Development of a Fuzzy Logic Based Model for Monitoring Child Pornography

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Abstract : A study was conducted to apply fuzzy logic to the development of a monitoring model for child pornography based on associated risk factors, which can be used by forensic experts or integrated into forensic systems for the early detection of child pornographic activities. A number of methods were adopted in the study, which includes an extensive review of related works was done in order to identify the factors that are associated with child pornography following which they were validated by an expert sex psychologist and guidance counselor, and relevant data was collected. Fuzzy membership functions were used to fuzzify the associated variables identified alongside the risk of the occurrence of child pornography based on the inference rules that were provided by the experts consulted, and the fuzzy logic expert system was simulated using the Fuzzy Logic Toolbox available in the MATLAB Software Release 2016. The results of the study showed that there were 4 categories of risk factors required for assessing the risk of a suspect committing child pornography offenses. The results of the study showed that 2 and 3 triangular membership functions were used to formulate the risk factors based on the 2 and 3 number of labels assigned, respectively. The results of the study showed that 5 fuzzy logic models were formulated such that the first 4 was used to assess the impact of each category on child pornography while the last one takes the 4 outputs from the 4 fuzzy logic models as inputs required for assessing the risk of child pornography. The following conclusion was made; there were factors that were related to personal traits, social traits, history of child pornography crimes, and self-regulatory deficiency traits by the suspects required for the assessment of the risk of child pornography crimes committed by a suspect. Using the values of the identified risk factors selected for this study, the risk of child pornography can be easily assessed from their values in order to determine the likelihood of a suspect perpetuating the crime.