

# Adeeb Abbas

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## EDUCATION

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### Drexel University

*B.S. in Computer Engineering; GPA: 3.78/4.00*

*Pennoni Honors College; 5 year + 3 Co-Op program*

Philadelphia, PA, United States

*Sep 2018 – Jun 2023 (Expected)*

## WORK/RESEARCH EXPERIENCE

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### Amazon Robotics

Greater Boston Region, MA

*Advanced Robotics Research (Applied Scientist) Co-Op*

*Jul 2022 – Present*

- Built the complete software stack (Kotlin, Python and C++) for an [exploratory project](#) team under the Robotics Manipulation Group
- Modeled various robots and using internal simulation tool for writing motion planners and perception utilities
- 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 light weight 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 optimising the number of Bloomberg Subscriptions.

## PUBLICATIONS

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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)

## PROFESSIONAL ACTIVITIES

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**CS 361, Drexel College of Computing and Informatics** 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. Dandekar*

**Drexel Chapter IEEE** Jun 2021 – Present  
*Technical Project Chair*

## AWARDS & ACHIEVEMENTS

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**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

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**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

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**Dr. Kapil R. Dandekar**

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Drexel University, Philadelphia, PA  
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