**Proof of Concept (PoC) Document**

**Project Title**: Community Risk Profiling Using FIR Data

**1.Introduction**

This Proof of Concept (PoC) document outlines the development of a data-driven system for community risk profiling using FIR (First Information Report) data. The system aims to analyze crime patterns, map geospatial risk, understand temporal and demographic trends, and predict potential crime hotspots. By leveraging public crime datasets from India, this POC serves as a foundational prototype to assist law enforcement, policymakers, and communities in understanding and mitigating crime risks.

**2. Purpose and Objectives**

**2.1 Purpose**

The main objective of this project is to develop a system that leverages publicly available FIR and crime data to provide actionable insights into crime trends, hotspots, and vulnerable populations. This aids proactive policing, resource allocation, and community awareness.

**2.2 Objectives**

* Analyze historical FIR data to identify prevalent crime types and trends.
* Create geospatial heatmaps indicating high-risk zones.
* Explore temporal patterns in crime occurrence (seasonal, hourly, etc.).
* Correlate demographic factors with crime rates.
* Build basic predictive models to forecast crime trends and hotspots.
* Visualize resource deployment strategies for crime prevention.
* Design dashboards for law enforcement and community awareness.

**3. Technology Stack**

**3.1 Data Sources**

1. Indian Crimes Dataset (2023):
   * Description: Detailed crime data from various cities in India for the year 2023.
   * Sample Size: Approximately 100,000 records.
   * Source: [Kaggle - SudhanvahG](https://www.kaggle.com/datasets/sudhanvahg/indian-crimes-dataset)
2. Crime in India Dataset (2001–2022):
   * Description: Comprehensive crime data across India from 2001 to 2022, covering various crime categories and states.
   * Sample Size: Over 1 million records across 75+ CSV files.
   * Source: [Kaggle - Rajanand](https://www.kaggle.com/datasets/rajanand/crime-in-india)
3. Open Government Data (OGD) Platform India - Crime Statistics:
   * Description: Datasets related to cases reported under Indian Penal Code (IPC) crimes, including state-wise data.
   * Sample Size: Varies by dataset; some datasets contain thousands of records.
   * Source: [Data.gov.in](https://www.data.gov.in/dataset-group-name/Crime%20Statistics)
4. National Crime Records Bureau (NCRB) Reports:
   * Description: Annual reports with comprehensive crime data, useful for in-depth analysis.
   * Sample Size: Detailed reports covering nationwide data.
   * Source: [NCRB Official Website](https://ncrb.gov.in/en/crime-india)

**3.2 Frontend**

* Web Framework: React.js
* Mapping Libraries: Leaflet.js for interactive maps
* Styling: Bootstrap, CSS3

**3.3 Backend and Data Processing**

* Python: Core language for data analysis and modeling
* Pandas & NumPy: Data wrangling and preprocessing
* GeoPandas: Handling geospatial data
* Matplotlib & Seaborn: Static visualizations
* Plotly & Folium: Interactive dashboards and maps
* Scikit-learn / XGBoost: Predictive modeling
* Jupyter Notebooks: Prototyping and exploratory analysis
* APIs: Flask for developing RESTful services
* Data Storage: PostgreSQL with PostGIS extension for spatial data

**3.4 Infrastructure**

* Docker: Containerization for reproducibility
* Git/GitHub: Version control
* Streamlit / Dash: Interactive dashboard for visualization
* Hosting**:** Cloud services such as AWS or Azure