CAPSTONE TERM 2 PROPOSAL

**Project Title:** Doodle Recognition System

**Course Name:** CAPSTONE TERM II

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# Overview/Intro

Doodle recognition has significant impact in computer vision and pattern recognition, particularly in relation to the handling of noisy datasets. We will be generating a Doodle Recognition Application for this capstone project. The users will be able to doodle on the screen and the application will classify the doodle(s) into one or more of the 345 categories. While the user is drawing, an advanced neural network attempts to deduce the category of the object, and its prognostications improve as the user adds more and more detail. For the purposes of this project, we choose to focus on the classification of the completed doodles in their entirety.

# Problem statement

Computers possessing the capability to comprehend quick line drawings will allow for broader forms of expression and communication. Languages vary from place to place, making it difficult for people to communicate if there is a lack of fluency in universal language (English). Due to this, the use of words can be limited when there is communication across cultures and literacy levels; drawings hold the ability to bridge these existing divides.

# Approach

The problems on hand, demand comparing multiple images to one another and categorizing similar images under one label. This task will require implementation of the pattern recognition abilities of neural networks. CNN is used to get the best results in pattern recognition as they use multiple convolutional layers to understand the image in depth and it would be like learning an image under a magnifying glass.

We will also preprocess the labels to eliminate space as delimiter which can be replaced by underscores, such that the label with 2 words is considered as a single label.

# Scope/limitations

This task remains difficult due to the large number of categories (345), wide variation of doodles within even a single category, and confusing similarity between doodles across multiple categories. In addition to this, some doodles may be incomplete, making them difficult to categorize. Lastly, individuals may draw a specific doodle to represent the subject differently leading to misclassification.