

Andrew J. Plesniak

andrewplesniak@gmail.com ♦ (724) 841-7430 ♦ www.linkedin.com/in/andrewplesniak/

EDUCATION

Carnegie Mellon University, Pittsburgh, PA

December 2020

Master of Science in Electrical and Computer Engineering [GPA: 4.0/4]

Specialized Coursework: Artificial Intelligence, Deep Learning, Computer Vision, Software Engineering

University of Pittsburgh, Pittsburgh, PA

May 2019

Bachelor of Science in Mechanical Engineering [*summa cum laude*; GPA: 3.9/4]

Specialized Coursework: Cyber-Physical Systems (IoT), Embedded System Design, Robotic Control

TECHNICAL SKILLS

Programming and Technical Languages: Python, Java, C++, C, CUDA, MATLAB, PHP, SQL, HTML, CSS

Software Engineering Tools: Git, Jira, Amazon Web Services, cloud computing, Linux, hypervisors, virtual machines

Additional: PyTorch, OpenCV, NumPy, Pandas, SciPy, NetworkX, Deep Graph Library, Boost, Spark, high performance computing

PROFESSIONAL EXPERIENCE

Machine Learning Research Engineering Intern, Bosch Center for Artificial Intelligence, Pittsburgh, PA *June 2020 -- August 2020*

- Developed a deep learning model to identify general visual features of traffic signs as part of a larger recognition pipeline
- Created a multi-hot labeling and training scheme to encode and learn traffic sign's visual features (shape, text color, icons, etc.)
- Implemented a ResNeSt variant with a novel combination of a split feature map attention and a graph convolution module
- Achieved 99% visual attribute recognition accuracy on the German Traffic Sign Recognition Benchmark and LISA datasets

Software Engineering Intern, Honeywell (Aerospace - SATCOM), Phoenix, AZ

May 2019 -- August 2019

- Led development of a core feature on a cyber-security critical product exceeding timeline predictions
- Engineered a new hypervisor software stack increasing isolation via virtual machines
- Designed and built software and network architecture eliminating potential cyber vulnerabilities

Research Assistant, Mascaro Center for Sustainable Innovation, Pittsburgh, PA

January 2016 -- May 2019

- Drove development of a machine learning based smart heart stent for emergency military use
- Devised a neural network approach to predicting spatial radiation signatures of ultra-high frequency antennas

Embedded Systems Engineering Intern, Eaton Corporation, Pittsburgh, PA *May 2017 -- August 2017; May 2018 -- August 2018*

- Automated testing procedures using Python drastically improving testing efficiency and accuracy
 - Programmed, wired, and networked automatic switching controls for Amazon and Equinix datacenters
 - Coded an application and user interface improving the usability of a laser engraver used to generate labels
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ACADEMIC PROJECTS

Extreme Pruning for Depth Estimation Neural Networks (Carnegie Mellon University)

January 2020 -- May 2020

- Applied a Lottery Ticket Hypothesis style iterative pruning scheme for ResNet-18 and the FastDepth network
- Achieved an 87% reduction in network parameters while boosting accuracy by ~5%

Semi-Supervised Deep Geometric Learning for COVID-19 (Carnegie Mellon University)

January 2020 -- May 2020

- Created a graph convolution network to predict regional COVID-19 outbreak severity for developing countries with sparse data

Efficient Instance Segmentation for Autonomous Vehicles (Carnegie Mellon University)

September 2019 -- December 2019

- Evaluated Mask-RCNN using ResNet-50 with a feature pyramid network as the baseline backbone network
- Tested MobileNetV3 and EfficientNet as more efficient backbone alternatives in the Mask-RCNN architecture
- Reduced model parameters by over 7x and increased inference speed by 20% while retaining similar accuracy

Robotic Painting Using Generative Machine Learning (Carnegie Mellon University)

September 2019 -- December 2019

- Developed a reinforcement learning based robotic workflow to paint a GAN generated face with a 6-axis robotic arm

Facial Identification Based Smart Door (University of Pittsburgh)

January 2019 -- May 2019

Conceptualization of a Computer Vision Military Target Identification Tool (University of Pittsburgh) *January 2019 -- May 2019*

LEADERSHIP

University of Pittsburgh Cheer Team, Captain

May 2016 -- May 2019

NCAA Student-Athlete Advisory Committee, Elected Representative

September 2017 -- May 2019

Engineering Student Council, Member

September 2015 -- May 2019