TABLE OF CONTENTS

	Abstract	i
	Acknowledgement	ii
	Table of Content	iii
	List of Figures	vi
	List of Tables	vii
1.	INTRODUCTION	01
	1.1 Project Overview	02
	1.2 Background	02
	1.3 Objectives	02
	1.4 Scope	03
	1.5 Challenges	03
2.	LITERATURE SURVEY	04
3.	REQUIREMENTS SPECIFICATION	06
	3.1 Functional Requirements	06
	3.2 Non-Functional Requirements	07
	3.3 Installation Requirements	07
	3.3.1 Hardware Requirements	07
	3.3.2 Software Requirements	08
4.	SYSTEM DESIGN	09
	4.1 Anaconda Navigator	09
	iii	

4.1.2 Anaconda Prompt 4.2 Languages Used 4.2.1 Python 4.2.2 JavaScript 4.2.3 HTML 4.2.4 CSS 4.3 Packages / Libraries Used 4.3.1 Libraries Used in Gesture Controller 4.3.2 Libraries Used in Voice Assistance 5. SYSTEM ARCHITECTURE 5.1 Functional flow of a Gesture and Voice Controlled Interface 5.2 Functional flow of a Gesture Controlled Interface 5.3 Functional flow of a Voice Controlled Interface 6. IMPLEMENTATION 6.1 Frontend Implementation	09 10 10 10 11 11 12 12 13
4.2 Languages Used 4.2.1 Python 4.2.2 JavaScript 4.2.3 HTML 4.2.4 CSS 4.3 Packages / Libraries Used 4.3.1 Libraries Used in Gesture Controller 4.3.2 Libraries Used in Voice Assistance 5. SYSTEM ARCHITECTURE 5.1 Functional flow of a Gesture and Voice Controlled Interface 5.2 Functional flow of a Gesture Controlled Interface 5.3 Functional flow of a Voice Controlled Interface 6. IMPLEMENTATION 6.1 Frontend Implementation	10 10 11 11 12 12 12 13
4.2.1 Python 4.2.2 JavaScript 4.2.3 HTML 4.2.4 CSS 4.3 Packages / Libraries Used 4.3.1 Libraries Used in Gesture Controller 4.3.2 Libraries Used in Voice Assistance 5. SYSTEM ARCHITECTURE 5.1 Functional flow of a Gesture and Voice Controlled Interface 5.2 Functional flow of a Gesture Controlled Interface 5.3 Functional flow of a Voice Controlled Interface 6. IMPLEMENTATION 6.1 Frontend Implementation	10 11 11 12 12 12 13
4.2.2 JavaScript 4.2.3 HTML 4.2.4 CSS 4.3 Packages / Libraries Used 4.3.1 Libraries Used in Gesture Controller 4.3.2 Libraries Used in Voice Assistance 5. SYSTEM ARCHITECTURE 5.1 Functional flow of a Gesture and Voice Controlled Interface 5.2 Functional flow of a Gesture Controlled Interface 5.3 Functional flow of a Voice Controlled Interface 6. IMPLEMENTATION 6.1 Frontend Implementation	11 11 12 12 12 13
 4.2.3 HTML 4.2.4 CSS 4.3 Packages / Libraries Used 4.3.1 Libraries Used in Gesture Controller 4.3.2 Libraries Used in Voice Assistance 5. SYSTEM ARCHITECTURE 5.1 Functional flow of a Gesture and Voice Controlled Interface 5.2 Functional flow of a Gesture Controlled Interface 5.3 Functional flow of a Voice Controlled Interface 6. IMPLEMENTATION 6.1 Frontend Implementation 	11 12 12 12 13
 4.2.4 CSS 4.3 Packages / Libraries Used 4.3.1 Libraries Used in Gesture Controller 4.3.2 Libraries Used in Voice Assistance 5. SYSTEM ARCHITECTURE 5.1 Functional flow of a Gesture and Voice Controlled Interface 5.2 Functional flow of a Gesture Controlled Interface 5.3 Functional flow of a Voice Controlled Interface 6. IMPLEMENTATION 6.1 Frontend Implementation 	12 12 12 13
 4.3 Packages / Libraries Used 4.3.1 Libraries Used in Gesture Controller 4.3.2 Libraries Used in Voice Assistance 5. SYSTEM ARCHITECTURE 5.1 Functional flow of a Gesture and Voice Controlled Interface 5.2 Functional flow of a Gesture Controlled Interface 5.3 Functional flow of a Voice Controlled Interface 6. IMPLEMENTATION 6.1 Frontend Implementation 	12 12 13
 4.3.1 Libraries Used in Gesture Controller 4.3.2 Libraries Used in Voice Assistance 5. SYSTEM ARCHITECTURE 5.1 Functional flow of a Gesture and Voice Controlled Interface 5.2 Functional flow of a Gesture Controlled Interface 5.3 Functional flow of a Voice Controlled Interface 6. IMPLEMENTATION 6.1 Frontend Implementation 	12 13
 4.3.2 Libraries Used in Voice Assistance 5. SYSTEM ARCHITECTURE 5.1 Functional flow of a Gesture and Voice Controlled Interface 5.2 Functional flow of a Gesture Controlled Interface 5.3 Functional flow of a Voice Controlled Interface 6. IMPLEMENTATION 6.1 Frontend Implementation 	13
 5. SYSTEM ARCHITECTURE 5.1 Functional flow of a Gesture and Voice Controlled Interface 5.2 Functional flow of a Gesture Controlled Interface 5.3 Functional flow of a Voice Controlled Interface 6. IMPLEMENTATION 6.1 Frontend Implementation 	
 5.1 Functional flow of a Gesture and Voice Controlled Interface 5.2 Functional flow of a Gesture Controlled Interface 5.3 Functional flow of a Voice Controlled Interface 6. IMPLEMENTATION 6.1 Frontend Implementation 	1.
 5.2 Functional flow of a Gesture Controlled Interface 5.3 Functional flow of a Voice Controlled Interface 6. IMPLEMENTATION 6.1 Frontend Implementation 	16
5.3 Functional flow of a Voice Controlled Interface6. IMPLEMENTATION6.1 Frontend Implementation	17
6. IMPLEMENTATION 6.1 Frontend Implementation	19
6.1 Frontend Implementation	21
•	24
6.1.1 User Interface	24
	24
6.1.2 Styling	25
6.1.3 Interactivity	25
6.2 Gesture and Voice Command Processing	26
6.2.1 Gesture Recognition	26
6.2.2 Voice Command Processing	27
6.3 Backend Integration and Coordination	29
iv	

7	RESULT	30
	7.1 Performance Metrics Analysis Result	30
	7.1.1 Gesture Accuracy	30
	7.1.2 Response Time Analysis	31
8.	CONCLUSION AND FUTURE SCOPE	33
	8.1 Conclusion	33
	8.2 Future Scope	33
9.	APPENDIXES	35
	9.1 Appendixes A: Snapshots	35
	REFERENCES	41

LIST OF FIGURES

Figure 5.1 Architecture of the System	16
Figure 5.2 Functional flow of a Gesture and Voice-Controlled Interface	17
Figure 5.3 Functional flow of a Gesture Controlled Interface	19
Figure 5.4 Functional flow of Voice Controlled Interface	21
Figure 7.1 Accuracy by Mouse Function Performed	31
Figure 7.2 Response Time Analysis for Different Commands by Users	32
Figure 9.1 Neutral Hand Gesture	35
Figure 9.2 Move Cursor	35
Figure 9.3 Left Click	35
Figure 9.4 Right Click	35
Figure 9.5 Double Click	36
Figure 9.6 Scrolling	36
Figure 9.7 Volume/Brightness Control	36
Figure 9.8 Multiple Item Selection	36
Figure 9.9 Hand Coordinates or Landmarks	36
Figure 9.10 Wishing Command	37
Figure 9.11 Date and Time Function	37
Figure 9.12 Listing Files	37
Figure 9.13 Service down message	37
Figure 9.14 Copy Function	38
Figure 9.15 Paste Function	38
Figure 9.16 Location Finding	39
Figure 9.17 Browsing Contents from Web browser	39
Figure 9.18 Launching Gesture recognition	40
Figure 9.19 Stopping Gesture Recognition	40
Figure 9.20 Weather Updates	40

LIST OF TABLES

Table 7.1 Gesture Recognition Accuracy for Mouse Functions	30
Table 7.2 Response Time Analysis for Different Commands by Users	31