Problem Statement and Goals
Software Eng

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Table 1: Revision History

Date	Developer(s)	Change
2023/09/15	All	Initial addition of all sections of the deliverable
2023/09/19	All	In-depth review and edit of all the sections of the deliverable using more information we obtained from Dr. Yuan
2023/09/23	Ethan	Updated the following sections: Problem, Stakeholders, Environment, Goals
2023/09/25	All	Final revision before problem statement deliverable
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1 Problem Statement

This section of the document describes the problem that is trying to be solved, the inputs and outputs of the project, and the stakeholders and environment for the software.

1.1 Problem

In today's day and age, people are often struggling to form social connections with others. Humans are social creatures and need some form of social interaction with others. Unfortunately, many people do not feel comfortable joining social events in person, and as a result they become even more isolated causing their mental health to suffer. These individuals need a way to have social interactions remotely.

The purpose of this project is to create an augmented reality (AR) game that enables players to have meaningful social interactions from a remote/indoor environment. The game will allow individuals who cannot physically go to social events or are not comfortable doing so, to get the social fix that they need and form strong connections with others.

1.2 Inputs and Outputs

- Inputs:

    - Time and processing power from a device
    - Human instructions input via the interface
    - Device sensor inputs
    - Text and Audio messages

- Outputs:

    - Interactive AR games and puzzles
    - Messages from other users
    - Audio and visual feedback for completing objectives
    - Progress indicator for each user
    - Available hints for active puzzles

1.3 Stakeholders

- Individuals aged 15-35 who enjoy games, are comfortable with technology and want to become more social

- Dr. Irene Yuan (project supervisor)

1.4 Environment

- Application will be built using the Unity platform

- Application will be supported on both Apple and Android mobile devices

- Application will require players to have internet access

2 Goals

This section of the document will outline the goals for the project.

2.1 Create an AR Game

The game will have AR elements associated with it using the phone camera, and other phone sensors such as the accelerometer and gyroscope. This will allow for more engaging activities that tie into reality, giving the remote game a more visceral feel.

2.2 Cooperative Gameplay

The game will have tasks/puzzles that users must work together to complete. This will encourage new types of interactions between players, challenging their cognitive and communicative skills to accomplish the tasks.

2.3 Multiplayer

The game will be playable with 2-6 users. This will enable larger groups of users to create unique connections they would not be able to create through individual games.

2.4 Remote Gameplay

The game will allow users to connect to a host device from remote locations. This allows players to play in a comfortable and safe environment.

2.5 Communication

The game will allow asynchronous texting and voice chat. Users can leave messages behind for others to listen/read. This will encourage users to have social interactions with other players.

2.6 Game Audio

The game will have in-game music as well as sound effects for when users perform in-game actions. The sound will provide the users with a dynamic atmosphere as if they were in a different location, and allow them to interact in a unique way.

2.7 Save Game

The game will allow users to save their progress so that they can continue from where they have previously left off. Users can drop and pick up the game whenever it is convenient, on the go or at home.

2.8 Hint System

If users are stuck on a particular puzzle, they can ask for a hint on how to solve the puzzle.

3   Stretch Goals

- Make the game playable by a large group of people(10+) at the same time. This will allow for more users to group together and play a larger cooperative game together

- Have the game run off a server, not just host-client connections. This will provide a stable infrastructure for users to connect to, and allow them to have a better experience

- Allow the users to create their own puzzles within the app. This will increase the replayability of the game as you could have an infinite amount of puzzles, and users could design custom levels for other users to try.

- Track gameplay statistics for each user. This will allow users to see the amount of progress that they have made in the game and give them something they can brag about.

- Matchmaking systems to connect users with strangers from around the world. This would allow users who do not have a group to play with to still be able to play the game.