

CHAPTER I

INTRODUCTION

1.1 Background

According to bps.go.id, every year the growth of motor vehicle users in Indonesia increases exponentially. Due to population growth and their needs, position detection of vehicle plate number plays an important role in the transportation system, such as speed control, stolen car identification, toll gate transactions [2].

Vehicle number plate in Indonesia there are 8 types of colors that have different meanings [3], but generally used, there are 4 types of plates, such as private vehicle number plate (black), public transport vehicle number plate (yellow), government-owned vehicle number plate (red), and Transportation Dealer vehicle number plate (white) [4].

Because each country has different shapes, colors, and characteristics on the plates. Thus, there are various algorithms that have been applied for plate detection, namely based on texture, edge detection, histogram, morphological processing, and transformation [5]. In paper [6] for plate position detection process was performed using edge detection and there were 25 images detected so as to obtain 72% accuracy. In 2015, there are same paper using morphological processing and get 80% [7]. Another paper still was conducted in 2015 by using Hough Transform for license plate location number on the digital image of the vehicle have an accuracy 90% [8].

Based on paper [9] written one of the major obstacles is that the complexity of the method is largely dependent on the size of the input data, thus consuming computation time. So the paper suggests an alternative approach to fast Hough Transform computation using Probabilistic Hough Transform. Probabilistic Hough Transform works, takes small subset of the edge points in the image, selected at random [10]. Another paper [11] said that Probabilistic Hough Transform for line detection method gives higher line detection rate, at the expense of moderate execution time acceptable.

And, an extraction method is needed to identify the boundaries of an object. In order to obtain more accurate results, the boundaries of the number plate area in an image are highlighted, identify of the rectangles in the image that is attempted [12]. Based on paper [13] there is a simple method to the closed the region by using a bounding rectangle, and the result shows that the approach is accurate and fast.

So, based on the problem above the author suggest using Probabilistic Hough Transform (PHT) which is used for finding the lines of the plate, and Bounding Rectangle is used to extract the plate boundary lines.

1.2 Scope of Problem

To avoid misunderstanding and broad thinking in terms of opinions regarding this thesis then the authors provide the following restrictions:

1. The dataset used was retrieved manually by the author.
2. This thesis only detects the position.
3. The dataset used is an image of a private car (black plate) used in Indonesia, in accordance with the rules that have valid in Indonesia.
4. The Resolution of the image with width = 4000px.
5. The dataset used the .JPG format.

1.3 Purpose

How to do Detection of Vehicle Number Plate Using Probabilistic Hough Transform ?

1.4 Goal

The goal of this thesis is to implement the Probabilistic Probabilistic Hough Transform methods for detection of vehicle number plate.

