Image classification model for Gen 1 Pokémon

Principle: Develop an image classification model that gets an image of one of the 151 original Pokémon and finds what type of Pokémon it depicts.

Database: Unique Image examples for each category of Pokémon.

Preprocessing: Make a unified format for images, corelate more information based on evolution lines, colors and in game “creature types”.

Model type: Use Supervised learning to train the different models we have learned, play around with the best model parameters.

Model training: Use a training subset of the dataset to train each model and find out which is overall better at distinguishing each type, correlation similar types and other input parameters.

Conclusions: Random image predictions based for the best models and exploration of the best working parameters.

Extra credit: Use best model to develop a model that can play “who’s that Pokémon” from the tv show.

Description:

The project will use a database of unique images annotated by the Pokémon’s name, prosses them into a unified format with RBG colors. Split them into a training set and a test set (based on an equal representation of each type). Use the training set to extract features from the images based on the similarities between each type (for example evolution lines are very similar to each other and may need to be used as features for better image classification. Colors play an important role as features and might need to be added in data preprocessing. For models we will use supervised learning in order to train a variety of models that we have learned and optimize each learning parameters for each model. The models will be tested on the test set of images. The target will not only be to find the overall model, but also what model is better at distinguishing similar types. Perhaps in the end we could use a more general model to classify each type in to a smaller groups of similar types and then test this models with distinguishing these types. In the end the conclusion will be to find the “best” trained model. If there is time perhaps a model that predicts Pokémon based on their outline may be developed (like the one in the show).

Dataset: https://www.kaggle.com/datasets/mikoajkolman/pokemon-images-first-generation17000-files

Image examples:

Extra data that need annotation: Evolution lines, in game types, color palettes

Model evaluation based on: Classification Error, Type similarity, Evolution lines, Correlation on in game types.

Extra credit: game “Who’s that Pokémon”

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