Abhishek Kashyap

✉ abhishek47kashyap@gmail.com   in abhishek47kashyap   ⓞ abhishek47kashyap

TECHNICAL SKILLS

Languages:	Python, C++, Embedded C
Softwares:	Robot Operating System (ROS), MATLAB, SolidWorks

WORK EXPERIENCE

- **Molcure Inc., Tokyo, Japan**   July 2020 - present
  Robotics Engineer
  - Setting up the ROS layer that handles bidirectional communication between UI and firmware for parallel robots.
  - Maintaining and improving the firmware that receives data from the ROS layer.

- **Kyoto University, Kyoto, Japan**   May 2019 - June 2020
  Research Assistant (an industrial collaboration with Zeeko Ltd.)
  - (University research) CAD/CAM software development: Implemented research papers to compensate for mechanical errors and improve positional accuracy of robots and CNC machines in the order of microns.
  - (Industry project) Manufacturing process automation: Automated a production pipeline that uses FANUC Robodrills which resulted in improved manufacturing cycle time.

- **City College of New York, New York City NY, USA**   Oct 2018 - Apr 2019
  Research Intern, Biomechatronics & Intelligent Robotics Lab
  - Created a framework of wearable sensors to record kinematics during different physical activities.
  - Developed controls of a pneumatic soft ankle exoskeleton triggered by IMU feedback for people having *foot drop*.

- **IHP Microelectronics, Berlin area, Germany**   Summer 2017
  DAAD Rise Professional Intern, Circuit Design department
  - Learned PCB designing by creating pads, vias, footprints, schematics, layers, and layouts.
  - Designed a board using Cadence Allegro for a 30 GHz biosensor.

PROJECTS

- **Optical sensor for haptic feedback on the daVinci surgical robot**, WPI   Sept 2017 - May 2018
  AIM (Automation & Interventional Medicine) Lab: surgical/medical robotics
  - Investigated sensing modalities in distributed tactile sensors for haptic feedback on the daVinci surgical robot.
  - Prototyped an optical based sensor by compression molding using 3D printed molds created in SolidWorks.
  - Set up the electronic and software interface of the sensor using Arduino, Python, and ROS.

- **Rejection of base plate disturbances for the Stewart Platform**, WPI   Fall 2017
  Robot Control course project, Team size: 3
  - Simulated a Stewart Platform to maintain the top platform level despite perturbations to base.
  - Verified results using Simulink's Simscape Multibody environment.

- **Angular position control of a bio-inspired robotic ankle**, WPI   Jan 2017 - May 2017
  Popovic Labs: bio-inspired robotics
  - Developed an algorithm for angular position control of a robotic ankle actuated by artificial muscles.
  - Used Embedded C to program the opening and closing of solenoid valves to actuate the artificial muscles.
  - Published a paper to highlight how using multiple muscles instead of one allows for finer position control.

EDUCATION

- Master of Science, **Robotics Engineering**   May 2018
  Worcester Polytechnic Institute (WPI), Worcester MA, USA

- Bachelor of Technology, **Electronics & Communication Engineering**   July 2016
  West Bengal University of Technology (WBUT), Kolkata WB, India

Conference Publications

[1] Bowers, Matthew P., Chinmay V. Harmalkar, Ankur Agrawal, **Abhishek Kashyap**, Jonathan Tai, and Marko Popovic. "Design and test of biologically inspired multi-fiber Hydro Muscle actuated ankle." In Advanced Robotics and its Social Impacts (ARSO), 2017 IEEE Workshop on, pp. 1-7. IEEE, 2017.

[2] Pramanik, Ankita, **Abhishek Kashyap**, and Santi P. Maity. "Study on sampling matrices for far-end image reconstruction by block compressed sensing." In Electrical and Computer Engineering (WIECON-ECE), 2015 IEEE International WIE Conference on, pp. 346-349. IEEE, 2015.

Open Source Software Projects

- **ROS2**   Status: ongoing
  Navigation Stack package: navigation2_dynamic
    - Detecting obstacles in 2D LIDAR data by clustering, splitting, and merging operations.
    - Classifying detected obstacles as *line* and *circle* obstacles for improved representation and tracking.
    - Writing up documentation explaining how adjusting various parameters/thresholds influences output.