Acoustic Tracing

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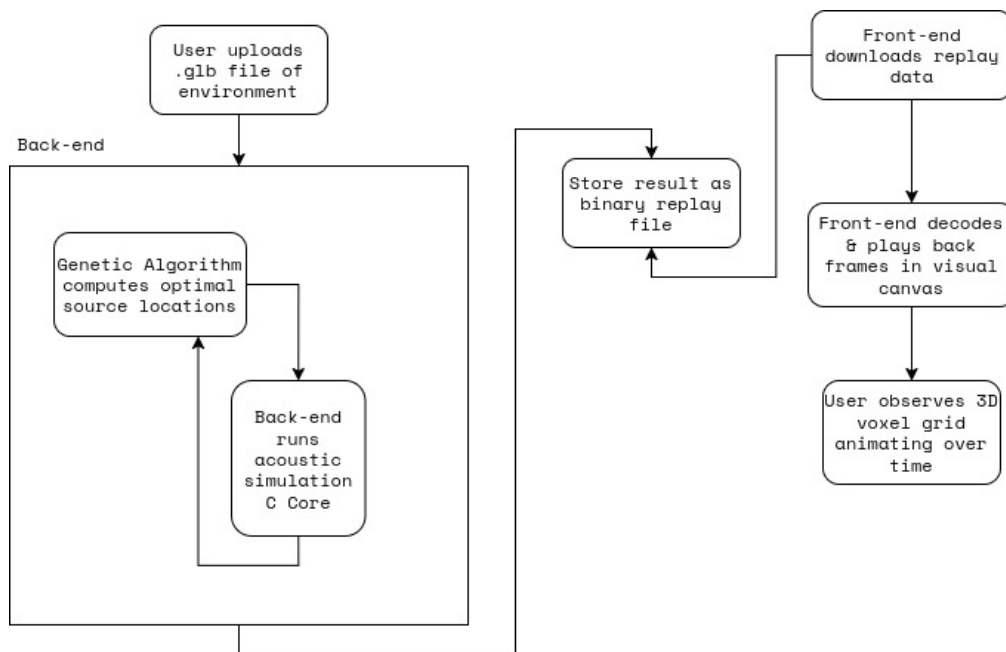
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Project Proposal

Introduction

Simulate how sound travels through a 3D environment, and replay that simulation as a 3D visualisation in a web app.
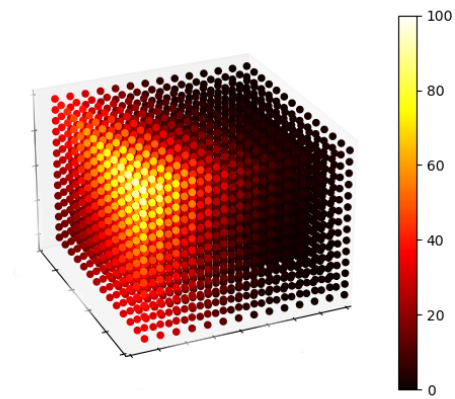
Workflow:

0.1 Desired Features

- Use of genetic algorithms to determine the optimal source location
- Observer Sound Intensity as a Voxel Heatmap
- 3D Scene Renderer
- Acoustic raytracer and raycaster
- React front-end with user-uploaded `.glb`, (environment scan) files
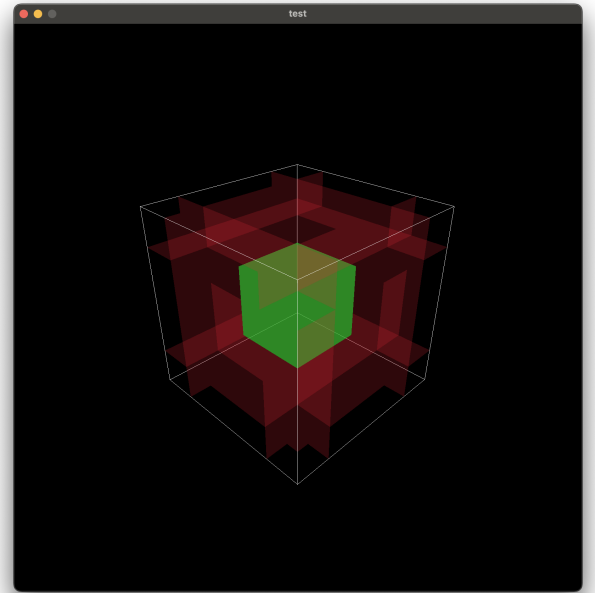
0.2 Implementation Stack and Technologies

C Performant raytracing and for genetic algorithm computation

React Modern front-end and user interactivity

0.3 Visualisation Figures

(a) Voxel Heatmap

(b) Restricting desired observer area