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I pledge my honor that I have abided by the Stevens Honor System.

Title: *Predicting Congressional Voting through Machine Learning Techniques*

Objective: To create a system for training a machine learning model to predict the voting of United States congressional members based on a multitude of inputs.

Technical Description: The systems will use the Computer Engineering discipline of machine learning in order to determine the most likely vote for each congressman on a particular subject or bill. The input vector may contain data from, but not limited to the following sources:

- Free-text of congressional acts and bills
- Campaign contributions
- Pertinent news articles
- Pertinent speeches or text from audio clips

Once these inputs are collected and put into a computer-readable format using natural language processing, they will be trained against known voting history. The output of this training sequence will be a computer model for each United States congressman. Future votes will be predicted by running the free-text into the model and creating a binary output or a probability.

Impact:

This product has a two-fold impact on all those affected by United States politics. The first impact will provide insight into the non-obvious factors which influence politician's decisions when voting on congressional bills. This is exposed by comparing weighting schemes in machine learning algorithms to most accurately predict congressional voting. The second impact is inherit power to predict the likeliness of a congressional member to vote for a particular act or issue. This can give constituents and lobbyists time to impact the member's decision before it is public.

Potential Commercialization and Sales:

The product has the ability to be licensed as intellectual property to several potential stakeholders. News organization may want to have an app or widget on their websites that can accurately predict upcoming congressional votes. Lobbyist may pay for this product as a service to analyze individual congressional members and determine where to focus their efforts. Finally, individual politicians or political parties may use this as a tool to track and predict their peer's votes.