

## **Abstract**

This paper has a purpose, namely to improve the performance of smart lighting with activity recognition using the hierarchical hidden markov model. This goal will answer the problems that occur, namely smart lights only light if humans are right under the lights so that it requires a smart light which is able to read the movement of people when approaching the lamp or not. Secondly, there are also smart lights, but when humans are under the lights, it only lights up for a few seconds, which should light up if there is a human below or a radius around the lamp so that a smart light is needed when someone is underneath and off if the human is outside the radius around the lamp. The model used is the hierarchical hidden markov model which is an extension of the hidden markov model that can solve evaluation problems, draw conclusions and learning using the algorithm used, namely the viterbi algorithm. The results obtained using HHMM are 93% accuracy, 92% recall, and 86% precision, these results are obtained from calculations through the confusion matrix where confusion matrix is obtained from the results of tests performed.

**Keywords:** Activity Recognition, Algoritma Viterbi, HHMM, Smart Lighting Systems