

Nicholas Mesa-Cucalon

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EDUCATION

Carnegie Mellon University, College of Engineering | Pittsburgh, Pennsylvania

Bachelor of Science in Electrical and Computer Engineering | May 2025

- Dean's List: Fall 2021, Fall 2023, Spring 2024
- Relevant Coursework: Data Structures & Algorithms | Distributed Systems | Probability | Linear Algebra | Machine Learning | Convex Optimization | Computer Vision
- Completed Coursework by December 2025: Generative AI | Multimodal Machine Learning

WORK EXPERIENCE

18-213 Intro to Computer Systems, Teaching Assistant, Pittsburgh, Pennsylvania | May 2024 - August 2024

- Led small group meetings of 4-5 undergraduate and masters students to reinforce concepts from lecture
- Held office hours for 5 hours a week to provide assistance to students on high level concepts for homework
- Covered topics ranging from computer architecture, system engineering, and computer networking

Voaige, Undergraduate Internship, Pittsburgh, Pennsylvania | May 2023 - August 2023

- Led development of and deployed production code for Delta Robot calibration with a team size of eight
- Produced a program and documentation for Hand-Eye-Calibration with 2 robot arm types using OpenCV
- Researched and documented over 50 papers on Point Cloud Registration for future work

Air Lab CMU, Undergraduate Research, Pittsburgh, Pennsylvania | October 2022 - January 2023

- Authored script to help generate novel test patterns for research
- Synthesized and devised action plan for novel Camera Models for fish eye lens
- Collaborated with two other undergraduate students to expand on an existing paper

PROJECT EXPERIENCE

"You need to Pay Better Attention" Paper Reimplementation June 2024- July 2024

- Reimplemented "Optimized", "Efficient" and "Super" Attention Layers described in Paper
- Recreated observed experimental trends for Sentiment Analysis on the IMDB dataset
- Achieved 97% training accuracy and 78% test accuracy with the Super Layer on the IMDB Dataset

RNN and Transformer Encoder for Sentiment Analysis February 2024 - March 2024

- Implemented a single hidden layer RNN and a Transformer Encoder Only model in PyTorch
- Achieved 81% Training Accuracy and 75% test accuracy on the IMDB dataset

Optical Flow Video Tracker April 2023 - May 2023

- Implemented Lucas-Kanade and Inverse Affine optical flow algorithms in Python
- Scripts track objects in 30FPS videos with 90% accuracy compared to ground truth

SKILLS

Software: Linux OS | Mac OS | Windows 10 OS | Microsoft Word | Microsoft PowerPoint | Microsoft Excel

Programming Languages: Python | C | C++ | SMLNJ | Golang | Rust

Technologies: Arduino | AWS | Bash | Git | Keras | OpenCV | PyTorch | Raspberry Pi

Languages: English (Native) | Spanish (Native)