Title: A Predictive Model for Electoral Outcomes in Trinidad & Tobago

Group Members

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Problem Statement

Elections in Trinidad and Tobago (T&T) are contentious, and elected governments typically win only by small margins where the outcome of many elections are decided by just a few marginal constituencies. Our project aims to develop a machine learning model to predict electoral outcomes based on historical data and voter sentiment.

Justification

T&T's elections have a significant impact on the lives of people who reside within its borders. Affecting the economy, the business and regulatory environment and private and public investment decisions. By providing accurate electoral outcomes, voters can be made cognizant of how their voting behaviour may affect the direction of the country and garner a greater understanding of their voting power, campaign strategists can make adjustments to their tactics to increase voter interest and businesses can adjust their operations as needed given a change in government and a resultant change in the country's legislative framework.

Preliminary Approach

Our approach involves collecting and preprocessing historical election data and polling data (where available). Our methodology would necessitate feature selection techniques to determine relevant factors influencing voting behaviour. Furthermore, the implementation of a regression model will be used to analyse past voting data to predict voter share for each political party as well as an estimate of voter turnout. A binary classification model will be used to predict the outcome of battleground constituencies. LSTM (Long Short-Term Memory) (a type of **recurrent neural network (RNN)**) may also be considered for use within our predictive model. Overall model evaluation of its fitness and sagacity may involve the following:

Voter Turnout and Percentages by party	Binary Classification of Tossups
Mean Absolute Error (MAE)	Accuracy
Mean Squared Error (MSE) and/or Root Mean Squared Error (RSME)	Precision, Recall, F-1 Score
R^2 (R-Squared)	Confusion Matrix

DATA CONSIDERATIONS

We will use publicly available past electoral datasets sourced from the Elections & Boundaries Commission (EBC) and The Picong Party. Additional data, such as historical polling data, will be obtained from the North American Caribbean Teachers Association (NACTA). If real-world data gaps exist, we will generate synthetic polling data for model training and validation.

EXPECTED OUTCOMES

- A predictive model capable of forecasting electoral outcomes in Trinidad & Tobago.
- An interactive web dashboard displaying voting insights and election predictions.
- A comprehensive report detailing our methodology, data gathering and processing steps, and succinct description of our findings.
- Recommendations for increasing voter interest and reducing voter apathy particularly within the contentious marginal constituencies utilizing voter analysis and predictive insights.