UNIVERSITI TEKNOLOGI MARA

# IDENTIFYING AND DETECTING UNLAWFUL BEHAVIOR IN VIDEO IMAGES USING GENETIC ALGORITHM

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## ABSTRACT

Unlawful behavior detection is one of the important research topic in Video Surveillance System (VSS). This is usually done manually by human. However, this is unfeasible due to the size of images that need to be scan through. Moreover, human are prone to misjudgment. Behaviors are usually detected through surveillance camera in the form of video recording. Video scenes are sequence of picture frame. The focus of this research is to identify and detect unlawful behavior in an academic restricted area. A total number of 95 videos used in the research are based on different types of hand movement which are knocking, twisting, waving and clapping. The videos are stored in *avi* format which are sampled to the resolution of 200×164 pixels. Each video is of less than 30 seconds length. The data undergo the pre-processed phase which consists of edge detection, adaptive thresholding segmentation and MATLAB *regionprops* function for feature extraction. The main goal of the research is to apply the concept of Genetic Algorithm (GA) that can classify hand movements as unlawful behavior in videos. GA is used as the method of unlawful behavior detection. Previous research on GA components impact evaluation has identified selection parameter as high potential of increasing GA performance for unlawful behavior detection. Two types of selection parameter namely tournament selection (TOS) and random permutation selection (RPS) are chosen. From the result and analysis obtained in this research, it is established that both TOS and RPS are comparable in terms of the detection rate, specificity, false positive rate, false negative rate and accuracy. It is proven that TOS gives better result of detection than RPS.

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