Class: CS5137 – Machine Learning

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Subject: Gotta Type ‘em All – An Analysis of Classification Algorithms

**INTRODUCTION**  
This project faced the challenge of classifying a given Pokémon based on its different statistics: Hit Points, Attack, Defense, Special Attack, Special Defense, and Speed. Given that new Pokémon are released roughly every two years, this would allow anyone to determine the type of the Pokémon, the available types are Bug, Dark, Dragon, Electric, Fairy, Fighting, Fire, Flying, Ghost, Grass, Ground, Ice, Normal, Poison, Psychic, Rock, Steel, and Water. This problem is challenging because of the small amount of statistics in comparison with the large number of types. Through experience with the many games of Pokémon, many players consider certain types of Pokémon to be weaker. This project aims to make these considerations fact through classification by Decision Tree, SVM, Naïve Bayes, and Nearest Neighbors algorithms.

**BASIC APPROACH**  
This project will be approached by splitting the dataset of necessary information into a training and validation set. The training set will contain 4/5 of the data while the validation set will contain the remaining 1/5 of the data. Each of the classification algorithms will then be used with these sets to find the accuracy based on the training data and the accuracy based on the validation data.

**EXPERIMENTAL SETUP**

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**EXPERIMENTAL RESULTS**

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