# Project: AI Vision

## Letter Identificaion

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26 03 2024

**Brief Overview /Abstract**

- **Introduction and Background**

This project aims to identify drawn letters to help Korean speakers learn English characters. The project features a paint style application that can be used to draw the letters that the model will then predict. The application is limited to single characters not full words. A dataset was collected by me from Kaggle to train the model. I used a train, test and validation set.

- **Methodology**

- **Methodology:** I will use a CNN deep learning network with around 9 layers. I will use ImageDataGenerator to get the most out of the dataset to make the model more rebust.
- **Tools/Techniques:** The code will be done exclusivly in Python. Jupyter Notebook will be the chosen IDE. Tensorflow will be used for the training.

- ## Results and Evaluation

Using 10 Epochs I achieved an overall accuracy of 75% and with 100 epochs 80%. This was not as accurate as preferred. This is due to the dataset used for training as it was small and inaccurate in some areas. With 100 epoch the accurracy was still steadly rising so this could have been pushed higher even.

- ## Discussion and Conclusions

In conclusion, the project uses a GUI that makes inputting images quite easy. The random letter generator allows users to get good practice on all available letters. A confidence score is displayed which is great to see how accuracte you were when drawing. A CNN model is used with 9 layers and 10-100 epochs to achieve a good accuracy score. This translates well into the practical test of drawing as the application gets most of the predictions correct.

- ## References

IBM. (2023). *What are Convolutional Neural Networks? | IBM*. Www.ibm.com; IBM. https://www.ibm.com/topics/convolutional-neural-networks