Ashank Behara

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WORK EXPERIENCE

3M | R&D Computer Vision Intern

May 2020 – August 2020 | Maplewood, MN

- Real-time image processing to perform feature extraction and computations on highly reflective and complex surfaces to support robotic vision and perception
- Leveraged OpenCV, Numpy, SciKitLearn, and Matplotlib in Python for supervised and unsupervised learning implementations of object detection and tracking using feature matching (ORB), correlation filtering, blob detection, contouring, skeletonizing, adaptive thresholding, machine learning, and more
- Built plant classifier using a CNN written in Tensorflow and deployed on NVIDIA Jetson-Nano with Coral edge TPU for IoT solution hosted on AWS Greengrass
- Custom trained and implemented YOLO based R-CNN model with Tensorflow and Darkflow for object detection and counting in real time for live video

Caesar Research Group @ UIUC | Undergraduate Researcher

March 2020 – Present | Urbana, IL

- Working on frontend infrastructure and VR backend teams for large scale IoT Virtual Circuit Emulator tool and Animal Movement Simulator
- Modeling virtual user-constructed hardware models as Immutable.js objects and writing unit tests for model translation to JSON
- Writing a streaming executor API in Python and setting up server to connect to
- Developing multiple displays with React (Typescript) for web frontend to visualize circuits and dynamically edit circuit component properties

Hack4Impact | Software Developer

September 2019 – Present | Urbana, IL

- Tech for social good 501(c)(3) shipping software to other nonprofits
- Worked in a wide variety of areas such as auth infrastructure, backend REST API development, integration of external APIs, and frontend development
- Full stack development in MongoDB, Express.JS, and Next.JS for interactive project sharing platform shipped to Kids Save Ocean
- Frontend development in React.JS and some backend in Flask for proof of concept ride sharing platform to provide affordable transportation for students

DPQL Lab @ UIUC | Undergraduate Research Assistant

June 2019 – December 2019 | Urbana,IL

- Wrote multiple MatLab and Python scripts to process, analyze, and correlate data from accelerometers, Vicon motion capture system, and force plates
- Implemented signal processing filters to de-noise data and interpolated data from sources with different frequencies to provide uniform information

RAAD Systems | Mechanical Design Engineering Intern

June 2019 – August 2019 | San Jose, CA

- Designed and modeled 6-axis robot and mounting interface for mobile robot using Autodesk Inventor given performance parameters
- Performed inertial and torque analysis for motor selection and functionality testing and implemented a D-H matrix for kinematic analysis in MatLab
- Gained knowledge in good industry practices to robustify load bearing parts of mechanical systems and proper design procedures for geometric tolerancing of holes and parts

GRASP Lab @ UPenn | Robotics Research Intern

June 2017 – August 2017 | Philadelphia, PA

- Performed data analysis of turbulence for fleets of drones
- Wrote Vicon system user guide for entire lab and debugging documentation
- Aided testing with energy optimization algorithms for hexapedal robots

CERFTIFICATIONS

Mastering Computer Vision | Fundamentals of Computer Vision with OpenCV in Python

Tensorflow: Computer Vision | Image classification with CNN using Tensorflow and Keras

Database Design and SQL | Relational databases and querying with SQL in Python for db2

EDUCATION

University of Illinois at Urbana-Champaign

Mechanical Engineering / Computer Science

August 2018 - May 2022

Key Coursework

Computer Architecture | Robotics | Deep Learning | Data Structures and Algorithms | Linear Algebra | Dynamics | Solid Mechanics | Statics | CAD | Design for Manufacturability | Circuits/Electronics

SKILLS

Development

C++ | Java | Python | Javascript | MatLab | NodeJS | React | MongoDB | Git | Flask | SQL | HTML | Shell | OpenCV | TensorFlow | Keras | SciKitLearn | ROS | Gazebo

Modeling and Analysis

CREO | SolidWorks | Inventor | Fusion360 | Apriori | Cura | Vicon

SELECTED PROJECTS

Got a Mask (and gloves)?

Summer 2020

- 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 classification
- Deployed on Raspberry Pi 4 with i2c LCD display

DD Robot Simulation & TurtleBot Control

Summer 2020

- Control and simulation of differential driven robot using ROS and Gazebo
- Built URDF to initialize the robot model and physical properties and deployed in rviz and Gazebo env
- Control code for movement written in Python

FateMaker

Fall 2020

Sustainability project accelerator sponsored by United Nations. Full stack web application developed using MongoDB, Next.js, Node.js, Fuse.js, and Express.js.

AWARDS & LEADERSHIP

NeuroTech @ UIUC | Co-Founder and VP

September 2019 – Present

- Lead and manage 40 person organization of PHD, Masters, and Undergraduate students
- Technical consulting for Fortune 500 companies and development using EEG data from BCI headset

1st Place @ Autodesk Designathon

November 2019

- Designed Knee Injury Simulator and web controller for medical students to be used at Carle Hospital

Honorable Mention @ Health Make-a-Thon

December 2019

- Designed Wearable to detect chronic illnesses amongst elderly patients in rural areas