Utilizing Artificial Neural Networks in Data Analysis

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The purpose of this project was to determine if artificial neural networks could be effectively utilized in a data analysis problem such as predicting stock prices. In order to answer the research question, the first step taken was to create an artificial neural network. The programming language Python, more specifically the program Python(x,y) (A version of Python with libraries such as Numpy built in), was utilized. The Python libraries scikit-learn and matplotlib were also utilized. After creating the artificial neural network model (using the Support Vector Machine model), training data was collected. The project utilized 1 year worth of historical stock data from the companies: Apple, Amazon, Google, GoPro, and Tesla. The stock data was split into quarters, the first three quarters of the year's data would be used as the training set, the last quarter would be used to determine the accuracy of the model's prediction. The model was then trained on the three quarters of a year's worth of data. The model was then asked to predict the last quarter. The percent change was measured using the formula: (Predicted Stock Value - Actual Stock Value) / (Predicted Stock Value) A value that was less than .15 more than 50% of the time was considered accurate. Another variable within the model was changed and the model was retrained and was asked to re-predict. The re-predicted data was more accurate and better followed the trends of the historical data. Overall the model was determined to be accurate. The neural network met the constraints by training itself and improving its accuracy.

Awards Won: