SRS Document

1) INTRODUCTION

The following subsections of the Software Requirements Specifications (SRS) document provide an overview of the entire SRS.

1.1) Document Purpose

The purpose of this document is to show the software requirements of the Image classifier software. The functionality and scope of this software are described in this SRS document.

1.2) Product Scope

The Image Classifier aims at helping the user to classify the images based on the object present in it.

The major benefits of this software are :

- It is a unique software which helps to classify objects without any human intervention.
- It has a wide variety of modules.
- By just few user inputs, user can identify different objects and check their accuracy percentage.

1.3) Intended audience and document overview

This SRS document is intended for developer, professors, students for reading. The rest of the document contains the functional and nonfunctional requirements of Image classifier software.

1.4) Definitions, Acronyms and Abbreviations

CNN – Convolutional Neural Networks
SRS – Software Requirements Specifications

1.5) Document Conventions

The entire document is in Times New Roman font. The headings are numbered 1,2,3 …. And so on. Both headings and subheadings are in bold.

- Main title: Font Times New Roman and size 14
- Subtitles: Font Times New Roman and size 14
- Content: Font Times New Roman and size 12

1.6) References and acknowledgements

- Software Engineering book written by Rajib Mall
- www.slideshare.net

2) OVERALL DESCRIPTION

Describes the general factors that affect the product and its requirements. This section does not state specific requirements. Instead it provides a background for those requirements, which are defined in section 3, and makes them easier to understand.

2.1) Product Perspective

It is aimed at replacing the tedious manual work required to classify images based on their contents. The system will use machine learning algorithms to learn from a given dataset and therefore able to identify subsequent image inputs. This will thus be helpful to reduce time and complexity of classifying images.

2.2) Product Functionality

Some major product functionalities of the system are as follows:

- Output of classified image based on the content.
- Accuracy of classification in percentage.

2.3) Users and Characteristics

Primary users of the system will be employees working in company, students, staffs, managers. Very little technical expertise is required for using the software.
Educational level of the Image Classifier - Low
Experience of Image Classifier - None
Technical Expertise - Little

2.4) Operating Environment

Open Source, Linux.

2.5) Design and Implementation Constraints

High Performance, User-friendly, very fast response time.

2.6) User Documentation

A document containing a logical sequence of steps to run the software will be provided for help.

2.7) Assumptions and Dependencies

Assume that the input image provided by the user will be present within the system. If not, then system will notify an alert.

3) SPECIFIC REQUIREMENT

3.1) External Interface Requirements

3.1.1) User interfaces

Input: To be taken through the terminal
Output: The image of the object that is specified as input will be detected and classified in a given picture.

3.1.2) Hardware Interfaces

The system shall run on:

- Operating System: LINUX
- Scripts which support python3.0
- Compiler: GNU
- Interpreter: The Python interpreter is usually installed as */usr/local/bin/python3.6* on those machines where it is available

3.1.3) Software Interface

The software requirements are:

- API: TensorFlow
- Library: TensorFlow
- Programming Language: Python

3.1.4) Functional Requirements

- System takes input
- System understands the input and identifies input object in image
- System will classify different objects in an image
- Display the Result

4) NON-FUNCTIONAL REQUIREMENTS

Non-functional requirements define the needs in terms of performance, logical database requirements, design constraints, standards compliance, reliability, availability, security, maintainability and portability.

4.1) Performance Requirements

Performance requirements define acceptable response times for system functionality.

- The load time for the software shall take no longer than five seconds.
- The output time depends on the size of the dataset.
- The system shall consume very little of primary memory.

4.2) Security Requirements

The software user will have full access to the software functionalities.

4.3) Software Quality Attributes

4.3.1) Software Compliance

There shall be consistency in variable names within the system.

4.3.2) Reliability

Specify the factors required to establish the required reliability of the software system at time of delivery.

4.3.3) Availability

The system shall be available 24*7.

4.3.4) Maintainability

The Image Classifier is being developed in Python. Python is a multi-paradigm programming language with object oriented programming support and therefore shall be easy to maintain.

4.3.5) Portability

The Image Classifier shall run in any linux environment that contains python3.0 support.