1 Roles the Team Member Plays in this Project

The algorithm applied in this project is determined after many discussions which all the members participate in. In this project, I write some code and also write some part of the final report.

2 Limitations of Our Work

In this section, I will talk about some personal understanding of this final project. In this problem, we are required to find the optimal 3D printing orientation to minimize the support area. Finally, the problem is converted to paradigm in which we are supposed to minimize an object function under some restrictions. The restriction in this problem is that the angle between the triangle normal direction and the downward direction is less than $45°$. There are still some limitations in our work. Firstly, the Particle Swarm Optimization does not guarantee to find the optimal solution. It is only capable of finding the approximately optimal solution. Furthermore, we do not try to segment the meshes in some manner, which may bring a better way to solve this problem.

3 Future Work

The geometry information of the model may be included to better simplify the mesh representation. In future work, geometry property should be considered to optimize the 3D printing orientation of models. Also, the support area is not the only factor that affects the quality of fabrication. More factors such as the mechanical properties and the thermodynamic properties are required to be integrated to evaluate the 3D printing orientation.