Advanced Microprocessors

2nd Semester 2025

Course Information

Instructor

Name: Dennis Gookyi

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Textbooks

1. Rogin R. Murphy: *Introduction to AI Robotics*
2. Gian Marco Iodice: *TinyML Cookbook*
3. Simon Monk: *Programming Arduino*

Course Site

https://github.com/dennisgookyi/AI-Class

Expected Learning Outcomes

- Learn about an approach to lowering the cost of robotics by leveraging recent advances in edge machine learning (ML) using low-cost microcontrollers
- Learn about how to enable modern ML-powered robotics stacks to run on ultra-low-cost microcontrollers
- Learn to develop techniques to run sophisticated algorithms on ultra-low-cost microcontrollers

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Schedule

Lecture	Topic
01	Course Overview
02	Course Hardware and Software Toolchain Setup
03	Overview of Tiny Machine Learning for Microprocessors
04	Overview Deep Learning for Microprocessors
05	Overview of Edge Impulse Platform for Microprocessors
06	Hands-on Project: Creating a Voice Controlled Robotic Subsystem Using Arduino Microprocessor
07	Class Project: Advanced Anomaly Detection in Robotic Systems

Useful Links

https://www.tensorflow.org/lite

https://www.edgeimpulse.com/

https://micropython.org/

https://www.adafruit.com/

https://www.arduino.cc/

https://tinyml.seas.harvard.edu/SciTinyML-24/

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