

## **Abstract**

*Object detection topic is always an interesting topic to discuss. The object detection discussed in this final project is face detection, which developed into automatic people counting system. People counting can be applied for many things, for example automatic attendance system in classroom, automatic people counter in a concert, and surveillance system. The challenge in people counting is detection accuracy, make sure the people counted by system is actually human.*

*Haar-like feature is a common method for object detection. But the detection accuracy really depends of samples used in training. Dealing with that problem, background and foreground separation will be done first using Gaussian Mixture Model. After foreground separated from background Haar-like feature will do face detection on foreground. People will be counted by system if they successfully cross the line while moving toward the camera.*

*With the combination of both method, system successfully count the number of people with accuracy 100% for five of seven data test. The highest average frame rate system reached by system was 28,76 FPS.*

*Keywords: face detection, Haar- Like feature, background subtraction, Gaussian Mixture Model*