

Yi-Shan (Annie) Wu

Johnson City, NY | (659) 901-7448 | ywu47@binghamton.edu | www.linkedin.com/in/anniewu-tw/ | www.anniewu-tw.com/

EDUCATION

Binghamton University, State University of New York, Thomas J. Watson College of Engineering and Applied Science

Master of Science in Computer Science, Concentration in AI-track

Expected May 2026

Cumulative GPA: 4.00/4.00

Relevant Coursework: Data Mining, Machine Learning, Internet of Things

University of Alabama at Birmingham (UAB), Department of Computer Science

Birmingham, AL

Coursework toward Computer Science master's degree

January 2023 - June 2024

Cumulative GPA: 3.70/4.00

Relevant Coursework: Advanced Algorithm, GPU programming, Probability and Statistic, Nature Language Processing, Object oriented

TECHNICAL SKILLS

Languages: Python, C, Java, Arduino

Software and OS: Microsoft Office Suite, SQL, CUDA, Pytorch, Tensorflow, Hugging Face

Additional: Microsoft PowerBI, Google App Script

Certifications: Nature Language Processing with Python (Udemy), CUDA programming Masterclass with C++ (Udemy)

PROFESSIONAL EXPERIENCE

Flow.Inc, Data Design Specialist | Taipei, Taiwan (R.O.C)

December 2018 – April 2022

- Engineered an automated workflow in Google Apps Script, enhancing team efficiency by automating tasks in Google Sheets, including usage tracking, email reminders, cell protection, job scheduling, and access permissions.
- Performed data cleansing and consolidation of employee work data, ensuring accuracy in daily reports and enabling data-driven insights.
- Developed and presented weekly online reports in Power BI for management, visualizing team assignments, productivity metrics, and performance insights.
- Awarded annual MVP recognition for strategic vision, innovation, and active participation in advancing team goals ("VIIPS") through strategic business insights and analysis.

Recreation of UAB, Operations Attendant | Birmingham, AL

June 2023 – December 2023

- Managed customer information of recreational equipment and monitored check-ins of the facility
- Completed setup/breakdown for events and attended staff meetings

RESEARCH EXPERIENCE

Facial Expression Recognition Using IMU Data Collection, Graduate Research Assistant | Vestal, NY *August 2024 – Present*

- Developed an advanced wearable health monitoring system to capture and analyze facial expressions, under the mentorship of Professor Yincheng Jin. This system leverages IMU data to discern nuanced facial movements associated with emotional expressions.
- Engineered a custom mobile platform using the Teensy 4.1 microcontroller and ICM-20948 IMU sensor, configured with precise accelerometer and gyroscope settings (120Hz frequency) and a magnetometer frequency of 70Hz to capture high-resolution, multidimensional (9-axis) data.
- Automated data acquisition and parsing by designing a Python-based serial interface, efficiently converting IMU data streams into structured CSV files with acceleration, gyroscopic, and magnitude vectors, timestamped for real-time analysis.
- Conducted advanced data mining and pattern analysis on labeled emotional data, identifying distinct IMU patterns across six primary emotions (happiness, anger, sadness, fear, surprise, and disgust). This analysis aims to uncover unique motion signatures for each emotion, contributing to the development of a robust emotion recognition model.

PROJECT EXPERIENCE

Fine-Tuning Respiratory Sound to Address Class Imbalance, Academic Project | Vestal, NY *August 2024 – Present*

- **Developed and Integrated an Audio Diffusion Model:** Leveraged a diffusion probabilistic model, specifically implemented as a conditional neural vocoder, to synthesize high-fidelity respiratory sound samples. This process involved conditioning the model on Mel-spectrogram features, allowing for the generation of realistic audio data that augmented underrepresented classes in the dataset.

- **Implemented Adversarial Fine-Tuning for Distribution Alignment:** Applied an adversarial training framework to minimize distributional discrepancies between synthetic and real respiratory sound features. By integrating a discriminator network, I enforced feature alignment, ensuring that synthetic data could be utilized effectively without introducing classification bias. This adversarial approach improved model generalization and classification performance across imbalanced classes.
- **Enhanced Model Robustness and Classification Accuracy:** Conducted extensive fine-tuning on the ICBHI dataset to validate the effectiveness of the adversarially fine-tuned model. Achieved significant improvements in classification metrics, including a notable increase in accuracy for minority classes. This work demonstrates a sophisticated handling of class imbalance through generative modeling and adversarial learning techniques.
- Expand on the work of “Adversarial Fine-tuning using Generated Respiratory Sound to Address Class Imbalance” published in Deep Generative Models for Health Workshop

Noise Augmentation on CUDA, Academic Project | Birmingham, AL

August 2023 – November 2023

- **Developed** optimized GPU kernels in C for Gaussian noise augmentation, leveraging CUDA for efficient tiling and channel-wise computation.
- **Benchmarked** GPU performance against CPU implementations, evaluating speed-up and efficiency across various kernel algorithms.
- **Designed** a robust performance evaluation model to measure accuracy, comparing optimized GPU-accelerated results with the original CPU design

LEADERSHIP EXPERIENCE

Girls Who Code, Community Outreach Committee | Vestal, NY

September 2024 – Present

- Plan and host community coding and technology outreach events for middle and high school female students
- Empower more young girls to dive into the field of Computer Science