

# Index

<b>1</b>	<b>Introduction</b>	<b>1-2</b>
1.1	Mission Statement	1
1.2	Mission Objective	2
1.3	Project Goal	2
1.4	Features	2
<b>2</b>	<b>Literature Survey</b>	<b>3-4</b>
2.1	Summary	4
<b>3</b>	<b>Software Requirements Specification</b>	<b>5-8</b>
3.1	Developers' Responsibility Overview	6
3.2	Environment	7
3.3	Tools Used	7
3.4	System Hierarchy	8
<b>4</b>	<b>Basic Concept / Technologies Used</b>	<b>9-15</b>
4.1	Machine Learning	9
4.2	Flask, RESTful API & WSGI server	9
4.3	UI Tools	9
4.4	MongoDB	10
4.5	Marker Based Augmented Reality	10
4.6	Android	11
4.7	Applications	11
4.7.1	Linux kernel	11
4.7.2	Libraries	12
4.7.3	Android Runtime	12
4.7.4	Application framework	12
4.8	Android Studio	13
4.8.1	Android SDK tools	13
4.8.2	Platform tools	13

4.8.3	Android Emulator	13
4.9	AWS S3 Bucket	14
4.9.1	ACLs	14
4.9.2	IAM User Policies	14
4.10	AWS EC2	14
4.11	PuTTY	15
<b>5</b>	<b>Implementation</b>	<b>16-20</b>
5.1	Data Collection	16
5.2	Data Synthesise	16
5.3	Feature Engineering	17
5.4	Ensemble Training and Model Building	17
5.5	Deep Learning and Model Building	17
5.6	Database Preparation	18
5.7	API preparation and cloud host	18
5.8	Establishment of Storage	19
5.9	Front UI Preparation	19
5.10	System Deployment	20
<b>6</b>	<b>Result and Analysis</b>	<b>21-23</b>
6.1	Classifier Comparison for Synthesized Data	21
6.2	Classification Comparison for AMEO-2015	22
6.3	API Connectivity and Regression Test	22
6.4	Deployment with Version Control and Beta Testing	23
<b>7</b>	<b>Conclusion</b>	<b>24</b>
7.1	Future Prospect	24
	<b>Appendix</b>	
	Index	<i>i</i>
	List of Figures	<i>iii</i>
	List of Tables	<i>iv</i>
	Reference	<i>v</i>

# List of Figures

Fig 1	Scrum Flow
Fig 2	Sprint Burn Down Chart
Fig 3	System Hierarchy
Fig 4	Backend Database Connectivity
Fig 5	Use of AR in Administration Control
Fig 6	Android Architecture
Fig 7	S3 Bucket Specific Storage Access
Fig 8	File Projection in Local and Global System
Fig 9	Data Visualization and Outliers Determination
Fig 10	ConvNet Architecture
Fig 11	Validation Accuracy Curve
Fig 12	Mongo Atlas JSON View
Fig 13	S3 Management Console
Fig 14	UI Frames Data Flow
Fig 15	Heroku Application Log
Fig 16	Classification Matrix of Synthesized data
Fig 17	API Test with Postman

# List of Tables

Table 1	Accuracy Comparison of Synthesized Dataset
Table 2	Analysis of Decision Tree Accuracy
Table 3	Accuracy Comparison of AMEO-2015 Dataset
Table 4	Analysis of Hyper-parameter Tuned Linear SVM Accuracy