**Sales forecasting using Machine Learning**

Forecasting sales is a common task performed by organizations. This usually involves manually intensive processes using spreadsheets that require input from various levels of an organization. This approach introduces bias and is generally not accurate especially during the initial few weeks of a quarter. In fact that's the time when an accurate forecast has the most benefit after all there's little value in providing an accurate forecast in the last week of a quarter.  
  
Though the process of forecasting tends to be complex it is straightforward to determine its accuracy. One simply has to wait until the end of a forecasting period (e.g. end of quarter) and then compare forecasts with actuals. We are confident about the accuracy of our models and are inviting sales leaders to our [**Man vs Machine Forecasting Duel**](http://www.springml.com/sales-forecasting-challenge) - give us a day with your data and we'll provide an algorithm based, unbiased forecast. At the end of the quarter you can evaluate our number by comparing with your internal forecast. Get started by visiting [www.springml.com/sales-forecasting-challenge](http://www.springml.com/sales-forecasting-challenge) and submitting the form. The process is simple and allows you to quickly see what machine learning can do for your organization.  
  
SpringML's app simplifies forecasting by executing machine learning models that run automatically and present a monthly or quarterly forecast of a customer's sales metric (e.g. Revenue, ACV, quantity). Sales leaders can These models consume both historical data to gauge trend and seasonality, as well as current pipeline of opportunities to then predict for the next 6 or 12 months. Accurate forecasts allow organizations to make informed business decisions. It gives insight into how a company should manage its resources - people, time and cash.  
  
Here are the various techniques that make up our forecasting ensemble.

* Time series forecasting using Bayesian models (BSTS package in R), Tree based techniques and other traditional methods like ARIMA.
* Include predictors for time series - these could be any variables that add value to the model e.g. product usage, number of users, marketing spend, etc. Include external data where applicable such as industry trends, demographic info, etc.
* Evaluate current pipeline data by running classification algorithms on open opportunities - this forms a part of the ensemble.
* Evaluate ensemble on previous few months before finalizing the best set of models to use.

Since forecasts are data driven the solution allows users to also perform "What-If" analysis. This is a tool that allows sales leaders to determine impact of certain factors on sales numbers. This type of analysis helps them determine what types of levers they have access to and what impact, either positive or negative, they can have on the sales. This advanced What-If analysis is based on machine learning where the model gets executed every time a user interacts with the tool. Some of the variables used in this analysis are number of sales reps, average deal duration, average deal amount, percent win rate. For example a sales manager can see what happens if they increase recruiting or if determine impact of a discounting program they have been considering. This list of features is configurable and can include other factors that may be more meaningful to a company.

**Predicting a stock market**

Abstract: High level of accuracy and precision is the key factor in predicting a stock market. The technical, fundamental or the time series analysis is used by most of the stockbrokers while making the predictions. Nevertheless, these methods cannot be trusted fully, so there is a necessity to provide the supportive method for stock market prediction. In this paper, we propose a Machine Learning (ML) approach that will be trained from available stocks data, gain intelligence and then uses the acquired knowledge for accurate prediction. After the through research of various algorithms and their fitness for different problem domains, Artificial Neural Network (ANN) was found to be the most practical consideration. Neural network models having the features and customisable parameters makes it possible to implement wide number of features along with the crossvalidation sets. The main significant approach, used in this paper for the predicting result is a concept of machine learning and result tested on the Bombay Stock Exchange (BSE) index data set. To seize the best accurate output, the approach decided to be implemented is machine learning along with supervised classifier. Results are tested on the binary classification done using SVM classifier with a different set of a feature list. Most of the Machine Learning approach for solving business problems have their privilege over statistical methods that do not include AI, although there is an optimal methodology for certain problems. A comparative analysis of selective application is conducted which concluded that ANNs are extensively implemented in forecasting stock prices, returns more control degree of a relative similarity in predicted result.

Keywords: Machine Learning, Stock Market, Artificial neural networks, Bombay Stock Exchange, Support vector machine.

Link1: <https://projectworlds.in/free-projects/machine-learning-projects-with-source-code/predict-stock-prices-machine-learning-projects/>

Link2: <https://projectworlds.in/free-projects/machine-learning-projects-with-source-code/stock-price-predictor-machine-learning-projects/>

Resources: <https://www.kaggle.com/borismarjanovic/price-volume-data-for-all-us-stocks-etfs>

**Handwritten Digit Recognition using Machine Learning Algorithms**

Abstract-

Handwritten character recognition is one of the practically important issues in pattern recognition applications. The applications of digit recognition includes in postal mail sorting, bank check processing, form data entry, etc. The heart of the problem lies within the ability to develop an efficient algorithm that can recognize hand written digits and which is

submitted by users by the way of a scanner, tablet, and other digital devices. This paper presents an approach to off-line handwritten digit recognition based on different machine learning technique. The main objective of this paper is to ensure effective and reliable approaches for recognition of handwritten digits. Several machines learning algorithm

namely, Multilayer Perceptron, Support Vector Machine, Naïve Bayes, Bayes Net, Random Forest, J48 and Random Tree has been used for the recognition of digits using WEKA. The result of this paper shows that highest 90.37% accuracy has been obtained for Multilayer Perceptron.

Keywords: pattern recognition, handwritten recognition, digit recognition, machine learning, WEKA, off-line handwritten recognition, machine learning algorithm, neural network, classification algorithm.

Link: <https://projectworlds.in/free-projects/machine-learning-projects-with-source-code/handwritten-text-recognition-with-tensorflow-machine-learning-projects/>

Link2: <https://towardsdatascience.com/build-a-handwritten-text-recognition-system-using-tensorflow-2326a3487cd5>

**Detection and classification of vehicle types using machine learning technology**

In this paper, we focus on detection and recognition of vehicles from a video stream. Contrasted with conventional techniques for article identification and arrangement, Machine learning strategies are another idea in the field of PC vision. Our model works in two phases: an information planning step, it comprises of applying Treatments on the pictures forming the dataset so as to separate the qualities, the subsequent advance is to apply the idea of convolutional neural systems to order vehicles. Vehicle discovery permits the utilization of different uses of computerized reasoning framework for a few purposes, particularly: canny transportation, programmed checking, selfsufficient driving, and driver wellbeing ensure. The motivation behind this article is to enable us to identify vehicles moving before us by means of a camera put under the rearview mirror and draw the direction lines of our vehicle. In this work, we center on the location and acknowledgment of vehicles in a video stream. We have demonstrated that our strategy for work extraordinarily improves the exactness rate and diminishes the mistake rate, however in spite of the utilization of regularization, institutionalization and advancement systems, the preparation time of our model remains an issue to raise. Our method gave better results in terms of precision, detection and classification where we obtained an accuracy of 99.2%.

# Fashion Recognition

## Use Deep Learning to Identify and Classify Fashion Items

Link1: <https://github.com/algorithmiaio/sample-apps/tree/master/JavaScript/deep-fashion>

Link2: <https://www.tensorflow.org/tutorials/keras/classification>