Software Design Document (SDD) Template

Software design is a process by which the software requirements are translated into a representation of software components, interfaces, and data necessary for the implementation phase. The SDD shows how the software system will be structured to satisfy the requirements. It is the primary reference for code development and, therefore, it must contain all the information required by a programmer to write code. The SDD is performed in two stages. The first is a preliminary design in which the overall system architecture and data architecture is defined. In the second stage, i.e. the detailed design stage, more detailed data structures are defined and algorithms are developed for the defined architecture.

This template is an annotated outline for a software design document adapted from the IEEE Recommended Practice for Software Design Descriptions. The IEEE Recommended Practice for Software Design Descriptions have been reduced in order to simplify this assignment while still retaining the main components and providing a general idea of a project definition report. For your own information, please refer to IEEE Std 1016-1998[1] for the full IEEE Recommended Practice for Software Design Descriptions.

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[1] http://www.cs.concordia.ca/~ormandj/comp354/2003/Project/ieee-SDD.pdf

Software Design Document

Real Time OCR with Navigation

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1. INTRODUCTION

1.1 Purpose
The system will be used as a system for identifying live texts and pictures so that it can also be used as an entertainment system so that you can know the location according to the texts of the signs and here to know the user's location and we will be able to publish the location or use it for other things.

1.2 Scope

1.3
The project will be used and provide algorithms to identify text from existing videos or live and also images so that the goal of the project will be to identify it live so it does not exist so we want to get, realize and use it as an algorithm to any camera possible, we will have an algorithm that will work well on cameras without obstacles.

1.4 Overview

We will provide a text recognition algorithm and navigation system.

1.5 Reference Material

We will have open material based on online articles or assisted by the project facilitator at University.

2. SYSTEM OVERVIEW

The project will be used as a tool on existing products such as pc programs, robots, vehicles. that the project will have the option to identify the text from the videos and summarize them so that the text can be used for anything like get the location or extract the text from it and sharing it.

3. SYSTEM ARCHITECTURE

3.1 Architectural Design

The project will be divided into several models so that the first model will be on an existing video or a live video and then we will divide the video into captions and apply the OCR algorithm to decode the text within each image OCR is a library that we already use from "tesseract".
And now we will mark the text in the image in some rectangle using threshold and translate the words into the language that the willing person can understand after that.
Calculate the position according to the distance between the photographer and the remote and the distances will be calculated by image processing.

3.2 Decomposition Description

from every input video we have, we extract pictures from the video and every picture we define threshold size to pass in the picture.
this threshold searches for lines and words all over the picture.
if the threshold finds any line or word we run the OCR algorithm to recognize the word in the threshold and after that, we extract the text from the image as output.
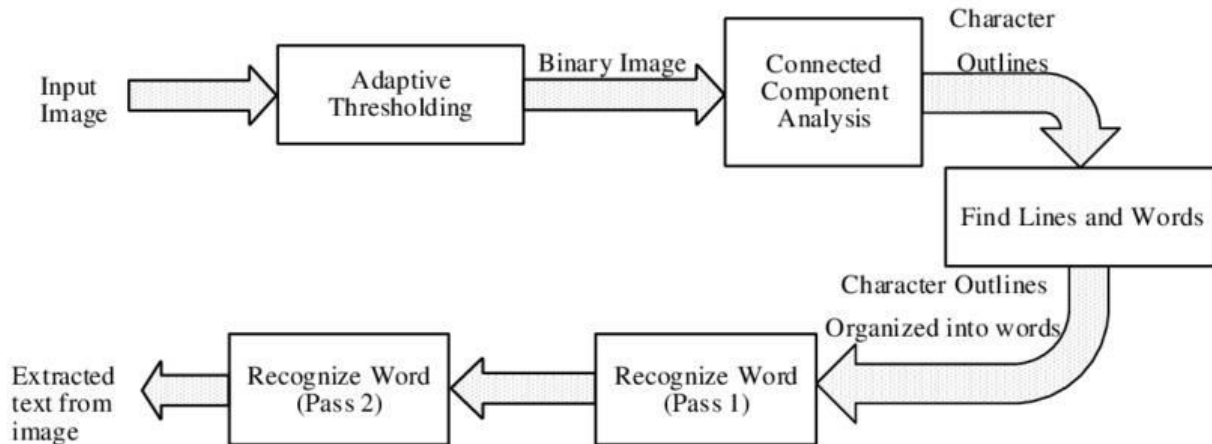
this another example based on how the OCR algorithm work using test extract time and long short term memory(LSTM) for extracting the words.
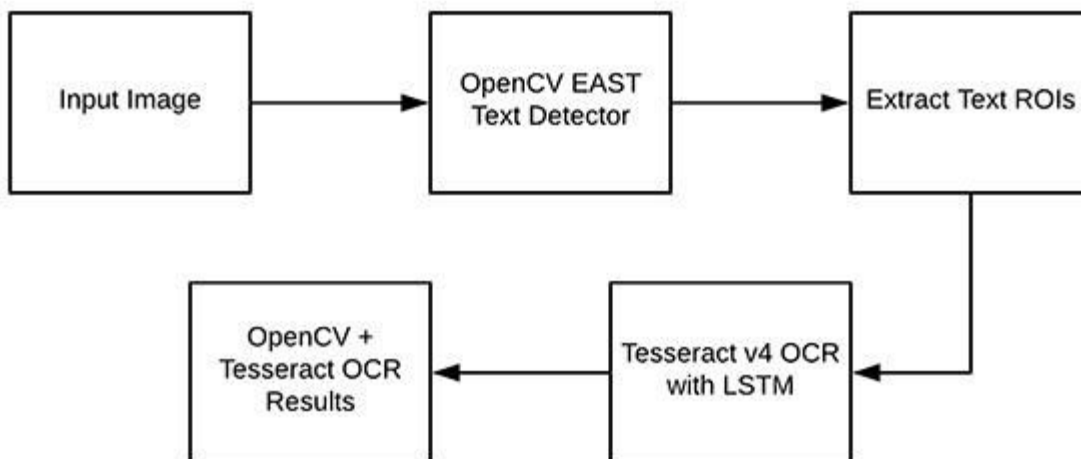
3.3 Design Rationale

In the project we will have expected obstacles that we will have to deal with: quality of the meter so that OCR did not recognize the text, the second model will not materialize because it is based on the first a video is recorded at high speeds and also as exhausted as the first obstacle. The form of writing FONT because we will not focus on this problem
Reverse or crooked text.
To solve this problem we could use a strong model that can provide all this problem but it should be learned with a high-performance GPU that we don't have.

4. DATA DESIGN

4.1 Data Description

The project will store its data in the Google firebase cloud so we will use commands and data structures to help us keep the data up to use for all kinds of things in the destination.

4.2 Data Dictionary

We used an exists OCR algorithm for improving to videos extracting that haven't OO method.

5. COMPONENT DESIGN

Input -> input video
While Input is running:
    I -> image from the video
    Threshold -> input size
    For j from 1 to end of the image:
        Boxes[] -> using OpenCV text detector with tesseract LSTM method
    For each j in Boxes:
        Words[] -> using the OCR model to extract the word from the boxes
    Output -> words[]

6. HUMAN INTERFACE DESIGN

The project focuses solely on an algorithm for identifying texts on the computer or robots.
So we don't have any deflection and we don't have a user's interface.

7. REQUIREMENTS MATRIX

functional requirements	number
the program apply for the user to identify the text from the input video	1
the program apply for the user to extract the text from the input video	2
The program has maps that contain a sign's location in the real world	3
The program allows to locate the location of the video by the videos features (the signs and text if recognized in the map)	4
The program works in real-time videos	5
The program allows the user to share his location with a friend by the location that returned from the algorithm	6
The program allows adding more maps	7