**MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**SCOOL OF COMPUTING AND INFORMATICS**

**DEPARTMENT OF COMPUTER SCIENCE**

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**BORNFACE SONYE**

**COMPUTER SCIENCE DEPARTMENT**

**THE DEVELOPMENT OF AN INTEGRATED CRIME DETECTION SYSTEM**

**REG. NO. COM/B/01-00106/2018**

**NAME. BORNFACE SONYE**

**SUPERVISOR:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY, NOVEMBER 2023**

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# Problem Statement

Criminal investigations require the integration of various sources of data and the analysis of suspects' behavioural traits. Traditional methods are often limited in providing efficient tools for the comprehensive analysis of crime data and suspect behaviours. This project aims to develop an integrated Crime Detection System to address these limitations and provide an effective solution for law enforcement agencies.

# Objective of the Project

The primary objective of this project is to design, develop, and evaluate an integrated Crime Detection System that combines data analysis, sentiment analysis, and machine learning to predict potential suspects based on various attributes. The project will focus on the following:

* Integrating data analysis, sentiment analysis, and machine learning techniques into a single system.
* Evaluating the system's effectiveness and accuracy in predicting potential suspects.
* Developing user-friendly interfaces for law enforcement agencies and suspects.

# History and Background

Traditional crime detection methods rely on manual data analysis and individual judgment, which can be time-consuming and prone to errors. Advanced technologies, such as machine learning and sentiment analysis, have shown promise in improving the accuracy and efficiency of crime detection. This project builds upon these technologies and integrates them into a unified Crime Detection System.

# Approach/Methodology

The project will use the following methodologies:

* Develop an integrated Crime Detection System with data analysis, sentiment analysis, and machine learning components.
* Collect and preprocess relevant data, including suspect information, witness statements, and crime scene data.
* Implement sentiment analysis to assess the emotions, obedience, consistency, and confidence of suspects and witnesses.
* Utilize machine learning algorithms to predict potential suspects based on collected data.
* Create user interfaces for law enforcement agencies and suspects to interact with the system.

# Requirements

To implement the project, the following resources will be required:

* Python programming language
* MySQL database management system
* Machine learning libraries (e.g., scikit-learn)
* Sentiment analysis tools (e.g., NLTK)
* Web development tools (HTML, CSS, JavaScript)
* Server space for system deployment

# Progression Timeline

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| EVENT | DESCRIPTIONS | DURATION | START | FINISH |
| * Project planning and Proposal | * Plan project * Set up development environment * Design the entire project architecture * Prepare Proposal presentation * Proposal presentation to stakeholders * Proposal review and feedback * Design review based on proposal feedback | 3 weeks | 27/10/2023 | 17/11/2023 |
| * Data Collection and Sentiment Analysis Module | * Design data collection user interface * Develop and test data collection module * Begin development of sentiment analysis module * Continue sentiment analysis module development | 3 weeks | 18/11/2023 | 09/12/2023 |
| * User Interface, Training Data, and Deployment | * Develop machine learning model * Implement MySQL database for data storage * Start working on privacy protection measures | 2 weeks  4 weeks | 10/12/2023  03/01/2024 | 24/12/2023  31/01/2024 |
| * User Interface, Training Data, and Deployment | * Finalize user interface for administrators, witnesses and suspects * Prepare and manage training data * Test and validate the system * Deploy the system, write and complete project documentation | 3 weeks | 01/02/2024 | 22/02/2024 |
| * Project Presentation Preparation   and verification by supervisor | * Ongoing validation and verification * Project presentation preparation | 2 weeks | 23/02/2024 | 08/03/2024 |
| * Report Writing | * Report Writing and documentation | 1 week | 09/03/2024 | 18/03/2024 |
| * Project Presentation | * Project presentation to judges and SCI staff | 1 day | \_\_\_ | \_\_\_\_ |
| * Report Submission | * Thesis and Report Submission | 1 day | \_\_\_\_ | \_\_\_\_\_ |
| * Project Review and Evaluation | * Continuous project review and evaluation | Continuous | \_\_\_\_\_ | \_\_\_\_\_ |

# References

1. James, G., Witten, D., Hastie, T., & Tibshirani, R. (2017). An Introduction to Statistical Learning with Applications in R. Springer.
2. Jurafsky, D., & Martin, J. H. (2019). Speech and Language Processing. Pearson.
3. Raschka, S., & Mirjalili, V. (2019). Python Machine Learning. Packt Publishing.