

A Decision Support System to Analyze Criminal Modus Operandi

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Declaration

We declare that this thesis is our own work and has not been submitted in any form for another degree or diploma at any other university or any other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged and a list of references is given.

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Abstract

Crime analysis is the method of analyzing crime activities. The process of finding the relationship between criminals and crime is still under-developed, but there is an increase in the complexity of police information and intelligence. “Criminal intelligence” is information with added value used by law enforcement to deal with crimes. Criminal intelligence helps to direct and prioritize resources when it comes to preventing, minimizing and detecting crimes using the modus operandi of criminals. Strategically and tactically intelligence makes police decision making more accurate, efficient and justifiable. Up to date and useful criminal intelligence is necessary for preventing, minimizing and investigating very organized and dire crime.

After doing field work and gathering data and information, it was evident that the crime analysts in the Crime Records Office (CRO) are extracting and analyzing criminal records to solve crimes using a very primitive manual system to store, extract and analyze criminal information with limited resources and trained personnel. This makes analyzing large volumes of criminal data very tedious. Existing crime analysis tools do not meet the requirements of the CRO in Sri Lanka.

The solution to this problem is a user friendly system, connected to the Sri Lanka police Criminal Database, that is used to enter and store details of apprehended criminals, with descriptions of their modus operandi, and compare those details with the modus operandi, uncovered from crime scenes, to predict a list of suspects possibly connected to those crimes and help crime analysts make decisions on the next course of action based on the analysis. The analysis results include details such as the suspect names, the suspect’s present place of residence and the Supervisor in charge of tracking the suspect.

This research proves that the new approach for criminal records analysis through data mining is fruitful. The k-means algorithm used for criminal records analysis has proven its efficiency and accuracy in clustering criminals. The criminal records analysis system is built to help crime analysts in the CRO and minimize the paperwork for police officers when recording criminal information. It supports the crime analysts in decision making but cannot replace them.

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