

Applying Case-Based Reasoning to Spatial-temporal Analysis of Residential Burglary Crime Investigation

This research presents the application of case-based reasoning (CBR) method to the investigation of the residential burglary crime. A lot of researches have been done by applying the features of modus operandi, the influence factors of victims, crime prevention measures, and geographic profile of consecutive crime for the investigation of the residential burglary crime. The main objective of this research is to develop a decision support system (DSS) by applying case-based reasoning (CBR) method for residential burglary investigation using the traces and evidences left on the crime scenes. Thus, the efficiency of residential burglary crime investigations can be improved by calculating the pattern and similarity between new and old cases. This research uses MyCBR as the case-based reasoning tool to build up the case base by using the historical residential burglary cases provided by the police bureau. It is then been used to develop the model for measuring the similarity between new and historical residential burglary cases and provide the information needed for crime investigation. We also introduce the applications of spatial information system, which has been developed by the integration of Google Mapping API, PHP scripting language, MySQL database, and Apache Web server, for providing the visual analysis on the spatial and temporal of the suspect. Consequently, the system that was developed in this research can be used as a decision support system to support the investigators to improve the efficiency of residential burglary crime investigation. Some suggestions are proposed for future research here. Firstly, the similarity measurement used in this research can be improved by using the other methods, such as neural network or Genetic algorithm, for prompt response and better accuracy and effectiveness. Secondly, a more flexible and adaptable mechanism on choosing the case analysis factors is needed for better performance of the case reasoning. Finally, profound assessments and analyses on the characteristics other crime types such as fraud, robbery and murder, should be performed before the application of the system developed in this research to the other crime investigation.

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