

## **Abstract**

Automatic people counting system using a single surveillance camera has become a challenging research topic because of the many difficulties to be handled to achieve an accurate and real-time system. Among many researches that have been done on this topic, the most popular approach is using background subtraction which relies on changes that occur from one frame to another in the video. Using this approach, counting mistake will happen if the recorded person doesn't move for some moments, because motionless objects will be treated as background. Presented in this final project book, a people counting system which do not rely on background subtraction, so this system will work as expected even if the person to be counted is standing still. This system counts the number of people who cross an area by detecting and tracking them. For the detection, this system scans and extracts Histogram of Oriented Gradients (HOG) features in the video frame to be classified as person or not person. The classifier itself is a result of a supervised learning that has been done beforehand. The system then tracks the detected people using a prediction and estimation method, Kalman Filter. From testing result, we has achieved a system that could work in real-time with 89,71% accuracy.

**Key words** : people counting, video surveillance, HOG, Kalman Filter, detection, tracking