Software Requirements Specification

for

Visual Analysis Using Cloud Services

Version 0.3

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## Revision History

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1. Introduction

1.1 Purpose
This document is intended to give an overview on what we will use to achieve our goals. It will only go over part of the software during creation and testing phase.

1.2 Intended Audience and Reading Suggestion
This SRS is intended for programmers.

1.3 Product Scope
The Visual Analysis Using Cloud Services aims to speed up lawyers ability to reviewing cases involving digital audio or video evidence.

1.4 Definitions, Acronyms, and Abbreviation
AI/ML: Artificial Intelligence Markup Language.
Box: A cloud storage.
Box Skills: A framework for bringing Cloud Services to files stored on Box.
AWS: Amazon Web Services.
AWS Lambda: A compute service on AWS.

1.5 References
N/A
2. Overall Description

2.1 Product Perspective
Since Box Skills makes use of third-party AI/ML to get information within files, it isn’t a standalone product and require the use of other API; the box skills node is a middleware that will also need to be hosted on a serverless function.

The final product should be similar to many transcribing software currently on the market. One example is Youtube, they have a function to transcribe and use those transcripts as subtitles for their videos.

2.2 Production Function
The VAUCS primary function is to transcribe speech of many languages to text, with an addition of facial recognition and topic comprehension possibly packaged into it.

2.3 User Classes and Characteristics
Lawyers will be the main user of this extension.

2.4 Operating Environment
The product major component will be in the cloud, allowing it to be accessible by any system that can utilize Box application.

2.5 Design and Implementation Constraints
Accuracy of any transcribing done either by AI or people will always subjected to error due to the complex and ever changing nature of any human language. Therefore, the VAUCS cannot be completely relied on for perfect accurate transcription.

2.6 User Documentation
N/A

2.7 Assumption and Dependency
The decision on which third-party AI/ML is yet to settle, so currently not available.
The Box Skill Application will need to be hosted on the Serverless Function AWS Lambda.

### 2.8 Apportioning Requirement

Ability to recognize and transcribe multiple languages.

A security protocol that would allow for analysis taking long that one hour to be recorded back to Box.
3. External Interface Requirements

3.1 User Interfaces
Currently uploading files and viewing files are done on Box website. The main interest for user is to upload files onto Box and have it be analyzed. To upload, select a skill enabled folder, then press upload on the top right of the screen. Now just wait for completion and the file on Box will now display not only the content of the file, but it's transcription amongst other things such as faces it recognized and key topics it comprehended.

3.2 Hardware Interfaces
N/A

3.1 Software Interfaces
N/A

3.1 Communications Interfaces
Box require access to the account or an access token and file directory to be able to obtain stored files. So when client need to download files, they would need permission from admin. This process happens automatically for our Box Skills application, and by extension our application will allow AI/ML services to access the file automatically. One communication issue is that access token have an expiration time of one hour, which cause a problem when analysis of file takes more than an hour.
4. Requirements Specification
## 4.1 Functional Requirements

### 2.1: Box

| 4.1-2.1-1 | Box shall process user request for files upload and download. |
| 4.1-2.1-2 | Box shall notify BSA when user upload file to pre-configured folder. |
| 4.1-2.1-3 | Box shall send necessary information and access token to invocation URL where BSA is being hosted. |
| 4.1-2.1-4 | Box shall store the metadata written by BSA back onto the original file. |
| 4.1-2.1-4 | Box shall visualize metadata written by BSA using its pre-designed transcript card, face card, and topic card within its web application. |

### 2.2: Box Skill Application(BSA)

| 4.1-2.2-1 | BSA shall be able to be hosted on a serverless functions AWS. |
| 4.1-2.2-2 | BSA shall capture and parse the event notification payload sent by Box to obtain all relevant information regarding the event. |
| 4.1-2.2-3 | BSA shall task AI/ML Service when an event received. |
| 4.1-2.2-4 | BSA shall send only necessary file information and access token to AI/ML Service. |
| 4.1-2.2-5 | BSA shall listen to the responses from AI/ML Service, and react accordingly. |
| 4.1-2.2-6 | BSA shall retrieve analysis from AI/ML Service upon completion. |
| 4.1-2.2-7 | BSA shall write the metadata back to Box. |

### 2.3: AI/ML Service

| 4.1-2.3-1 | AI/ML Service shall listen for BSA call and communicates it progress to BSA. |
| 4.1-2.3-2 | AI/ML Service shall use file information and access token provided by BSA to retrieve file from Box. |
| 4.1-2.3-3 | AI/ML Service shall produce transcription of speeches on the file. |
| 4.1-2.3-4 | AI/ML Service shall be able to recognize different languages. |
| 4.1-2.3-5 | AI/ML Service shall recognize faces and keywords. |
| 4.1-2.3-6 | AI/ML Service shall provide time stamp for all the analyzed result. |
4.2 External Interface Requirements
User upload files on Box can be of video or audio.
Acceptable video formats: aac, aif, aifc, aiff, amr, au, flac, m4a, mp3, ogg, ra, wav, wma.
Acceptable audio format: 3g2, 3gp, avi, m2v, m2ts, m4v, mkv, mov, mp4, mpeg, mpg, ogg, mts, qt, ts, wmv.

4.3 Logical Database Requirements
N/A

4.4 Design Constraints
AI/ML services would not provide a complete accurate transcription. This inaccuracy increases greatly when multiple voices and/or background noises are present.
Face recognition sometime would not pick up faces.
Topic detection is not usually relevant.
5. Other Non-functional Requirements

5.1 Performance Requirements
Analysis time should be at least 1:1 with video length.
Accuracy should be up to modern standard of transcription services.

5.2 Safety Requirements
N/A

5.3 Security Requirements
Files distributed outside of box should not remain there for long, as they are often important evident to on going cases.

5.4 Software Quality Attributes
Box Skill Application can be hosted in a number of ways. On a server, on serverless functions, or on a cloud server. Open for migration without much changes, if the need arrive.
AI/ML services can also be replaced. This process is even simpler as only need to direct AWS Lambda to make its call to a different service.

5.5 Business Rules
N/A
6. Other Requirements

N/A
Appendix A: Glossary

AI/ML: Artificial Intelligence Markup Language.
Box: A cloud storage.
Box Skills: A framework for bringing Cloud Services to files stored on Box.
AWS: Amazon Web Services.
AWS Lambda: A compute service on AWS.
BSA-Box Skill Application

Appendix B: Analysis Models

Look at flow diagram.

Appendix C: To Be Determined List