## **Proposal for Predicting Crime Rates in Baltimore Neighborhoods**

### **Introduction:**

The safety and well-being of communities are significantly impacted by crime rates. Understanding and predicting crime rates in different neighborhoods can aid in developing targeted interventions and allocating resources effectively. This project aims to investigate the relationship between neighborhood characteristics and crime rates in Baltimore, using data-driven approaches to predict crime rates based on various factors.

### **Research Questions:**

* *What is the correlation between neighborhood characteristics such as income, healthcare access, and population density, and crime rates in Baltimore?*
  + Investigating this will help identify key factors that influence crime rates, providing insights for policy-making and community development.
* *Can we develop a predictive model that accurately forecasts crime rates in Baltimore neighborhoods based on these characteristics?*
  + A reliable predictive model can be a valuable tool for law enforcement and community planners in proactive crime prevention.
* *How do changes in neighborhood characteristics impact predicted crime rates?*
  + Understanding this relationship can guide efforts to improve neighborhood conditions and reduce crime.

### **Plan:**

* *Data Collection, Analysis & Model Building:* **Sai Krishna Vishnumolakala** will be responsible for scraping crime data from the FBI's Uniform Crime Reporting (UCR) website and neighborhood census data from Data.gov and will analyze the data using pandas and numpy to identify valuable features and understand the relationship between neighborhood characteristics and crime rates. Furthermore, build predictive models using scikit-learn or TensorFlow, comparing different algorithms to select the best model based on performance metrics.
* *UI Development:* **Venkat Pantham** will develop a user interface using Streamlit, allowing users to interact with the model by toggling different features and observing how they impact predicted crime rates.
* *Collaboration and Accountability:* Regular meetings will be held to discuss progress and challenges. If a member is not fulfilling their responsibilities, the group will first attempt to address the issue through communication and support. If the situation does not improve, tasks will be redistributed among the remaining members, and the instructor will be informed.

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### **Tools:**

*Tech Stack:*

* + Data Scraping: Python (BeautifulSoup, requests)
  + Data Analysis: Python (pandas, NumPy)
  + Model Building: Python (scikit-learn, TensorFlow)
  + UI Development: Streamlit

### **References:**

1. FBI Uniform Crime Reporting (UCR):<https://www.fbi.gov/how-we-can-help-you/more-fbi-services-and-information/ucr>
2. Data.gov Census Data:<https://www.data.gov/>
3. Pandas Documentation: https://pandas.pydata.org/
4. Scikit-learn Documentation:<https://scikit-learn.org/>
5. TensorFlow Documentation:<https://www.tensorflow.org/>
6. Streamlit Documentation:<https://streamlit.io/>

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