



Project S.N.A.P
(Sightless **N**avigation **A**nd **P**erception)

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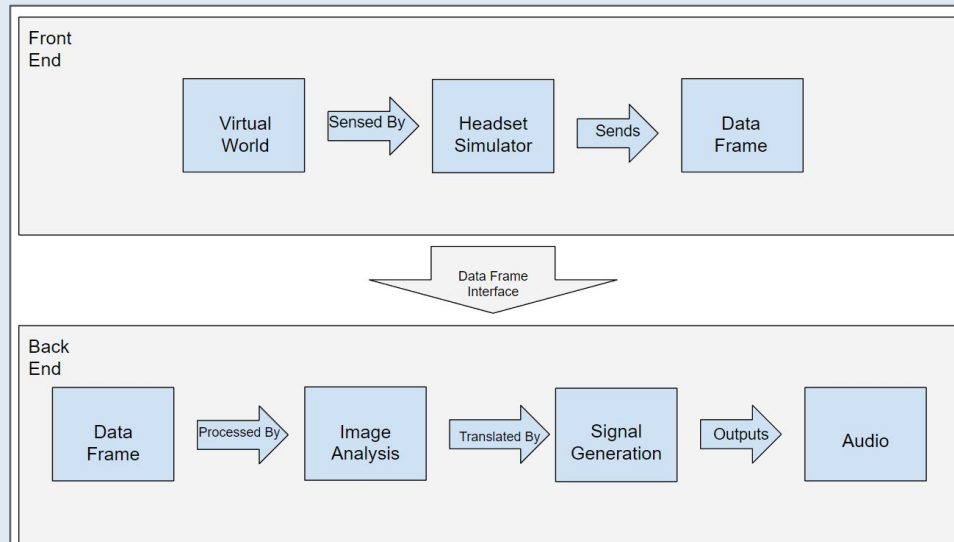
Sponsor: Dan Schneider



The Scope of the project (and some quick review)



- We are trying to give blind people a means of navigation.
- The previous group has built a good starting point.





Problem Statement:

Our goal is to create an easily distributable standard testing environment for gathering data and metrics to find the best possible acoustic navigation algorithm.



The Test Bed

- What is the test bed?
 - It is used to try out different configurations for our echo location algorithm.
- Why is the test bed important?
 - It allows us to find the best configuration to use to navigate an environment.

Software Components



Installation Process

A quick and easy download and installation process for easy distribution.

Main Menu

The main user interface to the testbed.

Logging/Analytics

For each test we need to gather as much data as we can for research.

Configuration

We want to make absolutely everything configurable.

Standard testing maps

A set of standard maps or tests that we can use to test navigation.

Backend

The visual analysis algorithm.

Character Controller/ Headset simulator

A prefab in unity that exactly simulates the functionality of the physical prototype.



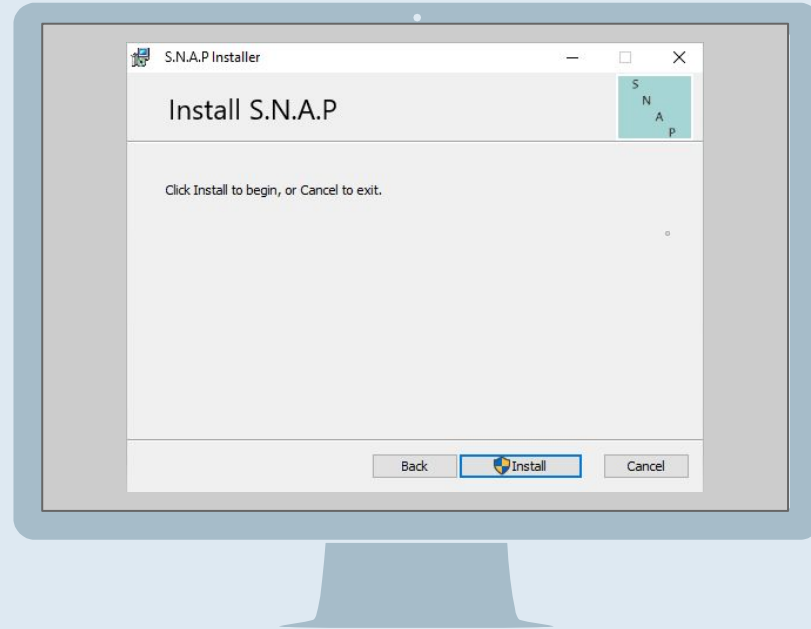


Installation and Distribution



Installation and Distribution

- Easy installation that minimizes user input
- GUI installation process





Backend



Backend

- We wanted to figure out the previous group's project.
- Document previous group's code for future inspection.
- Create objects and functions to make the backend more modular for easier configuration.



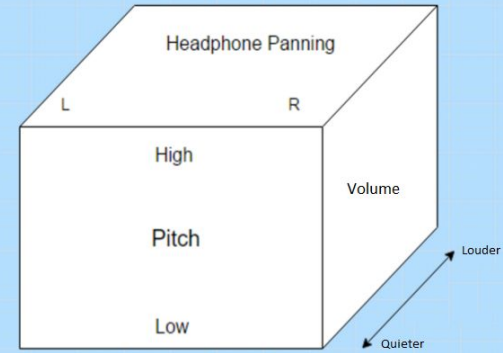
Configuration



Configuration

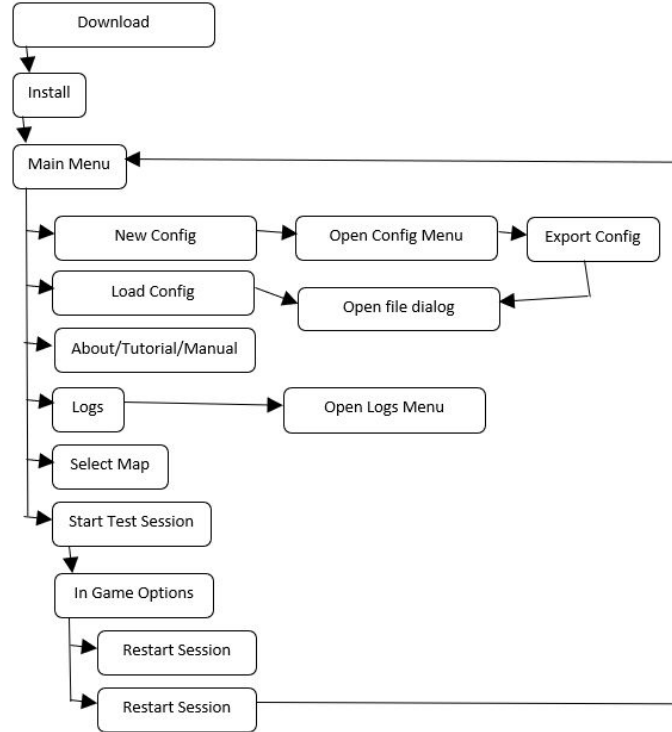
- Create intuitive configuration menu
- Allow configuration files to be saved and shared
- Configure axes of visual audio model to be modifiable

Acoustic Feedback Model



Any scale from 0-100 can be used for any axis such as pitch or volume

The flowchart shows the layout of how we want our Unity menus to interact with each other



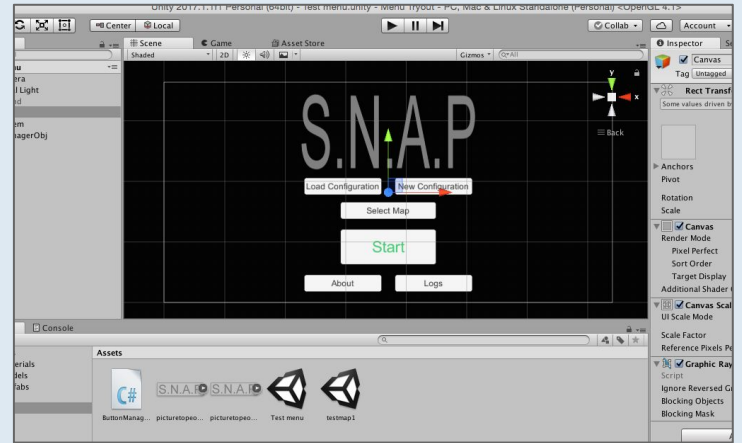


Main Menu



Main Menu Components

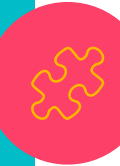
- Test map selector
- Audio configuration selector
- View previous test logging information
- About/Tutorial.



A current look at our main menu design in Unity

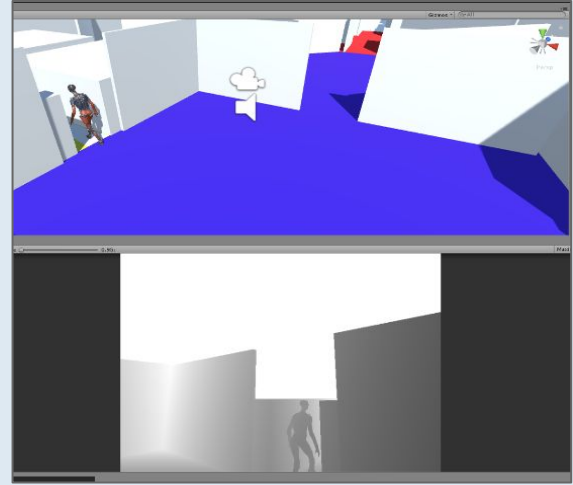


Testing Maps



Testing Maps

- Hallway map
 - Static objects
 - Obstacle Avoidance
- Dynamic Objects Map
 - Moving obstacles
- Staircase Map
 - Utilizing the y-axis



A look at the previous group's test map



Logging



Logging

- Why do we need detailed logging?
 - By recording user information about each test, we can acquire metrics about each audio configuration.
- What will be logged?
 - Object collisions
 - Total map completion time
 - Subjective user review of audio configuration



Headset Simulator



Headset Simulator

- It is important for our simulator to be 100% compatible with the physical prototype that our client has made.
- The headset simulator will be modular in the sense that we will be able



What We have
done so far



Repository Clean-up

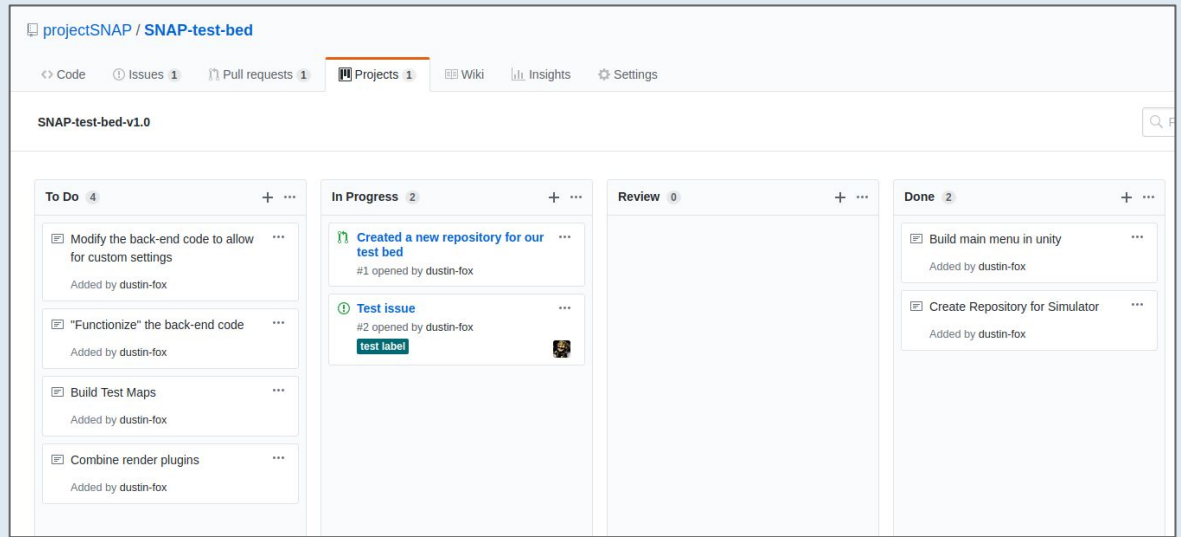
- We have spent some time pouring over the previous group's repository.
- We learned a lot about the importance of .gitignore
- The decision was made to create three new repositories.
- SNAP-test-bed, SNAP-render-plugin, SNAP-back-end

Agile Tools



- We wanted to set up the repository in such a way that it is very easy for future teams or anyone to contribute.
- This includes extensive README documentation
- To make this possible we created a Github Organization called projectSNAP

Agile Tools



- In addition to the new repositories we have set up a Kanban style agile board.
- This allows for a quick at-a-glance view of our progress and to-do's.




Current Backend Progress

Understanding

Go through the backend source code and understand the logical structure of program.

Documentation

We are documenting how each of the current functions work, so we can figure out the best way to implement our own.



Current Main Menu/Maps Progress

- Ability to switch between maps/scenes
 - Sub-menu allows for users to return to main-menu
- Global variables that store map information and audio configuration file
- Currently working on creating our first hallway (static objects).





Thanks!

Any questions?

