

# Luke Kulm

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## EDUCATION

**Cornell University**, College of Engineering, Ithaca, NY

Spring 2025

B.S. in Computer Science - GPA 3.7

**Relevant Coursework:** Machine Learning, Special Topics in Machine Learning, Analysis of Algorithms, Foundations of Robotics, Computer Vision, Large Language Models, Systems Programming

## EXPERIENCE

**Yrikka**, New York, NY | *Machine Learning Engineering Intern*

Summer 2024 - Fall 2024

- Developed a pipeline to evaluate multimodal LLMs on robustness and accuracy for medical diagnosis
- Used agentic workflows, deep learning techniques, and vector databases for evaluation
- Utilized adversarial attacks to test the robustness of image embedding models

**Cornell University**, Ithaca, NY | *Teaching Assistant - CS 4782: Deep Learning*

Winter 2024 - Spring 2024

- Constructed and modified programming assignments using PyTorch and data analysis techniques across topics such as GANs, Vision Transformers, and Reinforcement learning
- Assisted students with concepts across deep learning development and theory

**Emprise Robotics Lab**, Ithaca, NY | *Undergraduate Researcher*

Spring 2023 - Summer 2024

- Utilized prompt engineering to integrate GPT-4 into a robotic planning system for autonomous food peeling
- Implemented Python-based machine learning techniques to classify video, audio, and haptic data
- Employed ROS and Linux to orchestrate data acquisition and robot control; rapid prototyping with Arduino and CAD technology to fabricate a vegetable peeler for robot and human use

## PROGRAMMING LANGUAGES & TOOLS

**Languages/Packages:** Python, PyTorch, C/C++, Java, Ocaml, ROS, HTML/CSS

**Tools/Technologies:** Github, Linux, AWS, GCP, VSCode, Fusion360, LaTeX

## PUBLICATIONS & PROJECTS

**MORPHeus: a Multimodal One-armed Robot-assisted Peeling system**

w/ **Human Users in-the-loop (ICRA 2024)**

Fall 2023

- Employed ROS, Python, Pytorch, Linux, CAD, and GPT-4 to create an autonomous food peeling system with a robot arm, natural language, and multimodal perception
- Collaborated closely with a professor, and three students to produce an academic research paper

**Adversarial Robustness of I-JEPA**

Fall 2024

- Tested the adversarial robustness of Meta's I-JEPA to verify its strength in embedding images
- Authored a technical blog post explaining the methodology and theory behind the technologies

**Cornell's First Deep Learning Class for Undergraduates**

Fall 2023

- Created curriculum and course content for Cornell's first undergraduate course on deep learning
- Constructed programming and homework assignments on deep reinforcement learning

**Optimizing RL Agents for Poker with Supervised Fine-Tuning (In Progress)**

Fall 2024

- Combined deep learning frameworks like PyTorch to improve agent behavior in Texas Hold'em

**BrainRobotConnect (TreeHacks 2024)**

Spring 2024

- Created a robotic pipeline that utilized brain signals for robotic control using signal processing, data analysis techniques, and Boston Dynamics' Spot