

Nicholas Pellegrino

(315) 256-2618 | npelleg1@binghamton.edu | CV: <https://www.nickpellegrinoportfolio.com/>

EDUCATION

Binghamton University, State University of New York

Bachelor of Science in *Computer Science* at Watson School of Engineering

Bachelor of Arts in *Mathematical Sciences* at Harpur College of Arts and Sciences

Minor in *Scholarly Studies* as a member of the Binghamton Scholars Honors Program

Dean's List: Fall 2018, Spring 2019, Fall 2019, Spring 2020 | Honor Societies: Upsilon Pi Epsilon, Pi Mu Epsilon, Phi Eta Sigma

Expected Graduation: May 2022

GPA: 3.6/4.0

TECHNICAL SKILLS

Code: Python (7 yrs), Java (4 yrs), C# (4 yrs), C++ (2 yrs), C (1 yr), and some experience with MIPS Assembly Code, x86_64 Assembly Code, and HTML

Other: Photoshop (6 yrs), Unity Game Engine (3 yrs), Github & Cmd-line Git (4 yrs), Arduino (3 yrs)

Certifications: DoD Issued Security Clearance: Secret Level, SOLO Wilderness First Aid Certified, 2nd Degree Blackbelt in Karate, Certified Guro in Arnis

RESEARCH

Autonomous Intelligent Robotics (AIR) Research Lab – Binghamton, NY

January 2021 - Present

Research Fellow (Undergraduate)

- Developed a system to combine multi-modal sensing with a dialogue system such that a reinforcement learning agent can autonomously learn to compare properties of a physical object with those of a theoretical object being discussed conversationally with a human
- Acting as primary author for work-in-progress research publication, *Simultaneous Multimodal Object Exploration and Dialog for Human-Robot-Object Interaction*, which we plan to submit to a conference this fall

Poster Session Presentations

- Explainable Diagnosis of SmallSat Faults using Reinforcement Learning* NASA | August 2021
- Using Machine Learning to Diagnose On-Board Faults in Satellites* NASA | August 2020
- Find the Litter: a Smart Way for Automatic Litter Detection* Binghamton University | December 2019
- Chatbot for Air Force Missions: Classifying Unstructured Chatroom Text Data* Air Force Research Lab | July 2019
- The Effects of Cosmetics on the Accuracy of Deep Learning Pixel-Based Facial Recognition Algorithms* Binghamton University | November 2018

EXPERIENCE

NASA Goddard Spaceflight Center – Greenbelt, MD

10 Weeks of Summer 2021

Artificial Intelligence Intern (2021)

- Returned to the Research in A.I. for Spacecraft Resilience (RAISR) project, and helped train interns who were new to the project this year
- Designed a Partially Observable Markov Decision Process (POMDP) to autonomously detect errors on spacecraft in a human-explainable way
- Acting as co-author for research publication, which we plan to submit to AAAI 2022

NASA Goddard Spaceflight Center – Greenbelt, MD

10 Weeks of Summer 2020

Artificial Intelligence Intern (2020)

- Led research direction for machine learning components of Research in A.I. for Spacecraft Resilience (RAISR) project
- Coded Long Short-Term Memory (LSTM) network in Python for processing satellite telemetry and onboard diagnosis of spacecraft faults
- Invented importance sampling algorithm with ‘explainable AI’ approach by ranking telemetry data based on weights in trained LSTM’s output gate

Air Force Research Lab – Rome, NY

10 Weeks of Summer 2019

Machine Learning Intern

- Implemented a Wasserstein Generative Adversarial Network in Python which, after training on only 1,000 points of unclassified targeting data, produced over 25 million unique synthetic points of targeting data for the Air Force to use in training scenarios
- Constructed a Deep Neural Network with Natural Language Processing in Python to classify unstructured chatroom text data from Air Force Command & Control Operations and designed a Chatbot and a Warning System that act according to classifications determined by that DNN

PROJECTS

ZooML at HackBU – Binghamton, NY

March 2021

- Worked in a team of four undergraduates to develop an overlay for Zoom (the popular video meeting software), which performs face tracking and emotion recognition on meeting participants, to assist professors in gauging the attentiveness of a class during online lectures
- Won 1st prize best hack overall, and won all three of our categories (best machine learning hack, best civic engagement hack, best building a better future hack) in the HackBU 2021 24-hour hackathon competition

Book Authorship – Manlius, NY

January 2020 - March 2020

- Published book to Amazon & Kindle called “A.I. For Anybody,” which explains the mathematics behind neural networks to an uninformed reader

Mars Rover Project – Binghamton, NY

September 2018 - May 2020

Software Team (2018) & Autonomy Team (2019) – Binghamton IEEE

- Worked in a team of four students to create an autonomous navigation system in C++ for rover in desert conditions
- Developed on user interface for Basestation of rover in C++ to give users access to GPS coordinates, camera feeds, and sensor information remotely

LEADERSHIP & ACTIVITIES

Game Quill LLC – Manlius, NY

June 2019 - Present

Founder and Business Owner

- Founded a company to design, publish, and sell unique card games through kickstarter.com and gamequill.com
- Achieved 425% funding goal on Kickstarter for “As Good As It Gets,” garnering \$21,250 from card game sales in a two-month period