

Smart Predictive Analysis Tool

Data Verity is a consulting firm that provides financial institutions with a cloud-based Business Intelligence solution. We currently have modules that produce front-end reports, allow them to manage their database, manage their calendars and more. The next module that Data Verity is developing for our clients is a Predictive Analytics package using Principal Component Analysis.

Principal Component Analysis is an extremely powerful statistical tool. It can create useful regression models when there are a large number of independent variables, which can affect the outcome that you're trying to predict; it can even deal with more variables than you have data points! It effectively deals with inter-correlation of independent variables as well, which will cause most regression tools to fail. It is used by analysts in the social sciences, economics, chemistry, biology, physics, or essentially for any problem which is too complicated to use other forms of analysis. In short, it's powerful.

Project Goals and Requirements: This project will create a principal component analysis tool that will take a set of training data, use various functions and nonlinear combinations of that data, and create a regression model. The model will then be tested against separate testing data to measure the predictive quality of the model. Then the tool will iterate to seek out the model with the best predictive behavior. This will essentially be an artificially intelligent predictive tool that should be able to eat any set of data and seek out the best modeling function for the inputs to predict the outputs. Very cool.

Benefit to CSM Students:

- Students will learn about one of the most powerful statistical tools.
- Students will apply their computer science skills to a real world application.
- Students will gain experience in architecting a learning machine that uses training and testing data. This is used in various applications such as neural networks.
- Practical programming experience.

Client:

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