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NN Neural Network

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CHAPTER 1

INTRODUCTION

A bus is a road vehicle designed to carry a large number of passengers. The services offered by the buses has made it the most preferred mode of transportation for the citizens. The cheap ticket fares, the convenience, the safety and a capacity as high as 300 passengers has made buses a desirable choice for travel by the citizens. In most countries, the different locations the bus will be travelling through, will be displayed on a board in the front of it. However, the locations will be written in the native language. This would pose a problem to the foreigners along with people who are unable to comprehend the language.

The reason behind their wide usage is, the cheap ticket fares, the convenience as well as the safety being ensured for passengers. Being a local service, the buses display the destinations in their native language. Unfortunately, foreigners along with people who are unable to comprehend the native language find it difficult to use the local bus service. The project focuses on developing a software solution that will help end users to navigate across a city by integrating with the local bus service. Image of the bus board is captured via a phone camera. They are preprocessed using various image enhancement operations in order to obtain the image in the required format. Optical Character Recognition which is implemented by using Convolutional Neural Network, is used to understand the images captured, extract the relevant features and then map them to their respective character representations. The Malayalam characters obtained are then translated into the English language. Once the destinations are obtained, the user is provided with the bus stops through which that particular bus travels. Also the user is made aware of the users destination.

CHAPTER 2

ACKNOWLEDGEMENT

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CHAPTER 3

PROBLEM STATEMENT

Around 30% of the population comprises of foreigners and people who are unable to comprehend the native language, thereby making it difficult for this group to understand the locations written on the bus boards. Our main aim is to provide a software solution that will:

- help end users to navigate across a city by representing the destinations in the English language which is known to all
- provide bus stop destinations to the end user
- provide accurate location of the destination

3.1 Motivation

Kerala is rated as the most popular tourist destination in India by international travellers who cite beaches, Ayurveda resorts and spas as the prime attractions. Statistics related to the arrival on tourists in Kerala is a good way to measure the growth of the sector over a certain period of time. Foreign tourist arrival to Kerala during 2017 crossed 10.91 lakhs which marked an increase of 5.15% over the previous year. It is observed that there is a consistent growth in foreign tourist arrival in Kerala. Table 4.1 A given below indicates the arrival of foreign tourists to Kerala during the last five years and percentage of variation over the previous year.

TABLE NO. 4.1 A

FOREIGN TOURIST ARRIVALS 2013-2017

Tourist Arrival	2013	2014	2015	2016	2017
Tourists	858143	923366	977479	1038419	1091870
Percentage of variation over previous year	8.12	7.6	5.86	6.23	5.15

Graph 4.2 A shows the growth of foreign tourists from 2013 to 2017

Figure 3.1: Foreign tourist arrivals in 2013-2017

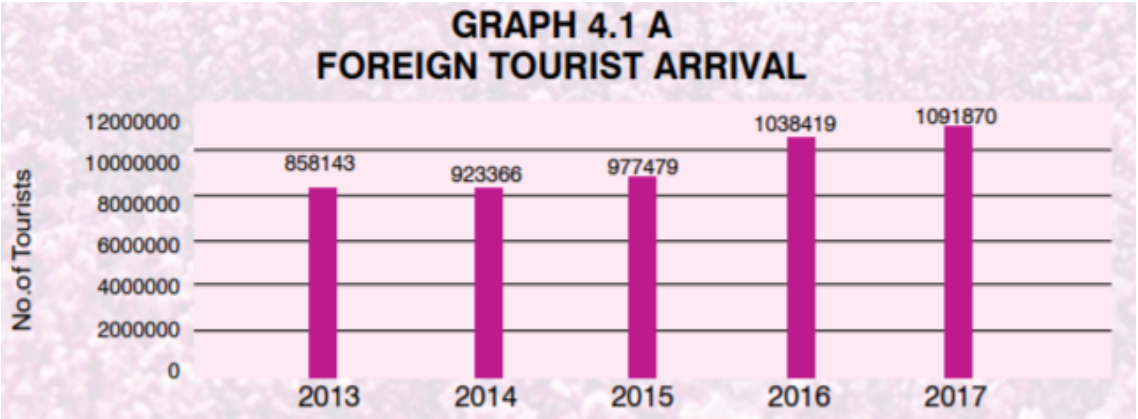

Figure 3.2: Shows the graph of foreign tourists from 2013-2017

Hence the primary motivation for our project targets this group as end users. Foreign tourists as well as residents in Kerala who wish to commute via bus service require basic understanding of the Malayalam language. Also people who are unable to comprehend the language find it difficult to use this service.

3.2 Objectives

The core objectives of this project are listed below:

provide user friendly interface

understanding of Malayalam scripts

language translation to common English language

time and cost efficient

increase effectiveness and reliability of service

ease of use

3.3 OCR Technology

OCR is a technology that recognizes text within a digital image. This approach is implemented in our project to detect Malayalam characters from the digital images of the bus boards. The images of the bus boards are converted to digital greyscale images. A standard deep learning approach of OCR is used for this purpose. A CNN model is trained with a dataset of Malayalam characters. On providing a test image of a Malayalam character, it detects the desired character.

3.4 Application Scenario

The main application of our proposed solution is in the domain of transportation system. More specifically in the bus service scheme.

3.5 Overview

The report mainly discusses the current state of the project. The Literature Review will discuss about the various Research Papers and the various concepts the team has evaluated to solve the problem. Each of the team member was given dierent topics to review and the top three relevant paper has been reviewed discussing the valuable contribution from each. The Dataset chapter discusses the Dataset we are considering for this project and the various advantages over similar datasets. The Design chapter will discuss about the various use cases and requirements of the project and how that is solved by our design. The Action Plan discusses about the project management style adopted and how the timeline for the project has been designed. It also discusses in detail about the various principles followed by the project. The System Validation chapter talks about the summary of the meetings the team had with Tata Elxsi regarding validation of the project ideas to save time otherwise wasted on taking the wrong decisions. Their contribution was necessary for the project to reach this far. The report is concluded with all that is discussed and

the further work that is to be taken in the Conclusion chapter. And the citations for the research papers are presented in the References chapter.

CHAPTER 4

LITERATURE REVIEW

ADD

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