Which Pokémon Did You Evolve From?

Abstract:

The purpose of this project is to create a model that is trained on pictures of first generation Pokémon. When given a new image, the model will predict which Pokémon is the most similar. The target audience are those who are fans of Pokémon.

Design:

In order to reduce the amount of computational time needed to train the network, I focused on 57 types of Pokémon from Generation One that are in unevolved forms. I used some data augmentation to increase the accuracy of the network.

Data:

I used a dataset from Kaggle that contained ~60 images for each Pokémon. After selecting the unevolved forms of each Generation One Pokémon, there were a total of 4,371 images used for training and validation (a split of 80/20) of the network.

One image per Pokémon was withheld from the dataset and reserved for testing.

Algorithms:

I built a convolutional neural network that had several convolutional layers. Each convolutional layer was followed by normalization, pooling, and dropout layers (to help minimize overfitting). There were a total of 9,678,905 trainable parameters that were trained for 20 epochs (with a validation accuracy of 0.5143) and 50 epochs (with a validation accuracy of 0.4960). ReLu and Softmax were used as the main activation functions.

Tools:

I used the Keras library from Tensorflow to develop the neural network model.
Google CoLab was used for training and testing the network.

Communication:
See presentation slides