

Ashank Behara

ASPIRING ROBOTICS AND PERCEPTION ENGINEER

119 Gilbert Avenue, Santa Clara, CA 95051

☎ (+1) 669-226-1554 | ✉ abehara2@illinois.edu | 🏠 <https://abehara2.github.io/> | 📷 abehara2 | 🌐 ashankbehara

Education

University of Illinois at Urbana-Champaign

August 2018 - May 2022

COMPUTER SCIENCE AND MECHANICAL ENGINEERING, BACHELOR'S

Robotics, Autonomous Systems, Deep Learning, Computer Architecture, Data Structures and Algorithms, Linear Algebra, Dynamics, Solid Mechanics, Statics, Computer Aided Design, Differential Equations, Fluid Dynamics, Thermodynamics, Discrete Structures

Experience

Center for Autonomy | Human Centered Autonomy Lab

August 2020 - Present

UNDERGRADUATE PERCEPTION RESEARCHER

Urbana, Illinois

- Implementing and training Velodyne **LiDAR based 3D object detection** model in **OpenCV and Pytorch** for electric and **autonomous car**
- Streaming **point cloud** and camera data from the GEM car using **ROS** and testing perception algorithms in simulation with **Gazebo** and **Rviz**

3M | Advanced Systems Lab

May 2020 - August 2020

R&D COMPUTER VISION INTERN

Maplewood, Minnesota

- Custom trained and implemented **YOLO R-CNN** model with a DarkNet backbone for **2D object detection** and localization of low visibility bodies
- Leveraged **OpenCV** in **Python** for curvature calculation of specular and reflective surfaces and deployed on **multi-axis robotic arm**
- Built multi-class image classifier using a custom built **CNN in Tensorflow and Keras** and deployed on NVIDIA Jetson-Nano for IoT solution

Hack4Impact

September 2019 - Present

SOFTWARE DEVELOPER

Urbana, Illinois

- Full stack development in **tech for social good** 501(c)(3) shipping robust software solutions to other nonprofits across the world
- Work vertically in tech stack in a team of 8 developers and designers with frameworks such as **React.js, Node.js, Flask, MongoDB, and Next.js**
- Built and shipped interactive project sharing platform and built proof of concept ride sharing web application for UIUC students

Caesar Research Group

March 2020 - August 2020

UNDERGRADUATE RESEARCHER

Urbana, Illinois

- Working on frontend infrastructure team for large scale IoT Virtual Circuit Emulator tool available for all UIUC engineering courses
- Modeling virtual user-constructed hardware components as Immutable.js objects and writing unit tests for translation to JSON
- Developing multiple displays with React (Typescript) and Konva.js for web frontend to visualize circuits and dynamically edit circuit properties

RAAD Systems

June 2019 - August 2019

ROBOTICS INTERN

San Jose, California

- **Designed and modeled 6-axis robot** and mounting interface for mobile robot using **Autodesk Inventor**
- Performed inertial and torque analysis for motor selection and functionality testing for kinematics analysis using **MATLAB**
- Gained knowledge in good industry practices to robustify load bearing mechanical systems and proper design procedures

Projects

Vision-based PPE Validation

[HTTPS://GITHUB.COM/ABEHARA2/GOTMASK](https://github.com/ABEHARA2/GOTMASK)

C++ and Python implementations of **real time object detection** of face-masked and gloved medical personnel using image segmentation and HAAR classifiers with **OpenCV**. Built, trained, and optimized CNN to 96.3% accuracy using **Tensorflow and Keras** for glove identification. Deployed on **Raspberry Pi 4** with external camera and i2c LCD display.

Autonomous Early-Collision Detection System

[HTTPS://GITHUB.COM/ABEHARA2/RIDESAFE](https://github.com/ABEHARA2/RIDESAFE)

Implemented Single Shot Detector in **Python and OpenCV** for detection and localization of **pedestrians, vehicles, and road signs**. Built **depth perception system** to accurately compute distance to a detected object and see if an object is within a set distance to the camera. Currently experimenting with **semantic instance segmentation** of **depth cloud** data.

Fatemaker

[HTTPS://GITHUB.COM/HACK4IMPACT-UIUC/KIDS-SAVE-OCEAN](https://github.com/HACK4IMPACT-UIUC/KIDS-SAVE-OCEAN)

Sustainability project accelerator aimed at motivating children to make a change in their communities and empower other children across the world. **Web application** developed using **Next.js, MongoDB Node.js, and Express.js**. We have finished after 6 months of development and are in the process of handing the project off!

Skills

Development: C++, Java, Python, Tensorflow, Keras, OpenCV, Pytorch, ROS, Gazebo, Javascript, MATLAB, React.js, Node.js, MongoDB, Verilog

Modeling and Analysis: Autodesk Fusion 360, CREO Parametric, Solidworks, Autodesk Inventor, APriori

Extra Curriculars and Awards

Co-founder and VP of Neurotech @ UIUC: Machine learning and technical consulting for Fortune 500 companies

1st Place @ Autodesk BioEngineering Designathon: Designed knee injury simulator for medical students

Honorable Mention @ Health Make-a-Thon: Designed wearable for chronic illness detection for elderly patients in rural areas

Illinois Club Tennis Team: Opportunity to play a sport I love at a high level!