Course Syllabus: AI & Machine Learning Capstone - Image Classification Proj

Description of Course:

This capstone course focuses on the practical application of machine learning techniques to image classification problems. Students will work on building and training convolutional neural networks (CNNs) using popular frameworks like TensorFlow or PyTorch.

Instructor and Contact Information:

Dr. Emily Clark

Email: emilyclark@university.edu

Office Hours: Wednesdays 1-3 PM (Online)

Assignment Schedule:

- Week 1: Introduction to Neural Networks & CNNs
- Week 2: Data Collection & Preprocessing (Image Datasets)
- Week 3: Building the CNN Architecture
- Week 4: Training the Model & Hyperparameter Tuning
- Week 5: Model Evaluation & Performance Metrics
- Week 6: Fine-Tuning & Transfer Learning
- Week 7: Final Model Presentation & Report Submission

Grading Policy:

- Project Proposal: 10%
- Data Preprocessing: 20%
- CNN Model Development: 30%
- Final Model & Presentation: 40%

Required Readings/Resources:

- Deep Learning with Python by Francois Chollet
- Hands-On Machine Learning with Scikit-Learn and TensorFlow by Aurelien Geron
- Online resources: TensorFlow Documentation, PyTorch Tutorials

Final Project Submission:

Due Date: Final model and project report are due on Week 7. Students will also present their results and demonstrate the models performance on test data.