

## ABSTRACT

Pattern recognition is one of technology that continues to evolve. Enormous benefits for human life makes researchers continue to develop the performance and accuracy of the system by trying to implement a lot of methods and algorithms. One of the many pattern recognition technique known is Optical Character Recognition (OCR).

OCR is a pattern recognition system to input a character off-line image (scan or photo) or on-line (stroke results in real-time). OCR basically consists of three main processes namely preprocessing, feature extraction, and classification. In this thesis, the preprocessing phase digital image processing will be done so that more efficient input image to be processed in the next step. As for the feature extraction phase will use the method Modified Direction Feature (MDF) and the Least Squares Support Vector Machine (LSSVM) as classifiers.

MDF is a combination of methods Direction Feature (DF) and Transition Feature (TF) is to calculate the value based on stroke character traits from different directions so that the unique nature and character traits to be one method which has good performance in the process of feature extraction. Once the character traits acquired, it will be classified by the LSSVM method which is a variant of the standard SVM. If SVM is characterized by a convex quadratic programming problem with a barrier of inequality, the LSSVM contrary, characterized by the use of just limiting equation. So the solution of LSSVM is generated by solving these equations.

Combination of methods MDF and LSSVM in this thesis achieved an accuracy of 84,61% for uppercase, 90,48% for lowercase, 86,36% for *numeric*, and 68,37% for total data (all case-sensitive).

**Keywords** : Pattern recognition, Optical Character Recognition (OCR), Feature Extraction, Modified Direction Feature (MDF), Least Squares Support Vector Machine (LSSVM).