

Free Sky

The sky is not the limit but your playground

Autism Virtual Reality Project

Members

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Faculty Sponsor

Dr. Lucas Stephane lstephane@fit.edu

Client name and Affiliation

Name: Dr. Dana Gadaire dgadaire@fit.edu

Affiliation: The Scott Center for Autism Treatment

Goal:

The goal of the project is to create a system to assist Scott Center therapists, our clients, to provide an easier, funnier and more efficient way in aiding autistic kids in facial expression recognition. While some attempts to monitor individuals with autism were carried out, there is currently no platform where we can truly try and aid them in this area.

Motivation:

Our motivation is to assist with the progression of autistic treatment by using a serious gaming platform. As we realize with the increase in technology we can now monitor and aid people with disabilities better.

Features:

Patients

- Keeping Patients Engaged - Based on the treatment needed by autistic patients the game levels will include a friendly character to help guide the patients through tasks and familiar and comforting virtual environments.
- Positive Reinforcement - A consistent character will appear and encourage the patients. For example, if a patient is struggling with a situation, the character may say “You can do it - keep trying.” This way the patient does not become discouraged.
- Treatment Plan Access - The patient will be able to access the treatment plan their staff member assigned to them in a gamified form.

Therapist

Accessing and analyzing patient data is important for caregivers, so it is equally important that they have several options such as:

- Individual Profile
- Comparing Profiles, e.g. How is Gavin doing compared to Alanah

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- Progress assessment
- Feedback from the patient: How much they are enjoying the process
- Lowest Mean test scores for different categories: e.g. why is everyone scoring low in facial recognition dealing with sadness? is it too hard...
- Highest mean test scores: Is this measurement method too easy?

Technical Challenges: Discuss three main CSE-related challenges:

- The learning curve associated with developing a serious game related to healthcare. We all currently have limited experience in Unity
- We have no experience as it relates to database management and have to learn as we develop using an agile development framework, e.g. Scrum
- This is the first user-driven system that any of the team members are facing; therefore, we need to perform an in-depth state of the art related to users, patients and technology in order to identify the best way to build our system

Milestones

Milestone 1 (Sep 30): itemized tasks:

- Have a sit-down meeting with both our faculty sponsor and the Scott center to create full requirements documents outlining exactly how each aspect of the platform is supposed to work
- Have a development platform be chosen and have a small simple animation environment be setup in Unity where the user can look around
- Have an Entity relationship diagram created to have a physical layout for the database
- Select all the tools needed for animation and ensure that it is compatible with the game development platform
- Create a test plan for testing all aspects of each game level focusing on user interactions
- Create a design document with our faculty sponsor

Milestone 2 (Oct 28): itemized tasks:

- Create and test writing and retrieval queries to/from a database, and specifying and implementing the caregiver forms for patient assessment linked to the game
- Create and implement customized accounts that adjust user experience for each user, e.g. name display, level of Avatar facial expression exaggeration, smiley size, etc.
- Create and test avatars in the game development environment
- Outline requirements for the Avatars and possibly have a focus group with the Scott Center therapists and patients

Milestone 3 (Nov 25): itemized tasks:

- Create a Functional level and be able to test the data collection aspect and Reward system
- Host a test run with the Scott Center therapists and consolidate the requirements document, making changes where necessary
- Create and test filter options for data on each patient information, as requested by the therapists
- Create a simple individual platform for the therapist that is linked to the patients database

Task Matrix

Task	Gavin	Alanah	Jiaqi
Requirements Document with Scott Center for each aspect	Focus and write the Therapist and Main Database aspect of the document	Focus and write the Rewards System Avatars aspect of the document	Focus and write the Child user aspect of the document
Choose Development platform	Unity research	3d vista research	Unreal research
Developing a test demo	Working with the creation of the camera for the user looking around the area	Creating and Importing test environment plugin	Importing and testing sprite/avatar plugin
Database ER diagram	Design	Review and Adjust	Review and Adjust
Create a Design Document	Write 40 percent of the design document	Write 20 percent of the design document and review for any adjustment	Write 40 percent of the design document
Deciding on Animation Tools	Look into Photoshop and other Adobe products offered by Adobe, such as Mixamo Fuse	Look for other alternatives, such as Autodesk Character Builder, etc.	Research other useful animation tools not mentioned
Creating a Test Plan	Responsible for 20% write up and review and adjustment	Responsible for Writing 40% of the test plan	Responsible for Writing 40% of the test plan

Approval from Faculty Sponsor

"I have discussed with the team and approve this project plan. I will evaluate the progress and assign a grade for each of the three milestones."

Signature:  Date: 9/9/2019