ABSTRACT

Paper money is money in the form of sheets made of paper or other materials (which resembles a paper).Paper money has value because the face and it is certainly correlated with the authenticity identification of the money itself so it can be legal exchange. Many crimes of counterfeiting banknotes happened lately, especially in Indonesia rupiah for fractional 5000-100000. This final project was made to design software that can identify the nominal value and authenticity of paper currency rupiah through a process of image processing using the Hidden Markov Model.

This identification software consist of two part, that are database development and identification process it self. The database development produce codebook and HMM probability value. Identification process has two identification stages. The first stage is nominal value identification and the second stage is authenticity identification. The nominal value identification process is done with the extraction of the certain pattern on the part of the *scanned* paper money that has serial number. The Patterns that extracted are shape of nominal value number from each money value. The authenticity identification process is done with the extraction of pattern that created after money being exposed with *Ultra Violet* (UV) light. Differences between pattern of each money are used as data to identify nominal value and its authenticity.

This final project analyzed the effect of varying codebook size, numbers of training , and intensity level on accuration the software. A trial was made to share a currency with a condition that can still be seen the pattern / characteristics found in each of the nominal to be identified. Based on the results of tests conducted found that the accuracy rate of 98% of software in the 256-bit codebook size and number of 10 training.

Key Word : Image Recognition, Paper Money Identification, Hidden Markov Model