

WELCOME TO ENGINEERING SUMMER ACADEMY 2025

Artificial Intelligence and Machine Learning

Dr. Lu Zhang, Associate Professor
Electrical Engineering and Computer Science Department



Objectives

1. Demystify artificial intelligence and machine learning.
 - a) Recognize algorithms in the world and be able to give examples of computer algorithms and algorithms in everyday contexts.
 - b) Know three parts of an algorithm: input, steps to change input, and output.
 - c) Know that machine learning is a specific type of algorithm and has three specific parts: dataset, learning algorithm, and outcome.
 - d) Recognize AI systems in everyday life and be able to reason about the prediction an AI system makes and the potential datasets the AI system uses.

Objectives


2. Understand the problems of classification and clustering in the machine learning context. Understand how the machine learning is implemented in code.
 - a) Know the workflow of training and testing a machine learning system.
 - b) Know how to evaluate the performance of a machine learning system. Know that machine learning systems can make mistakes.
 - c) Understand the Python code for machine learning.

Agenda (June 24)

- Morning:

- What is AI and Machine Learning?
- AI Bingo
- Clustering and Classification
- Teach Machine to Identify Cats and Dogs

- Afternoon

- Machine Learning is Simple, with  python™
- Build Your Own Machine Learning Models
- Play with Generative AI

Acknowledgement

- Part of materials are based on
 - “An Ethics of Artificial Intelligence Curriculum for Middle School Students” created by Blakeley H. Payne with support from the MIT Media Lab Personal Robots Group, directed by Cynthia Breazeal.