

## EDUCATION

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### Drexel University

*BS in Computer Engineering; GPA: 3.78/4.00 (Dean's List)*

Philadelphia, PA

2018 – 2023 (Expected; 5yr - 3 Co-op)

## SKILLS

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- **Programming/Scripting Languages:** C++, C, C#, Python, Bash/Zsh
- **Frameworks:** ROS, Tensorflow, PyTorch, Django, Flask, Docker

## WORK EXPERIENCE

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- **Amazon Robotics** July. 2022 - present  
*Software Engineering Intern (Advanced Robotics)* North Reading, MA
  - 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** Sept. 2021 - March 2022  
*Robotics Software Engineering Intern* Cambridge, MA
  - Built a 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)
  - Monocular SLAM with OpenCV and C++ for a mobile robot
- **Drexel Wireless Systems Lab** June 2019 - August 2021  
*Undergraduate Research Associate (Part-time)* Philadelphia, PA
  - Managed and worked on VarIoT, a university wide IoT data collection hub/server, wrote Python and Node JS code for data collection from sensors and various client hubs
  - Dockerized and deployed images of web applications for VarIoT for rapid testing and prototyping
  - 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 (SIG), LLP.** Sept. 2019 - February 2020  
*Software Engineering Co-op* Bala Cynwyd, PA
  - 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.
- **Department of Computer Science, Drexel University** Sept. 2020 - March 2021  
*Software Engineering Co-op* Philadelphia, PA
  - 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.
  - Built data input and preprocessing pipelines using Tensorflow to bring down memory use down 128 GBs to 8 GBs.
  - Used GNURadio's Python API to create a framework to perform both simulated and over-the-air (OTA) raw IQ data collection for experimentation

## PUBLICATIONS

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A. 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)