Andi Scarola

Education

The University of Texas at El Paso **El Paso, TX**

Master of Science in Software Engineering, ***Fast Track Program*** ***May 2027***

Bachelor of Science in Computer Science; Minor: Mathematics GPA: 3.39 | ***May 2026***

Relevant Coursework: Software Engineering, Software Construction, Artificial Intelligence, Machine Learning

Experience

W.M. Keck Center for 3D Innovation at UTEP **May 2025 – Present**

Flow Team *(May 2025 – August 2025)* *El Paso, Texas*

- Constructed modular backend systems in **Flask** to interface with **3** distinct probe configurations via real-time dashboards, giving researchers a flexible and accessible way to control airflow experiments.
- Optimized backend **Python** components across multiple workflows, reducing test runtimes by up to **85%** and accelerating experimental throughput for researchers.
- Maintained all sites as the ***lead developer***, shipping weekly feature updates, reviewing pull requests, and resolving website failures to ensure continuous reliability.

Ceramics Team *(August 2025 – Present)*

- Engineered a pipeline for analyzing SEM scans of 3D-printed ceramics, enabling automated detection of fiber orientation and spatial distribution.
- Developing an AI-based segmentation pipeline using **DeepLabV3+** and **SAM** to extract fiber orientation and density from SEM images of 3D-printed ceramic composites.
- Designed modular **Python** scripts leveraging **OpenCV** and **NumPy** to analyze grayscale images and compute average angle, area coverage, and fiber counts.

OSU NSF AI-EDGE Institute **May 2024 – July 2024**

Generative AI Researcher *Columbus, Ohio*

- Led a team of **3** within a selective AI research program (12 students), conducting hands-on generative modeling projects and presenting results to faculty and industry mentors.
- Built a real-time ASL letter recognition system using **MediaPipe** for hand tracking and a **diffusion model** to expand a dataset to **50+** hand gestures for training a classifier with **PyTorch** and **Hugging Face**.
- Optimized a **GPT-2** model on 1 million tokens of Shakespearean poems using **PyTorch**, delivering a **4%** improvement in model performance.

UTEP NSF Coding Like a Data Miner (CLDM) **October 2023 – October 2024**

Research Assistant *El Paso, Texas*

- Created a poster presentation to an audience of **300+ attendees** at The International Society of the Learning Sciences; *CLDM: Perspectives From the Field: Scaffolding Peer Critiques and Feedback in Education.*
- Co-authored a peer-reviewed publication by analyzing participant data, identifying key instances for study, and drafting written sections on methodology and results.
- Led **15+** interviews, analyzed data from **30+** participants for research publications, and mentored **20+** students in Python through code reviews, debugging, and designing practice problems.

Personal Projects

Fight Coach (Hackathon) | *Python, MediaPipe, Hugging Face Transformers, OpenCV, Flask* **April 2025**

- Developed a **real-time pose analysis tool** for combat sports using **MediaPipe** to extract 2D skeletal keypoints from recorded fight videos.
- Trained a **transformer-based sequence classifier** using **Hugging Face** to recognize fighting stances and detect technical flaws based on pose sequences.
- Produced a modular pipeline to preprocess video frames, convert pose landmarks into feature vectors, and feed time-series data into the classification model.

DUI Risk Radar (BorderHack 2nd Place) | *HTML, CSS, JavaScript, React, Firebase* **September 2024**

- Engineered a **full-stack** web application using **React** and **Firebase Firestore** in a team of **3** to address the UN's **Goal 3.6** of reducing global road accident deaths and injuries.
- Developed data generation algorithms using **linear interpolation** to simulate realistic datasets, improving simulation accuracy by **70%**.
- Integrated DUI data visualizations on interactive maps using **Google Maps API** and **Heatmap.js**, displaying **500+ data points**, and utilized **Google Cloud Speech-to-Text API** for real-time voice-to-text reporting.

Technical Skills

Languages: Python, Java, C, JavaScript, SQL, Assembly

Technologies: React, GitHub, Flask, HTML/CSS, Axios, Pytorch, Pandas, MediaPipe, Firebase