Calendar

Week 1 - Introduction to Machine Learning

July 15:

LECTURE **Neural Networks**

READING Box's Loop

READING Neural Networks from Scratch

DEMO Tensorflow Playground

HANDOUT Perspectives in Philosophy of Science: Realism, Anti-Realism, and Beyond

July 16:

LECTURE **Computer Vision**

HANDOUT Introduction to Object Detection and Segmentation

READING Understanding Convolutions

READING Calculus on Computational Graphs: Backpropagation

July 17:

LECTURE **Machine Learning**

READING Overview of Machine Learning Algorithms

READING Overview of Machine Learning Tasks

READING Model Evaluation: Training, Validation and Testing

LECTURE **Language Models**

READING An Introduction to Language Models

July 18:

LECTURE **Computer Vision**

HANDOUT Introduction to Convolutional Neural Networks

DEMO MNIST Fully Connected Network

DEMO MNIST Convolutional Neural Network

READING Convolutional Neural Networks Explained

WORKSHOP Lesson Plan Brainstorming Session

Week 2 - Experiments for Students

July 22:

LECTURE **Computer Vision**

HANDOUT Introduction to Object Tracking

July 23:	LECTURE **Computer Vision**	HANDOUT Introduction to Object Tracking (Continued)	DEMO CVAT Tutorial	DEMO Google Colab Tutorial
	WORKSHOP **Lesson Plan Brainstorming Session**	DATASETS Roboflow Universe	DATASETS Example: Bottle Detection Datasets	
July 24:	LECTURE **Computer Vision**	DEMO Monocular Depth Estimation (on a Raspberry Pi)	DEMO Training a YOLOv8 Model for Object Detection	READING The Bitter Lesson
July 25:	WORKSHOP Lesson Plan Brainstorming Session			

Week 3 - Various Topics on Vision and AI

July 29:	LECTURE **Computer Vision**	READING From depth maps to point clouds	DATASETS NYC Open Data	DEMO Tiny YOLO Models for Deployment to Raspberry Pi 5	
July 30:	LECTURE **Model Evaluation**	HANDOUT Concepts in Deep Learning	READING Average Precision	DEMO Decision Thresholds	DEMO Decision Thresholds: Real World Demo
	WORKSHOP Work on Lesson Plans				
July 31:	WORKSHOP Work on Lesson Plan Presentations				
	LECTURE Guest Lecture: Sharon Di				
August 1:	WORKSHOP Work on Lesson Plans				

Week 4 - Advanced Topics and Preparation for the Presentation

August 5:	LECTURE **In-Class Demos with Huggingface**	DEMO On-Browser Visual Language Model	DEMO Zero Shot Object Detection	DEMO Model Cards: Gemma2
	WORKSHOP Work on Lesson Plans			

August 6:	LECTURE **Bias, Stylization and Diffusion**	DEMO Artist DEMO LivePortrait
	WORKSHOP Work on Lesson Plans	
August 7:	REVIEW Finalizing Lesson Plans	
August 8:	FINAL DAY Lesson Plan Presentations	

Final Presentations

August 8:	LESSON **Training Neural Networks**	SLIDES Lesson Plan PLAN Slides
	LESSON **Bikes in NYC**	SLIDES Lesson Plan PLAN Slides
	LESSON **Household Object Detection with AI**	SLIDES Lesson Plan PLAN Slides
	LESSON **Biased Data Analysis**	SLIDES Lesson Plan PLAN Slides
	LESSON **Cumulative Frequency Distribution**	SLIDES Lesson Plan PLAN Slides