and shopping malls. The robot will rely on cameras, laser scanners, motors, haptic handles, among other sensors, to communicate with users and to achieve shared autonomy. The tasks may include,

- Design and implement visual recognition systems on the mobile robot to support mobility of visually impaired people.
- Design and implement suitable robot interfaces for shared-autonomy with a human user, including guiding and supporting situational awareness based on visual recognition.
- Configure and/or develop robot localization, navigation, and planning by using perception sensors like lidar, imu, and stereo camera.
- Improve perception and control robustness in diverse environments and crowded area with surrounding people.

**Expected Qualifications:**

- Experience designing and developing interactive systems
- Experience designing and conducting user studies following HCI and/or HRI methods
- Programming experience expected, preferably with Python and/or C/C++
- Ability to communicate effectively in English
- Ability to work well within a team, including experience using teamwork management tools such as Git
- Familiarity with various sensor technologies such as LiDAR, cameras, IMU, and sensor fusion

**Additional valued experience:**

- Experience designing systems for and conducting user studies with people with disabilities
- Knowledge of robotics, robotic sensors, ROS, ROS drivers, motors and actuators, control systems, and safety systems
- Knowledge of state-of-the-art SLAM and robotics algorithms (calibration, tracking, ICP, etc.)
- Experience in machine learning frameworks such as Caffe, TensorFlow, PyTorch

**Contact:**

Please send your CV (including two references and examples of robotic systems you have developed) and a short statement of purpose (SOP) describing your motivation for pursuing this position, to [daisukes@cmu.edu](mailto:daisukes@cmu.edu), and CC to [kkitani@cs.cmu.edu](mailto:kkitani@cs.cmu.edu) and [chiekoa@cs.cmu.edu](mailto:chiekoa@cs.cmu.edu).

For more information, please visit our lab website: <https://www.cs.cmu.edu/~NavCog/index.html>