# Sketch (Doodle) Generation

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## The Problem Statement

Build an assistive teaching model that can perform the following tasks:

1. Given a label, and an incomplete sketch of the label, suggest a continuation of that drawing, so that the final image looks like that label.
2. Given a sketch, predict what the sketch looks like and how far away it is from the label.

## Why do we want to work on this?

1. This model could help children learn to draw common things like birds, vehicles, fruits.
2. This project topic gives us a chance to explore transformers, RNNs and see how sequential generation models work.

## Our Dataset

We have the following sources, and could use any combination of them for the project.

1. [https://console.cloud.google.com/storage/browser/quickdraw\_dataset/sketchrnn](https://console.cloud.google.com/storage/browser/quickdraw_dataset/sketchrnn;tab=objects?prefix=&forceOnObjectsSortingFiltering=false)
2. <https://github.com/googlecreativelab/quickdraw-dataset>
3. <https://www.kaggle.com/c/pictionary/data>
4. <https://github.com/facebookresearch/DoodlerGAN>

## Algorithms that we may use

Neural networks with any of the following architectures (may use multiple for comparisons):

1. CNN for the classification task
2. RNN/LSTM/VAE/GAN for the sketch generator model

## Experiments and analyses we will run

The plan is performance evaluation analysis using accuracy and loss metrics evaluating how accurate our sketch model is at recognition of a sketch.

We will also experiment with different model architectures to see which one best fits our goal for the sketch generation task and learn from the iterations.

## Plan until Midterm Report

1. Prepare the dataset for the task.
2. Complete the sketch classification (recognition) task.
3. Have 1 or more iterations of a working RNN model with appropriate encoders, for sketch generation.