

## Group 4

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Option 1:

Pointcloud Annotation tool for generating Structure-Aware Mesh Decimation and Visibility analysis:

PointCloud annotation tool is a dire need today for good annotated data for object detection. Along with recognition, current research areas revolve around mesh Decimation into simpler models from pointcloud graph and visibility analysis using ray tracing. Combining 3D optical flow visualization, ray tracing shadows and Meshing of PC we make a annotation tool for users to modify point clouds and annotate in a quicker manner. 3 papers are uploaded with this document which describes the algorithm to implement and the references for creating the tool are: (Are written in python)

[https://github.com/yzrobot/cloud\\_annotation\\_tool](https://github.com/yzrobot/cloud_annotation_tool)

<https://github.com/springzfx/point-cloud-annotation-tool>

Option 2:

C-interpreter:

The general compilation principle course will say something like how to express grammar, Lexical analysis Parsing, recursive descent, Code optimization and so on. Compiler Principles teach us how to construct a "compiler generator", which is to construct a tool, generate a compiler based on grammar (such as lex/yacc), and so on. These theories attempt to teach us how to solve problems automatically in a common way. They have a strong practical meaning, because once we understand the deepest principles underneath, code quality will be obviously improved. Our interpreter will include the skeleton, virtual machine, lexer, top down parser, variable, functions and statements and expressions which is the necessary part for a c compiler.

Option 3:

Article implementation

Article Name: "Anytime Safe Interval Path Planning for Dynamic Environments"

It is an article about multi\_vehicle path\_planning. It is like a 3d-astar search algorithm, the three axis are x, t, and time, the difference between this and the 2d-astar algorithm is that each node becomes safety intervals, for example, if the node is occupied for time 1 - 100, 300 - 400, then it's safe intervals is 101- 299 and 401 - +INF.

If we choose this option we need to implement this function as well as writing a simulator to simulate the result so that it is more convincible.