

Damian Owerko

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Education

University of Pennsylvania , Philadelphia	
Ph.D. in Electrical and Systems Engineering	May 2025
GPA: 4.00/4.00	
M.S.E. in Robotics	May 2023
GPA: 4.00/4.00	
B.S.E. in Systems Science and Engineering	May 2020
GPA: 3.71/4.00	
B.A. in Physics	May 2020
GPA: 3.71/4.00	

Relevant Coursework: Graph Neural Networks, Machine Learning, Learning in Robotics, Autonomous Racing, Elements of Probability, Digital Signals Processing, Software Design and Engineering

Professional Experience

Apple , <i>Display Technologies Intern</i> , Cupertino	May 2022 – August 2022
<ul style="list-style-type: none">Created a machine learning model for display state estimation that reduced prediction errors by 88%.Integrated hardware, C++, Python to collect tens of gigabytes of performance data about displays.Analyzed the dataset using a Dask cluster on Kubernetes to rapidly iterate on model design.Presented findings to senior management with a variety of technical and non-technical backgrounds.	
University of Pennsylvania , <i>Research Fellow</i> , Philadelphia	August 2020 – Current
<ul style="list-style-type: none">Leveraged GNNs to improve electrical grid efficiency achieving a 5% cost reduction and <2% error rate.Developed a framework for solving large-scale special problems by training CNNs on small scenarios and leveraging transfer learning for scalability, which was presented to Congress in Washington, DC.Collaborated with Lockheed Martin to develop a scalable multi-sensor multi-target tracking system, which achieved a 40% accuracy improvement from SOTA and can handle hundreds of targets.First author on six papers presented at IEEE conferences including ICASSP, ACSSC and GlobalSIP.	
University of Pennsylvania , <i>Head Teaching Assistant</i> , Philadelphia	January 2018 – May 2023
<ul style="list-style-type: none">Taught five semesters of “Information and Signal Processing” and “Graph Neural Networks”.Mediated multiple conflicts within student project groups resulting in a resumption of collaboration.	
CodiLime , <i>Machine Learning (ML) Intern</i> , Warsaw	June 2016 – August 2016
<ul style="list-style-type: none">Engineered a state-of-the art CNN model for malware classification achieving 97% accuracy.	
Institute of Electronic Material Technology , <i>Research Assistant</i> , Warsaw	June 2015 – August 2015
<ul style="list-style-type: none">Optimized vapor deposition production process to maximize conductance, carrier mobility and density.	

Leadership Experience

- Penn Aerial Robotics**, *President*, University of Pennsylvania *September 2016 – September 2020*
- Managed a club of 32 people with a mechanical and software team competing in four competitions.
 - Developed autonomous robots incorporating computer vision, deep learning and reinforcement learning.
- Penn Electric Racing**, *Software Lead*, University of Pennsylvania *September 2016 – September 2020*
- Engineered an electric formula race car drive that won Formula North and FSAE Lincoln.
 - Wrote safety-critical embedded software in C/C++ including field-oriented motor controller code.
- Emergency Entry Logistics System**, Capstone Project, University of Pennsylvania *September 2020*
- Designed distributed system that tracks people using RSSI from Bluetooth Low Energy beacons in C.
 - Leveraged Thread and mqtt to communicate RSSI with AWS IoT to perform triangulation and filtering.
- Sight Stone**, PennApps Hackathon, Philadelphia, PA *September 2018*
- Won “Most likely to be a founder” award by Rough Draft Ventures for a novel refreshable brail display.

Fellowships, Honors, and Awards

- Dean’s Fellowship**, University of Pennsylvania *September 2020*
- Awarded to PhD students in recognition of exceptional performance and potential for continued high achievement in graduate work.
- Harold Berger Award**, University of Pennsylvania *May 2020*
- Engineering capstone project that best combines innovation with an entrepreneurial possibility.
- Stuart Eichert, Jr. Memorial Prize**, University of Pennsylvania *May 2019*
- Junior who best demonstrates initiative, intellectual attainment, and commitment to the professional practice of engineering.
- Vagelos Integrated Program in Energy Research**, University of Pennsylvania *May 2016*
- Competitive program that funds summer research in energy for selected undergraduates.

Selected Publications

D. Owerko, C. Kanatsoulis, J. Bondarchuk, D. J. Bucci Jr, and A. Ribeiro, “Transferability of Convolutional Neural Networks in Stationary Learning Tasks.” Submitted to IEEE Trans. Signal Process., Jul. 15, 2023.

D. Owerko, C. I. Kanatsoulis, and A. Ribeiro, “Solving Large-scale Spatial Problems with Convolutional Neural Networks,” accepted to *2023 54th Asilomar Conference on Signals, Systems, and Computers*, arXiv, Jun. 2023, p. to appear. doi: [10.48550/arXiv.2306.08191](https://doi.org/10.48550/arXiv.2306.08191).

D. Owerko, F. Gama, and A. Ribeiro, “Optimal Power Flow Using Graph Neural Networks,” in *ICASSP 2020 - 2020 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, May 2020, pp. 5930–5934. doi: [10.1109/ICASSP40776.2020.9053140](https://doi.org/10.1109/ICASSP40776.2020.9053140).

Relevant Skills

Prgramming Languages: Python, C++, C, Julia, MATLAB, JavaScript, Kotlin, Java, Swift, SQL

Tools: PyTorch, TensorFlow, Dask, Kubernetes, Apache Spark, Node.js, Android, React, Linux, ROS, Altium

Soft: Technical Writing, Business Presentations, Conflict Mediation, Negotiations, Project Management