Ayush Sinha

Contact: 1105 Mitchem Drive - Urbana, Illinois 61801 | (217) 904-9032
ayush2@illinois.edu | ayush7.sinha@gmail.com | iamayush.github.io

EDUCATION

o **University of Illinois at Urbana-Champaign**
Master of Science, GPA: **4.0/4.0**   *May 2019*

o **Indian Institute of Technology, Kanpur**
Bachelor of Technology , CPI: **9.3/10**   *June 2017*

RELEVANT PROJECTS

o **Autonomous Robot Navigation**
- Programmed microcontrollers on mobile robot to navigate unknown obstacle course and identify objects of interest
- Implemented A* path planning, LADAR based obstacle detection and computer vision for locating objects

o **Positioning and Impedance Control of Robot Arm**
- Designed an inverse dynamics controller for accurate end-effector positioning to follow given course
- Utilized simple impedance controller while traversing grooves and interacting with fragile objects

o **Control and Testing of Soft Exoskeleton**
- Constructed anthropomorphically accurate upper-body model for testing soft robotic exoskeleton
- Developed pressure controller using pneumatic valves, pressure sensors and a PID regime on LabVIEW

o **Teleoperated Bionic Hand**
- Recorded user hand movement using a glove equipped with IMU and flex sensors
- Actuated bionic hand using servo motors and cables to replicate user's hand

PROFESSIONAL AND RESEARCH EXPERIENCE

o **Graduate Assistant | Control Systems Laboratory, UIUC | Urbana, USA**   *Aug 2018 – Current*
Supervisor: Mr. Daniel J Block
- Technical assistance for UAV Navigation and Control, and Computer Control of Mechanical Systems courses
- Performing embedded programming, simulation, hardware-software integration and digital control

o **Intern | Kyushu Institute of Technology | Kitakyushu, Japan**   *Dec 2016*
- Wrote ROS modules for implementing specific motions on open source PLEN robot
- Processed EEG signals using Simulink, Arduino to move robot at human's intent detection

o **Guest Scientist | Max Planck Institute for Intelligent Systems | Stuttgart, Germany**   *May 2016 – July 2016*
- Designed, built and characterized spider-inspired pneumatic and cable driven robotic actuator
- Fabricated parts using 3D printing, laser cutting and silicone rubber molding

o **Trainee | Tata Motors Limited | Lucknow, India**   *May 2015 – June 2015*
- Ensured assembly line continuity by eliminating recurring manufacturing error at supplier's end

NOTABLE SKILLS

Programming – C, C++, MATLAB, Simulink, LabVIEW | **Design –** SolidWorks, Inventor, EAGLE

Hardware – Arduino, TI MCUs and DSP+ARM MPUs, Quanser DAQ | **Languages –** English, Hindi

SELECTED COURSEWORK

Mechatronics, Digital Control Systems, Introduction to Robotics, Control Systems Theory and Design, Robot Dynamics and Control, Robot Motion Planning, Probabilistic Mobile Robotics, Fundamentals of Computing

ADDITIONAL EXPERIENCE

o **Teaching Assistant** – Upward Bound UIUC
- TA for Physics, Algebra, Grammar at Office of Minority Student Affair's college prep academy

o **Volunteer** – Physics Van UIUC
- Perform "Science Shows" to encourage students at elementary schools in and around Urbana-Champaign

o **Senior Member** – Team RCON IIT Kanpur
- Led team of fifteen freshmen to create two badminton playing robots for National Robocon 2015
- Organized exhibitions, acquired sponsors and conducted recruitment for the team