CHAPTER ONE

INTRODUCTION

1.1 Preface

It is well known now that there are more than half billion cars in the world now days and every vehicle has its own unique ID characters as an identifier differs from any other vehicle in the world.

Every car ID is composed of numbers and letters in English or in any other language. In Arabic countries the ID is composed of Arabic letters and numbers as an identifier. Every vehicle is registered in the traffic archive linked to all the information about its owner.

The car ID characters are written on a license plate that is mounted on the back and the front of every driven car, and it must be well written and visible. every driven car does not have a license plate mounted on it is considered as traffic offence.

In road traffic everyday a lot of vehicles are making traffic offences such as running red lights, speeding or reckless driving. Knowing all the data about the vehicle and its owner will make it easier to deal with those offences. To process and to deal with the data of every vehicle we must have a way to know the information about the vehicle and we mean another way instead of typing the car ID manually, which is a system that can automatically detect car ID by having a captured picture or a stream video from an appropriate angle to the offender vehicle by converting the digital image of the plate to a text that can be compare to a database which links the license plate to its owner. This system is implemented to help the human to automatically detect plate number without human supervision. So this project is developed to replace human in monitor the car.

1.2 Problem Statement

Previously, human is needed to observe and list the user car plate number manually. In Sudan, car ID characters are composed of Arabic letters and Arabic numbers.

1.3 Proposed solution

Open Source Automatic License Plate Recognition Library (OpenALPR library) is a C++ library that can be used to take photographs or video streaming of license plates and converts it to text using Optical Character Recognition (OCR) algorithms.

1.4 Aims & Objectives

1.4.1 Aims

The core aim of this project is to recognize the cars IDs automatically only via photograph or a video of the car license plate. The image is not necessary to be taken from a straight angle to recognize the plate. The car ID characters can be in Arabic or in English language.

1.4.2 Objectives

- To combine the capabilities of OpenALPR library to recognize license plates and the capabilities of Visual Studio to create a graphical user interface for the system.

- To test this user interface application in different images of license plates in different languages.

- To create a database to retrieve information about the car owner.

1.5 Methodology

OCR Algorithms are capable to provide an alpha numeric conversion of the captured license plate images or video stream into a machine-coded text. License plate recognition involves capturing photographic images of license plates, whereby they are processed by a series of the proposed system that is designed to extract the license plate from the vehicle. Then compare the extracted plate with a database to get information about the vehicle owner. In this system we used OpenALPR library.

The implementation of the application is developed on C++, C# and SQL.

1.6 Thesis Outlines

The thesis is divided into five chapters:

Chapter One is an introduction facilitates briefly the purpose of this project.

Chapter Two is a literature review that gives a brief review of License Plates, Optical Characters Recognition, Automatic License Plate Recognition, SQL Database and Graphics user interface (GUI).

Chapter Three shows the steps needed to modify the OpenALPR library in order to recognize Arabic license plates, create SQL database and the design of graphics user interface.

Chapter Four presents several result cases with a discussion of each one.

Chapter Five provides the conclusion and recommendation