

Xinwei Guo

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EDUCATION

Binghamton University, State University of New York, Thomas J. Watson College of Engineering and Applied Science
Master of Computer Science, Artificial Intelligence, Expected December 2025 | **Cumulative GPA:** N/A

Binghamton University, State University of New York, Thomas J. Watson College of Engineering and Applied Science
Bachelor of Science in Computer Science, Graduated December 2024 | **Cumulative GPA:** 3.61/4.00

Relevant Coursework: Data Structures and Algorithms, Object-Oriented Programming, Operating Systems, Computer Architecture, Distributed Systems, Intro To AI, Design Patterns, Programming Languages, Data Mining

TECHNICAL SKILLS

Languages: C, C++, Java, Python, HTML/CSS, JavaScript

Software and OS: Visual Studio Code, GitHub, Linux (Ubuntu), Jupyter Notebook, ROS

Tools/Frameworks/Libraries: SSH, tmux, Conda, pip, PyTorch, NumPy, NodeJS, Vite, React

WORK EXPERIENCE

SUNY RF, Research Assistant | Vestal, NY

June 2024 – Present

- Conduct research on replicating ptychography image reconstruction using the PtychoFormer transformer model and training the model with synthetic data and fine-tuning with real diffraction patterns.
- Research robotic tasks and motion planning using vision language models, segmentation models, and various tools such as ROS, conda, and pip.

Chipotle, Team Member | Vestal, NY

September 2022 – December 2023

- Provided customer service by efficiently handling orders, resolving customer inquiries, and ensuring a positive dining experience in a fast-paced environment.
- Maintain cleanliness and organization to ensure the store is ready to operate efficiently.
- Handled fresh ingredients adhering to strict food safety standards, set the line, and ensured all stations were fully stocked and ready for service.

Weill Cornell Medicine, Lab Assistant | New York, NY

July 2022 – August 2022

- Assist in research on using the Quantitative Susceptibility Mapping technique in MRI for measuring and mapping the magnetic susceptibility of tissues in the brain.
- Assisted in preparing brain images of patients with multiple sclerosis for analysis by identifying and marking areas with lesions.

PROJECT EXPERIENCE

Robotic Task And Motion Planning, Research Project

January 2025 – Present

- Use a semantic perception pipeline using BLIP, CLIP, Detic, and SAM2 for object detection and labeling; processed point cloud data from iPhone and Intel RealSense D455 to create 3D voxel maps with semantic bounding boxes for downstream planning tasks.
- Utilized ROS 1/2 communication bridges between Segbot and external computing systems using Hello Robot's Stretch AI repository; utilized conda, pip, and various development tools to support VLM-based task and motion planning using OpenAI's GPT4 api.

PtychoFormer, Research Project

June 2024 – Present

- Modified the PtychoFormer model, adapting the Transformer encoder to handle a 5x5 grid of diffraction patterns, enabling enhanced spatial coverage and reconstruction quality for ptychographic phase and amplitude retrieval.
- Developed preprocessing pipelines using NumPy and PyTorch to arrange 25 real diffraction patterns into valid input configurations for the model.
- Trained the PtychoFormer model on real experimental data, achieving robust phase and amplitude reconstructions with and without fine tuning.

Flappy Bird AI, Personal Project

April 2025 – May 2025

- Implemented a neural network with PyTorch to control agent action based on 3 inputs, trained on a genetic algorithm.
- Visualized real-time training and agent evolution using Pygame, enabling live monitoring of learning progress.
- Designed and tuned genetic algorithm operations, including selection, crossover, and mutation, to optimize agent performance over generations.

BioTechWithoutBorders, iGEM research project

May 2019 – November 2019

- Conducted research on citrus greening disease and how genetic engineering can help prevent its spread.
- Assisted in lab procedures such as PCR, annealing DNA, and incubating bacteria.
- Assisted in the development of the team's website and helped present the research project at the 2019 iGEM competition in Boston against 353 teams from 43 different countries.

LEADERSHIP AND INVOLVEMENT EXPERIENCE

European Culture Club, Vice President | Brooklyn, NY

September 2020 – June 2021

- Led engaging presentations and organized weekly Zoom meetings to explore the diverse cultures of European countries.
- Conduct research and present various aspects of European history, governments, traditions, and cuisine, as well as facilitate discussions to deepen our appreciation of European culture.