**ABSTRACT**

Massive data collected by automated fare collection (AFC) systems provide opportunities for studying both personal traveling behaviours and collective mobility patterns in urban areas. Existing studies on AFC data have primarily focused on identifying passengers’ movement patterns. However, we creatively leveraged such data for identifying pickpocket suspects. Stopping pickpockets in the public transit system has been crucial for improving passenger satisfaction and public safety. Nonetheless, in practice, it is challenging to discern thieves from regular passengers. In this paper, we developed a suspect detection and surveillance system, which can identify pickpocket suspects based on their daily transit records. Specifically, we first extracted a number of useful features from each passenger’s daily activities in the transit system. Then, we took a two-step approach that exploits the strengths of unsupervised outlier detection and supervised classification models to identify thieves, who typically exhibit abnormal traveling behaviours. Experimental results demonstrated the effectiveness of our method. We also developed a prototype system for potential uses by security personnel.

**EXISTINNG SYSTEM**

The System of existing literature focuses on finding patterns in passenger activity records. Such knowledge can be useful in a variety of applications, and plays a vital role in effectively finding and satisfying passenger needs. Examples include assessing the performance of the transit network, identifying and optimizing problematic or flawed bus routes, improving the accuracy of passenger flow forecasted between two regions, and making service adjustments that accommodate variations in ridership on different days. In particular, [4] estimated the crowdedness of various stations in the transportation network using AFC data. [9] measured the variability of transit behaviours on different days of the week.  Existing studies that detect anomalies in urban sensing data can be divided into two categories: those based on locations, and those on trajectories. Along the line of location-based anomaly detection, [15] presented a framework that learned the context of different functional regions in a city, which provided the basis of our feature extraction approach.  In addition, [16] attempted to discover casual relationships among spatiotemporal outliers.

**Drawbacks of the Existing System**

• There is no Smart Card Based Travelling due to Only Manual Passengers Activity Patterns and Manual Transit Records.

• Since thieves involved in victim reported events were not caught, the system could not identify them according to the no checkout rule. Instead, the system manually labeled thieves according to their travel behaviours. Specifically, the system first identified all passengers on the vehicle during the same period of time, and then visualized their trajectories to ascertain whether their travel patterns were typical.

**PROPOSED SYSTEM**

In the proposed system, the system adopted a comprehensive approach to the pickpocket detection problem. The overall framework of our solution is illustrated in this system. The system first partitioned the city area into regions with functional categories. Then, the mobility characteristics of passengers were extracted from transit records dynamically over time.  A core component of the system was a two-step passenger classification process, the first step being regular passenger filtering, and the second step being suspect detection. Finally, system user feedback information, such as newly confirmed thieves, was entered as ground truth for future model training based on a utility function that strikes a trade off between effectiveness (i.e., performance) and relevance (i.e., recency). A more detailed description of this system may be found in this system.  The contribution of our study can be summarized as follows. Firstly, we identified a number of features that may be extracted from AFC records and are potentially useful for distinguishing thieves from regular passengers.  Secondly, a two-step approach was proposed to make the suspect detection problem practical in a large-scale data environment where the positive and negative samples are extremely imbalanced.  Thirdly, our dynamic filtering enhancement significantly reduced the everyday computation costs and maintained superior accuracy. Most importantly, a real system for the end user was designed and tested using real world, large-scale data. As an applied data science study, our solution is the first to address an important social issue identifying pickpockets by using big data. The significance of this work has been recognized by a featured article in The Economist.

**Advantages of Proposed System**

* Effective techniques for Abnormal Traveling Behaviour Detection.
* Smart Card Based Transit Record Maintenance.
* Enhanced Public Safety, by prevention of crime and improved security measures.
* Scalability and Adaptability.
* Reduction in Investigative Costs and Time.

**REQUIREMENT SPECIFICATION**

**Hardware Requirements**

For developing the application the following are the Hardware Requirements :

Processor : i3 or above

RAM : 4 GB (min)

Hard Disk : 20 GB

**Software Requirements**

For developing the application the following are the Software Requirements:

Framework : Tkinter

Operating system : Windows 10 or above

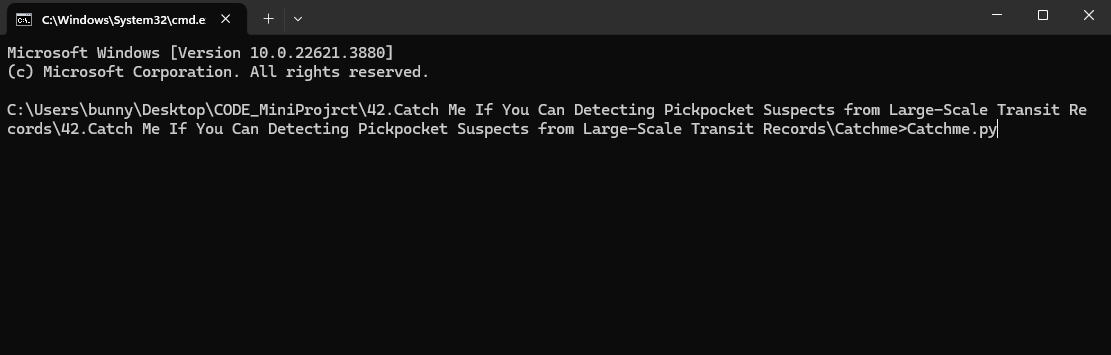
Coding Language : Python

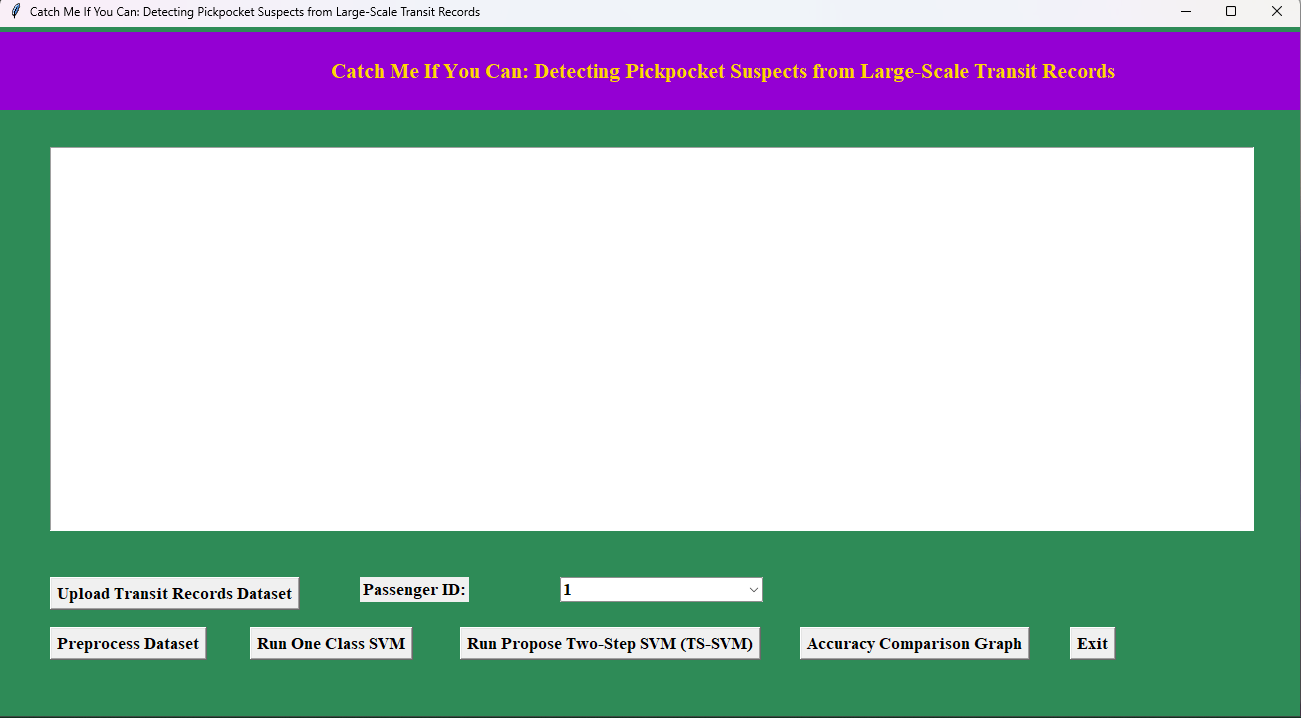
Back-End : Django-ORM

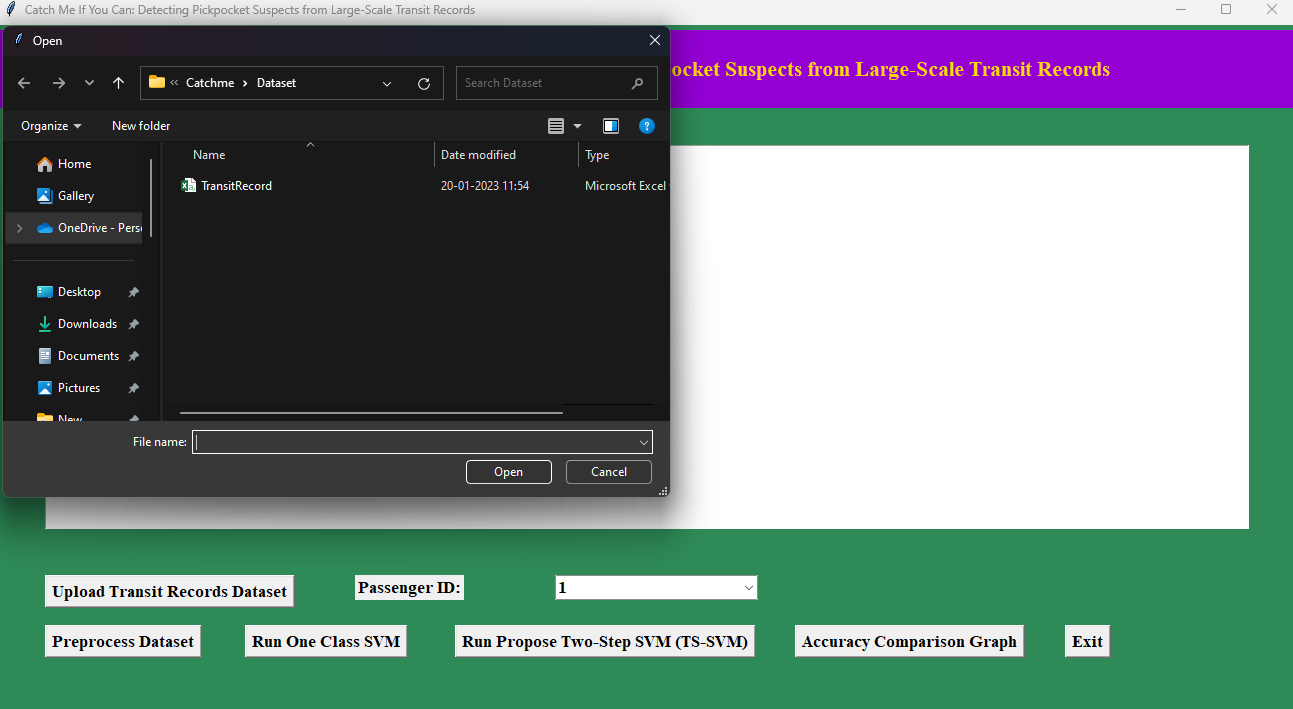
Designing : HTML,CSS, Javascript

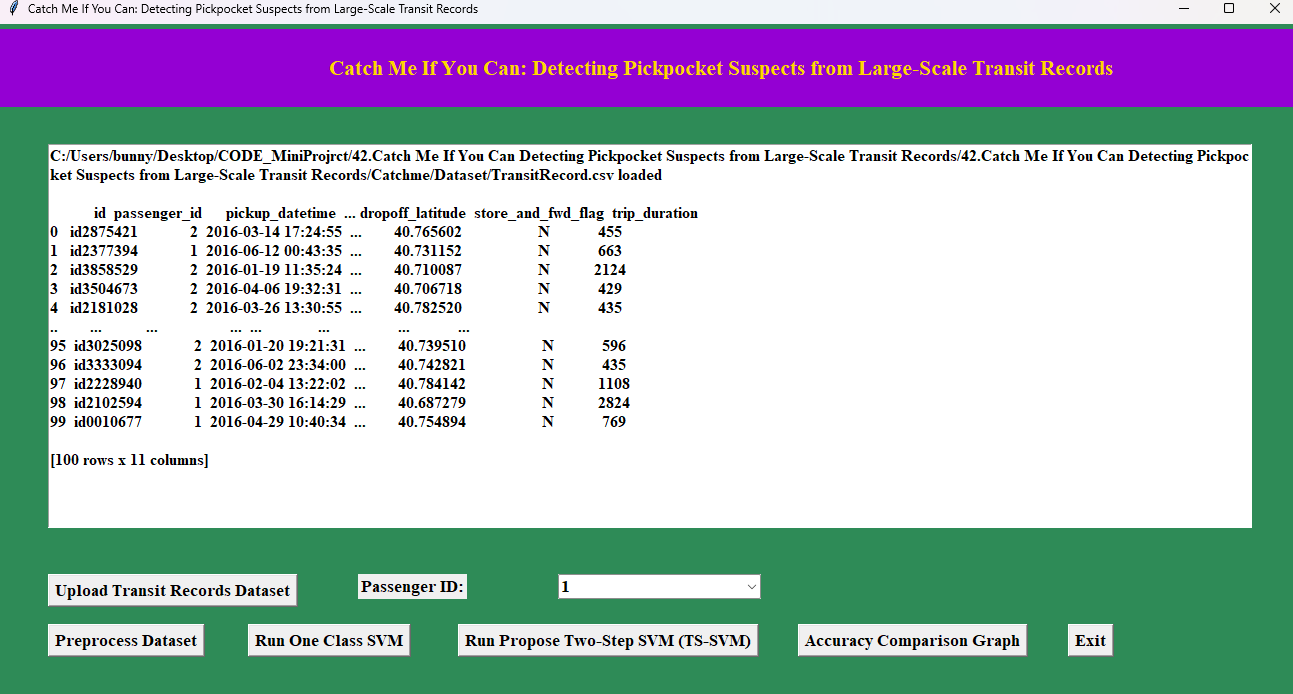
**CONCLUSION**

In conclusion, the proposed system for detecting pickpocket suspects from large-scale transit records represents a significant advancement over existing methodologies. By incorporating dynamic data sources, the system adapts to changing suspect behaviours, thereby enhancing the accuracy and relevance of crime predictions in dynamic environments. The comprehensive evaluation metrics provide a thorough assessment of model performance across various crime scenarios, offering an improved understanding of its predictive capabilities. Additionally, the emphasis on model interpretability promotes transparency, which is crucial for gaining stakeholder trust and facilitating informed decision-making. While these advancements show promise for more effective crime prevention and intervention, ongoing refinement and validation are essential to ensure the system's continued resilience and reliability in the evolving landscape of suspect behaviours and social factors.

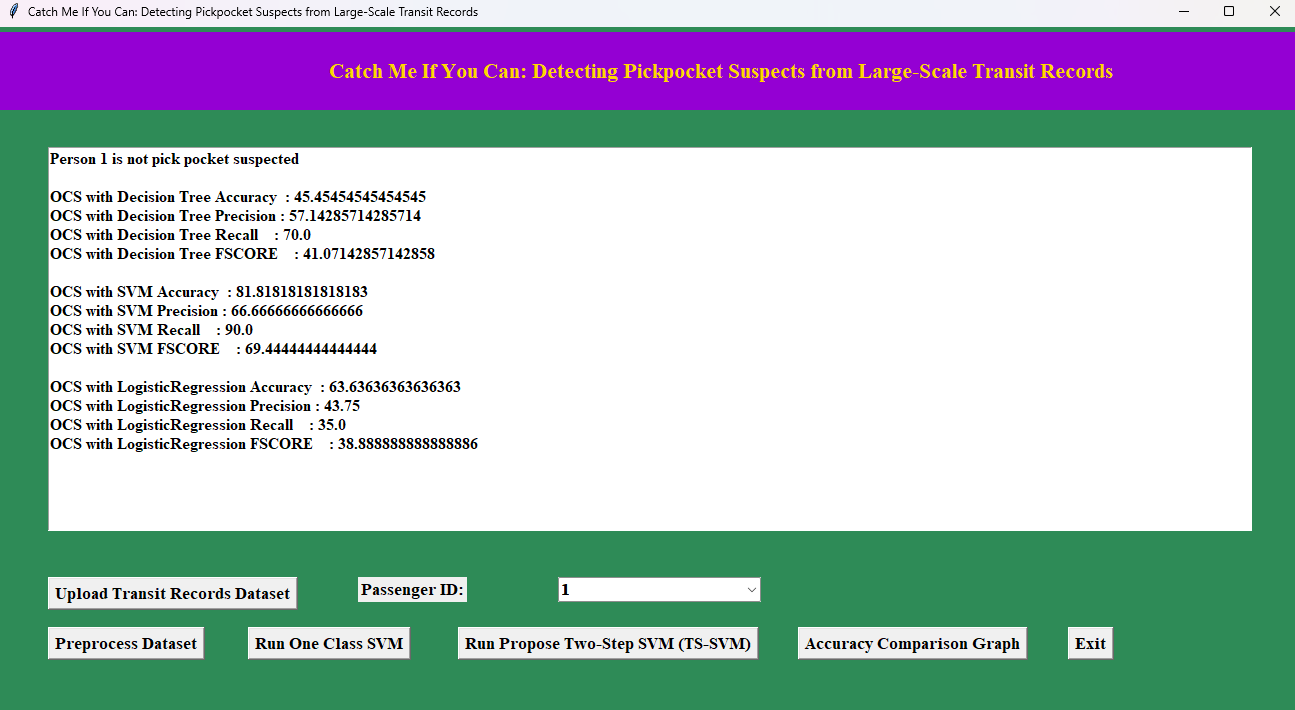
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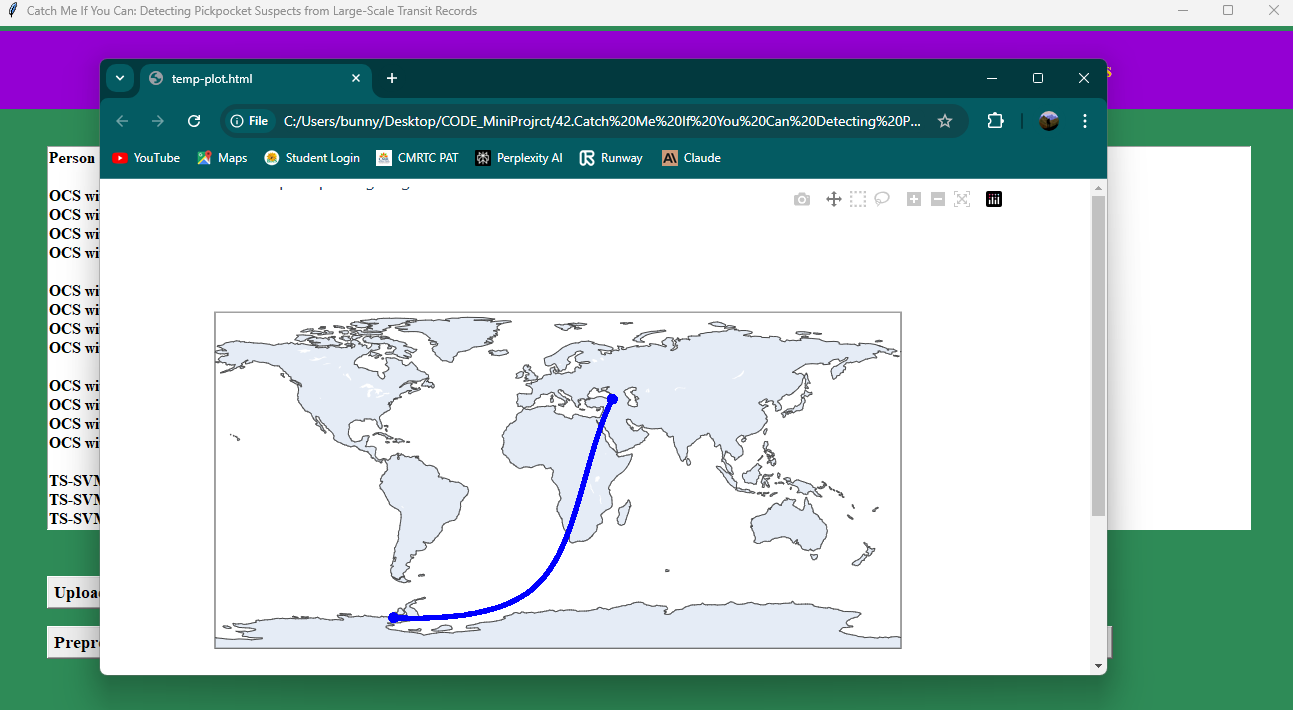
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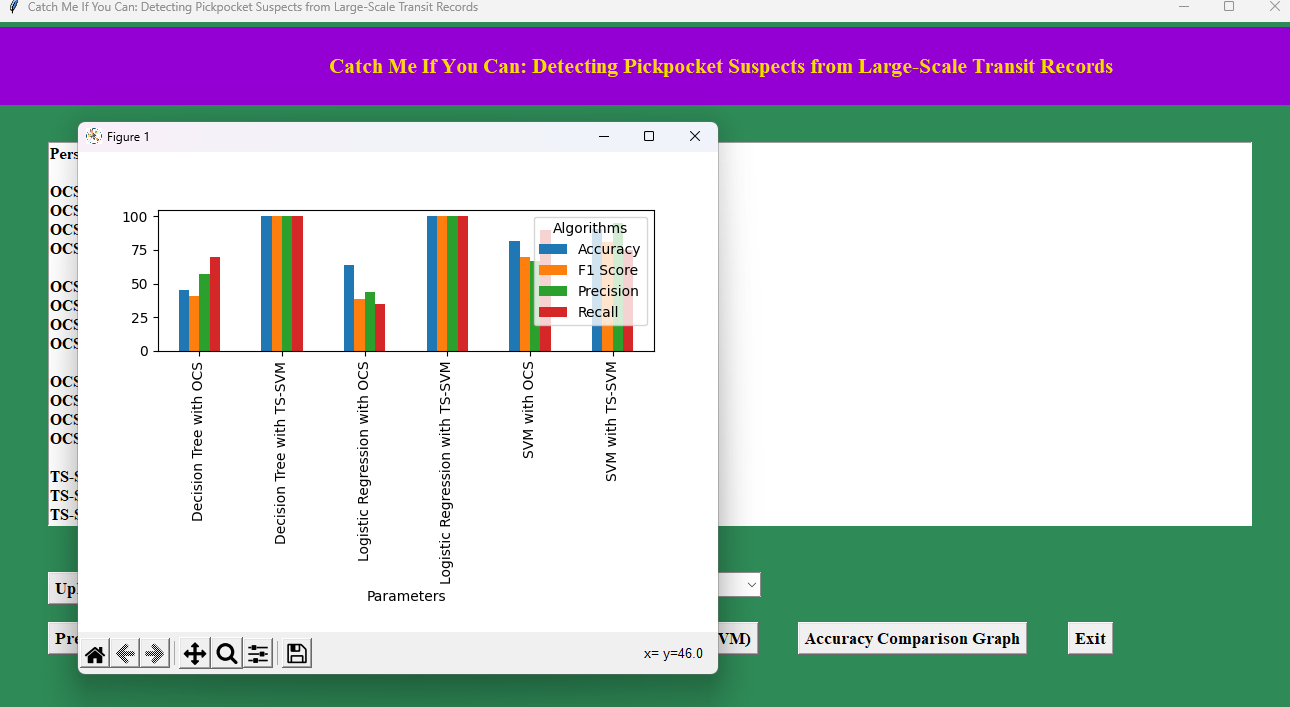
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