

FITARNA Evaluation 1 Presentation

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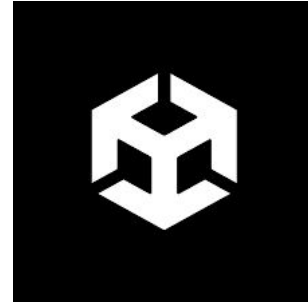
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Milestone 2

Milestone 1 Review

Task 1: Comparing and Selecting Technical Tools

- Unity (Engine)
 - AR Foundations (Framework)
 - ARCore (Android SDK with a Unity XR plug-in)
- A* (Pathfinding)
- C# (Unity) and Kotlin (Any feature that can't be done in Unity)
- RealityScan



Task 2: Android Demo App

- Scans are completed using Epic Game's Reality Scan.
 - Each Scan takes 150-300 pictures to achieve medium to high quality
 - Large empty surfaces or reflective surfaces tend to fail to load / scan
- Scans are uploaded to [SketchFab](#) and then downloaded as .glTF files.
- Files are imported to Unity and handled by the [glTFast](#) plug-in.
- You must then manual align scans and scale to real size (a door is a little over 2 cubes tall, ~2 meters)
- Loading prefabs into AR can be done with logos/ images, but we were having trouble with this and fell back to using QR codes

Task 2: Android Demo App

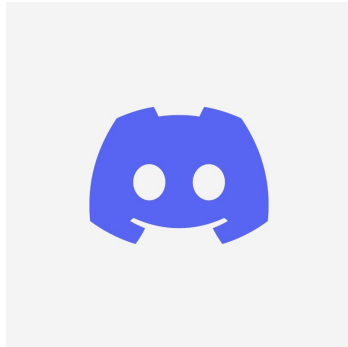


Task 3: Resolving Technical Issues

- Scanning: We successfully scanned two rooms and connected them to each other in Unity.
- Unity/ AR: We successfully imported scans to unity and aligned them in real scale.
 - We did not fully figure out localization with the AR camera.
 - We did successfully load a prefabricated object into AR using a QR code
- Cross-platform: We learned how to build and run a Unity scene to an Android device connected to the computer Unity is running on via USB.

Task 4: Comparing and Selecting Collaborative Tools

- Documentation: Google Docs
- Communication: Discord Group Chat
- Calendar: Github Projects (Roadmap and Other tools)
- Presentation: Google Slides



Task 5: Design Document

The design document for FITARNA was completed and includes:

- Covers System Overview, Data Design, System Architecture, Component Design, User Interface Design and a requirements matrix for the app.
- Broke system down into key components such as the User Interface, AR System and Pop-up System for a modular design.
- Defined responsibilities for each of those components
- Those components where given pseudocode as a guide to an implementation.
- A detailed description of UI design from the user's perspective, with breakdowns of the Main Menu, AR Navigation screen and each of the app's included modes
- A requirements matrix listing all the tasks the app will accomplish.

Task 6: Requirement Document

- Defined the scope, goals, and constraints of FITARNA
- Described the requirements of the apps major features:
 - Navigation Mode - Allow users to follow AR overlays to a selected destination
 - Tour Mode - Informative, self-guided tour around library
 - Pop-ups - Interactive pop-ups featured in navigation and tour mode
- Ex: Functional Requirement 1.5: The system shall end navigation automatically when the user reaches the destination.
- Listed performance requirements, design constraints, software system attributes, user characteristics.

Task 7: Library Outline

- We received a layout of the library (one with furniture and one without)
- This will help with create a 2D map of the library for our navigation application.



Task 8: Test Plan

- Went into detail about the items we will be testing to verify functionality:
 - Navigation
 - Destination Selection
 - Pathfinding
 - Reach Destination
 - Tour
 - Switching to Tour mode
 - Quizzes
 - Pause/Resume
 - Pop-ups
 - Navigation/Tour Pop-ups
 - Links
- Defined the expected outcomes of testing FITARNA's features

Milestone 2

Task 1: Importing and Integrating Library Floor Plans into Unity

- The first set of floor plans (no furniture) is not to scale, and the second set (with furniture) MIGHT be to scale.
- We need to make a 2D map of the library, to scale.
- Potentially we will build in common pathways using weights and give areas with furniture an extreme penalty to avoid pathfinding through furniture.



Task 2: Compiling information for pop-ups and getting approval

- We plan to compile information on the use of rooms and facilities (printer, Podcast Room, etc.) and the historical significance of art installations.
- This information will be fact checked and approved by the library staff.
- Once approved, the information will be integrated into the app for pop-ups.

Task 3: Initializing App version 1.0 with Navigation and pop-ups for the First Floor of the Library

- This is the meat of the project
- Includes:
 - Working Localization / Image Tracking
 - Properly aligned pop-ups and navigation indicators
 - Working pathfinding, aligned with localization
 - Deployment to Android without extreme load time/ lag
- Bonus: If we can successfully navigate up the stairs and indicate a transition to Floor 2, this would be a significant bonus and run into our objectives for Milestone 3.

Milestone 2

Task Matrix

Task	Dathan	Ethan	Jacob	Vincenzo
1. Importing and Integrating Library Floor Plans into Unity	25%	25%	25%	25%
2. Compiling details for each room and facility for informational pop-ups and getting them approved by the library.	25%, Pop-up info for floor 1	25%, Pop-up info for floor 2	25%, Pop-up info for floor 3	25%, Pop-up info for floor 4
3. Initializing App version 1.0 and integrating navigation and pop-ups for the first floor.	25%, Creating and placing pop-ups	25%, Pathfinding	25%, Image Tracking / Recognition	25%, Creating pathways, localization, and tying features together

Questions?