

## **ABSTRACT**

In the last century, a technological revolution introduced us to a variety of new computer-based applications, including artificial intelligence approaches. Therefore, a lot of research has already been done to improve the accuracy and the predictive capability of the artificial intelligence models concerning different applications.

Computer vision is an area of artificial intelligence that trains computers to interpret and understand the visual world. One of the most popular challenges in Computer Vision since the first AI algorithms were designed, is optical character recognition (OCR). It was found to be useful in an enormous number of applications, including smartphone systems and PDF readers. Before using deep learning for this task, a feature extractor was needed before training. However, the pattern recognition accuracy was largely dependent on the ability of the designer to identify appropriate features. Once image classification evolved into more elegant techniques, deep learning - and thus a better recognition accuracy - could be implemented to get better OCR results.

This project aims to build an OCR system by implementing a convolutional neural network architecture to distinguish between handwritten letters from the EMNIST Letters dataset. The 1 CNN model will additionally be evaluated on handwritten letters that are captured by the camera and handwritten characters drawn on a tablet. The model will be built in the Pytorch framework as this framework's application in OCR recognition tasks is poorly researched.