

Section	Sub Sec	SubSub	Title	Pages	Cum	Status
0	1	0	Cover Page	1	1	Yellow
0	2	0	Declaration	1	2	
0	3	0	Certificate	1	3	
0	4	0	Dediction	1	4	
0	5	0	Abstract	1	5	
0	6	0	Acknowledgement	1	6	
0	7	0	Sponsor Details	1	7	Pink
0	8	0	Contents		11	
0	8	1	List of Sections		11	
0	8	2	List of Figures	4	11	
0	8	3	List of Tables		11	
0	8	4	List of Abbreviations		11	
Total Intro				11		

Chapter 1		Introduction				
1	1	0	Introduction	0.5	0.5	Yellow
1	2	0	Problem Definition	0.5	1	
1	3	0	Objective	0.5	1.5	
Chapter 2		Literature Survey				1.5
2	1	1	Khepera	0.5	2	Green
2	1	2	Alice	0.5	2.5	
2	1	3	AMiRo	0.5	3	
2	1	4	Formica	0.5	3.5	
2	1	5	Pluto	0.5	4	Pink
Chapter 3		Hardware Architecture				4
3	1	0	Overview / Block Diagram	0.5	4.5	Pink
3	2	0	Design Considerations / Requirments	0.5	5	
3	3	0	Power Supply (Battery)	0.5	5.5	
3	4	0	Regulator	0.5	6	
3	5	0	Charging	0.5	6.5	
3	6	0	Microcontroller		6.5	
3	6	1	Microcontroller Considerations	0.5	7	
3	6	2	About STM32 and M3	1	8	
3	6	3	STM32 in HiveX + Clock	1	9	
3	7	0	Locomotion		9	
3	7	1	Motors	1	10	
3	7	2	Motor Driver	2	12	
3	8	0	Communication	1	13	
3	8	1	USB, UART, I2C, SPI	1	14	
3	8	2	Wirless Communication	2	16	
3	9	0	Expansion Slot and Interfacing	1	17	
3	10	0	Misc (LED, Switch, Debug, etc)	1	18	
3	11	0	Putting it all together (Schematic)	1	19	
3	11	1	EagleCAD	0.5	19.5	

3	12	0	IC Fabrication Process + EMI		19.5	
3	12	1	Layout	0.5	20	
3	12	2	Routing	0.5	20.5	
3	13	0	Assembly		20.5	
3	13	1	Machine Soldering	0.5	21	
3	13	2	Chassis + 3D Printing	2	23	
Chapter 4		Software Architecture			23	
4	1	0	Overview / Block Diagram	1	24	
4	2	0	Design Considerations / Cross Platform	0.5	24.5	
4	3	0	Organisation / Flowchart	1	25.5	
4	4	0	Driver / HAL		25.5	
4	4	1	Standard Peripheral	0.5	26	
4	4	2	CubeMX HAL	0.5	26.5	
4	5	0	Middleware		26.5	
4	5	1	CubeMX Development	1	27.5	
4	5	2	Arduino / Maple	1	28.5	
4	5	3	mbed	1	29.5	
4	6	0	Application	1	30.5	
4	7	0	Programming		30.5	
4	7	1	UART Bootloader	0.5	31	
4	7	2	OTA	0.5	31.5	
Chapter 5		Results and Discussion				
5	1	0	Results + Images	3		
5	2	0	Discussion	1		
Chapter 6		Conclusion and Future Work				
6	1	0	Conclusion	0.5		
6	2	0	Future Work	1		
0	1	0	References	1		
Total Report				38		
Annexure						
A	0	0	Datasheets	10	10	
B	0	0	BOM	2	12	
C	0	0	Application Code	5	17	
D	0	0	CubeMX Middleware	8	25	
E	0	0	Arduino Middleware	5	30	
F	0	0	mbed Middleware	6	36	
Total Annexure				36		
GRAND TOTAL				85		