Adeeb Abbas

+1 267 206 8442 | adeebabbas@gmail.com | LinkedIn | GitHub | Boston, MA

Education

Drexel University — Philadelphia, PA, United States
B.S. in Computer Engineering; ***GPA: 3.78/4.00*** — *Sep 2018 – Jun 2023 (Expected)*
Pennoni Honors College; 5 year + 3 Co-Op program

Work/Research Experience

Amazon Robotics — Greater Boston Region, MA
Applied Scientist Co-Op — *Jul 2022 – Dec 2022*

- Built the complete software stack (Kotlin, Python and C++) for an exploratory project team under the Robotics Manipulation Group
- Modeled various robots and used internal simulation tool for writing motion planners and perception utilties
- Used various state-of-the-art models for transfer learning and improving segmentation performance for robotic manipulation for Amazon Grocery Fulfilment
- Research and development of instance segmentation models for Amazon Fresh using NLP-inspired networks like transformers

Toyota Research Institute — Cambridge, MA
Robotics Intern — *Sept 2021 – March 2022*

- Built a ROS-based Voxel Occupancy Visualizer and Bounding Box stability tracker for a bi-manual robotic system, Punyo
- Wrote a controller in C++ for robotic manipulation for a 5 DOF (per arm) dual arm robot using Drake
- Perception based dual-arm object grasping and manipulation controller in C++ for Punyo (7 DOF per arm)
- Planned and executed large-scale experiments for Punyo testing both the software and hardware stack, worked on improving the tactile sensing-based controller
- Worked on Visual SLAM using C++ and OpenCV for a mobile robot

Drexel Wireless Systems Lab — June 2019 - Present
Undergraduate Research Associate (Part-time/VIP/Summer Scholar; multiple instances) — *Philadelphia, PA*

- Managed and worked on VarIOT, a university-wide IoT data collection hub/server, wrote Python and NodeJS code for data collection from sensors and various client hubs
- Dockerized and deployed images of web applications for VarIOT for rapid testing and prototyping
- Proposed new methods for feature engineering for raw IQ data and used residual networks to produce state-of-the-art results of modulation recognition (upto 10% better than existing models), later synthesized into a conference paper.
- Worked with Python's multiprocessing library, PyCUDA and OpenCL to make dataset generation 5 times faster and created a Flask server for ML inferencing
- Built and optimized for ML training data input and preprocessing pipelines using Tensorflow
- Used GNURadio's Python API to create a framework to perform both simulated and over-the-air (OTA) raw I/Q data collection for experimentation
- Automating building and deploying LXC containers containing all software necessary to run various software-defined radios on Drexel's wireless testbed
- Designed and created a Python-based CLI tool to remotely control a 16x16 switch radio matrix
- Created lightweight machine learning models for wearable devices to tackle Deep Vein Thrombosis
- Worked on a probe positioner and made its movement accurate by enhancing the controls to automate the millimeter wave experiments in the lab.

Susquehanna International Group — Bala Cynwyd, PA
Software Engineering Intern — *Sept 2019 – Feb 2020*

- Designed and developed applications in .NET Core/Framework and Python used to visualize market data coming from various handlers such as Bloomberg Multicast.
- Fixed bugs in internal software/tools that were heavily used by traders and analysts.
- Automated deployments using tools such as TeamCity and Octopus Deploy
- Developed applications to track the entitlements for optimizing the number of Bloomberg Subscriptions.

Publications

- **Adeeb Abbas**, V. Pano, G. Mainland, K. Dandekar, "**Radio Modulation Classification Using Deep Residual Neural Networks**" in Proceedings of the IEEE Global Communications Conference (MILCOM, 2022)
- **Adeeb Abbas**, K. Dandekar, "**Actuation Device for tackling Deep Vein Thrombosis**." Poster presented at: Drexel STAR Showcase; Aug 2019; Philadelphia, PA

Professional Activities

CS 361, College of Computing and Informatics, Drexel University Fall of 2022
Teaching Assistant for Concurrent Programming in C++ with Dr. Mark Boady

IEEE SPMB (Signal Processing in Medicine and Biology) 2021
Reviewer under Dr. Kapil Dandekar

Drexel Chapter IEEE Jun 2021 – Present
Technical Project Chair

Awards & Achievements

Drexel University Dean's Scholarship, Founder's Scholarship and Presidential Grants: 2018 - Present

Basavaiah Family Scholarship: 2021 - Present

Drexel University Dean's List: multiple instances, 2018 - Present

Drexel STAR (Students Tackling Advanced Research) Scholar : 2019, a program from Drexel Freshman students to pursue research in their freshman year summer at Drexel

Drexel Office of Undergraduate Research Grant recipient: multiple instances - 2021, 2022

Skills

Programming: C++, C, C#, Python, Bash/Zsh

Frameworks: ROS, Tensorflow, Drake, PyTorch, Django, Flask, Docker

Languages: Urdu (Native), Hindi (Native), English (Professional), Arabic (Elementary)

Operating Systems: Linux (Arch and Debian), Mac, Windows

References

Dr. Russ Tedrake
Vice President, Robotics Research
Toyota Research Institute
Cambridge, MA
✉ russ.tedrake@tri.global

Alex Alspach
Senior Manager, Dexterous Manipulation
Toyota Research Institute
Cambridge, MA
✉ alex.alspach@tri.global

Eric Cousineau
Senior Research Engineer
Toyota Research Institute
Cambridge, MA
✉ eric.cousineau@tri.global

Dhruv Kool Rajamani
Computer Vision Software Engineer
Amazon Robotics
North Reading, MA
✉ rdhruv@amazon.com

Dr. Kapil R. Dandekar
Professor & Associate Dean, Department of ECE
Drexel University
Philadelphia, PA
✉ dandekar@drexel.edu

Dr. Lifeng Zhou
Associate Professor, Department of ECE
Drexel University
Philadelphia, PA
✉ lz457@drexel.edu