

## **ABSTRACT**

*Micro-expression is a facial expression changes that occur in a short time unconsciously. This happens because there is a human face muscles unconsciously influenced by human emotion. It can serve as an important clue for detecting lies and malicious behavior, as well as micro expression also has the potential to be used in the medical field and national security. Micro expression occurs so quickly that it is often missed by naked eye or even sometimes difficult to observe. Therefore we need a system that can help detect micro-expressions that occur in humans.*

*At this final project micro-expression recognition algorithm using discriminant subspace tensor analysis (DTSA) as feature extraction and extreme learning machine (ELM) for the classification process. DTSA method produces 2 transformation matrix based on the value and the average of each class image dataset that has averaged as many as N frame. The method used to determine the value of proximity and the average is KNN (K-Nearest neighbor) and heat as well as binary kernel. ELM is a single-Hidden Layer Feed forward Neural Networks (SLFNs) on each hidden layer weights performed randoming on input weight and the weight bias. Input weight, weight bias, as well as input data to be used in function activation is a sigmoid function to get the output value of weight, so it can be used to determine calcification of the data. Tests carried out using micro data expression that consists of 4 classes of disgust, happiness, repression, and tense.*

*Testing is done with 2 classification model by using ELM-Sigmoid and ELM-RBF kernel. Based on these tests ELM-RBF kernel has an average accuracy is optimal for ELM-RBF kernel for Nframe 5 and kernel number 300 by 86.25%.*