

Contents

1	Introduction	1
2	Part 1 - <i>OpenSCAD</i> Overview	2
2.1	Installing Python	2
3	OpenSCAD	3
3.1	Primitive Shapes	3
3.2	3D Primitives	3
3.3	2D primitives	4
3.4	Movement Operations	6
3.5	Combining Operations	6
3.5.1	Modules	7
3.5.2	Building the Example Shape	7
3.6	<i>OpenSCAD</i> Basics	8
3.6.1	Modules	8
3.7	The Designing Process	8
4	Part 2 - LPP Design	9
5	The Design Process	9
5.1	Parametric designs	9
5.2	Coding the design	10
5.3	Generating Plans	10
5.4	Parametric Design	10
6	Design Constraints	11
7	Building the Wing	11
7.1	Circular Arc Airfoils	12
7.1.1	Arc Geometry	12
7.1.2	SymPy	13
7.2	Wing Thickness function	13

7.3	Wing Center Section	15
7.4	Tip Design	16
7.5	Tip Templates	17
7.6	Wing Assembly	18
8	Stabilizer and Fin	18
8.1	stabilizer	18
8.2	Vertical Fin	18
9	Motor Stick	19
10	Tail Boom	19
11	Propeller	20
11.1	Blade Planform	20
11.2	Prop Spar	20
12	Final Assembly	20
12.1	Mounting Components	21
12.1.1	Paper Tubes	21
12.1.2	Mounting Posts	21
12.2	Mounting Tail Group	22
12.2.1	Stabilizer	22
12.2.2	Vertical Fin	22
13	Flight Box	22
13.1	Basic Construction	22
13.2	OpenSCAD Design	23
14	Weight and Balance Analysis	23
14.1	Generating STL Files	23
14.1.1	Estimating Weights	23
15	Biography	25