

## **ABSTRACT**

Braille is a communication system that's used by the blind to read and to write. The first system was created by Charles Babier and was intended to be use by the French military at war. The Babier's ruler as what they've called the system was complex to use and the problem of the system was spotted by Louis Braille who was a blind man at his teenage years. Louis Braille then modified Babier's ruler and made it simple and easy to use. Today, it has been in existence for almost two centuries.

Since technology is rapidly arising, researchers are finding ways to help the visually impaired in many ways. One of the most important purposes is to be able to convert Braille characters to regular text for preservation, duplication purposes and many more. As of now there are already several algorithms that have the capability to convert Braille to regular text but with limitations. As researchers, the proponents discover some problems on the algorithms which can be corrected. One of the problems on the existing algorithms on how the system to be developed will recognize slanted or skew Braille images. In addition, the problem on how it will recognize Grade 2 double-sided Braille documents.

To solve the problems mentioned, the proponents reinvented the algorithms and developed a system that clearly showed the whole operation. The system developed is composed of three different parts. The preprocessing part which has five levels: grayscale, thresholding, noise reduction, back side filtering and de-skewing. The segmentation process is the one responsible in partitioning the Braille characters into regions and collecting the raw data on the image. Lastly, the recognition part which is the one that compares the gathered data into the database and return the equivalent texts.