

ABSTRACT

The availability of parking space is important thing in every building. Parking space facilities usually found in offices, mall, etc. Using a good parking system, taking the vehicle into a parking space would be comfortable and secure. However, often the drivers that want to enter did not know the condition of the parking space is full or still have slots to be occupied. This will be a problem when the condition of the parking is full, so the driver will circling in the parking area to find an empty slot, and it will cause the waste fuel, time, energy, emotion, and impact on increasing the amount of CO₂ emissions.

In this final project created a detection system and parking slot allocation as part of the *Smart Parking System*. The system will detect the empty parking slot, then search the nearest distance from the entrance using greedy algorithm and then show to the drivers through lcd screen placed at the entrance. Using a *Raspberry Pi* with *PiCamera* to capture and proceed fill or empty status in the parking area. In the other parts of the system, there is a *surveillance system* that will capture images every person who was in the parking area in real time.

Based on this final project test, Raspberry Pi and Pi Camera placed on the 3rd floor ($\pm 11\text{m}$), 4 ($\pm 14\text{m}$) and 5 ($\pm 17\text{m}$) to know the limit of the tool. The best accuracy result on the 3rd floor ($\pm 11\text{m}$) with a threshold value of 20 is 87.5%. The computing time range with an average for 13,8 seconds. The camera takes parking conditions pictures with good result in the morning and afternoon.

Keywords: Parking Detection, Slot Allocation, Smart Parking System, Raspberry Pi, Surveillance System, Greedy Algorithm, Threshold.