Subject

Advanced Machine Learning

Recommended activities after class

Unidad I

Deep Learning

Session 4

Professor: Alejandro Esteban Martínez

1 Activities.

- Assignment 1 (Delivery at S5 – 10:00)

For this assignment, you will build and train a convolutional neural network (CNN) using the Fashion MNIST (https://www.kaggle.com/datasets/zalando-research/fashionmnist) dataset. Design and implement a CNN architecture that accurately classifies various pieces of clothing. Once your model is trained, export it into the ONNX format for CPU usage or TensorRT for GPU acceleration—using CUDA if you have an NVIDIA GPU, otherwise, CPU-only is acceptable. Next, integrate your model with OpenCV to develop a simple real-time camera feed application that identifies the type of clothing presented in front of the camera.

Your final submission should include your complete source code, a PDF document with your name that explains your CNN architecture, discusses your results, and outlines any challenges or problems you encountered, and a demonstration video testing your application with different types of clothing.