

## Abstract

*In recent years, the automatic people counting have become an interesting topic to be studied, many benefits can be gained from the count of people information such as use for the surveillance system, traffic light at the crossing, the visitors analysis of shop or tourist, and much more. There are two problem focus in this research done, they are removing shadow problem in foreground extraction obtained, and perspective problem in people counting process. Therefore, it needs an appropriate method for this problem.*

*The input is a videos 15 fps and 320 x 240 piksel in size. Each of video frame is processed by using GMM extracting the foreground pixels. Foreground obtained with GMM is still included shadow of people walking. This shadow should be removed using the shadow removal method. Beside that, objects far from the camera, have smaller size than that close to the camera. With a potential energy approach, this perspective problem can be solved because according to the principle of potential energy, an object with the same height has the same potential energy. the system was built to test the performance using some of videos with different scenario. This method can produce over 95% in accuracy.*

**Keywords:** *people counting, GMM, shadow removal, potential energy approach*