Iris: An Art Therapy Application In Augmented Reality

CS 8395: Augmented Reality Final Project
Aadarsh Jha
aadarsh.jha@vanderbilt.edu

Introduction

Herein, the use of augmented reality (AR) is explored in the application of Art Therapy (AT) for neurodivergent individuals. In particular, AT is defined as the "therapeutic application of image making" — with an emphasis on releasing the unconscious by art expression, encouraging a transference relation via free association. In effect, AT is considered to be a symbolic form of speech, unlocking another modality of communication [1]. Thus, AT is holistically an inclusive, and alternative, method of expression, allowing those who are unable to express themselves through conventional manners have access to therapy and treatment. Recent research demonstrates the shift of Art Therapists towards utilizing AT for individuals with neurodiversity, autism spectrum disorder (ASD), and personality disorders [2]. Researchers have shown that the use of AT encourages psychological well-being, self-awareness, and improved mental health by emphasizing sensory regulation, individualized artistic experiences, socially appropriate skills, and encapsulating complex topics in a digestible manner [2, 3]. Inspired by the Neurodiversity-Inspired Engineering Courses (CS 8395, Dr. Keivan Stassun) — a course which emphasizes engineering approaches towards narrowing the gap between Neurodivergnt and Neurotypical individuals — an AR-Engineering approach is explored for AT. The overall goal of this project is to increase the accessibility of AT via an AR-based mobile drawing application, with a specific target audience of neurodiverse individuals.

Methods

The goal of this project can be described in two-fold: 1) allowing for the user to draw in several different types of modalities (brush stroke, style, color) to increase accessibility and creative expression, and 2) allow for 3D-models to be placed around the 3D space to recreate realistic scenes. An additional goal would be to evaluate the application on a body of neurodivergent-identifying individuals, likely via collaboration with the The Frist Center for Autism and Innovation at Vanderbilt University. Inspiration for these subgoals can be found in previous literature, wherein an emphasis in presence and immersvity, as well as customization and reliability, has been found to increase success in AT within mixed reality systems [4]. The technical development of this project will primarily focus on Android-mobile development, via Unity and Vuforia. 3D models from the Unity Asset store will likely be fetched, as well.

Conclusion and References

To conclude, the use of AR to create accessible AT spaces by 1) allowing for several modalities of artwork, and 2) enabling realistic scenery and expression via 3D models in AR. The novelty of this project is allowing for users to create more immersive experiences within their AT, powered by customized artwork and 3D exploration. To this end, an added dimensionality to AT is created, enabling users to go beyond the physical limitations of artwork, and express themselves with the help of 3D space. It would be ideal that this would further bolster the benefits of real-world AT.

References:

[1] Edwards, David. Art therapy. sage, 2014.

[2] Martin, Nicole. "Art therapy and autism: Overview and recommendations." Art Therapy 26.4 (2009): 187-190.

[3] Akridge, Jazlyn Marie. "The Benefits of Creative Art Therapy for Youth with Autism Spectrum Disorder: A Review of the Literature." (2021).

[4] Hacmun, Irit, Dafna Regev, and Roy Salomon. "The principles of art therapy in virtual reality." Frontiers in Psychology (2018): 2082.