LEADER: Law enforcement Adaptive De-Escalation Education Resource

Kenneth Hernandez, Daniel Estrada
Product Owner: Steven Luis
Professor: Dr. Masoud Sadjadi

FIU
FLORIDA INTERNATIONAL UNIVERSITY

COLLEGE OF ENGINEERING AND COMPUTING

Problem & Summary

Everyday, law enforcement have to deal with a large variety of situations. Some situations may be dangerous, and some may be mundane. Due to this, law enforcement must train rigorously to learn how to de-escalate any situation. Sometimes these officers may even deal with people who have mental health issues and conditions. To help these officers, LEADER attempts to try and create a training environment for these officers using new-age AI.

LEADER uses AI to generate conversations with the player. The goal of using AI is to generate different situations with different levels of unpredictability. The game allows the player to speak into the game, and receive a verbal response back from the actor. The end goal of these situations is to make the actor agree to perform some sort of action which signifies that the actor has calmed down and the situation is de-escalated.

FIU Engineering & Computing

High-level scope

The high-level scope of this project is to create a VR simulation in which the officer may interact with a realistic AI-actor in a variety of situations. This will allow the officer to develop skills that allow him to enter any situation, assess the state of it, and de-escalate it to help avert any possible negative situations.

Elements of high-level scope:

- The ability to randomly generate a setting for a new situation.
- The ability to randomly generate an AI-actor with different possible mental states and animations.
- The ability to understand the situation and properly assess when the AI-actor has calmed down, therefore ending the situation.
- The ability to easily change and implement different AI models for the conversational AI.

FIU Engineering & Computing

User Stories

Implemented

- User Story 1: Research and background
- User Story 2: API implementation & development
- User Story 3: AI development & implementation
- User Story 4: Asset development & implementation

Not Implemented

- User Story 5: Situation assessment
- User Story 6: Modification of AI difficulty or unpredictability
- User Story 7: Deployment

FIU Engineering & Computing

Technologies Used

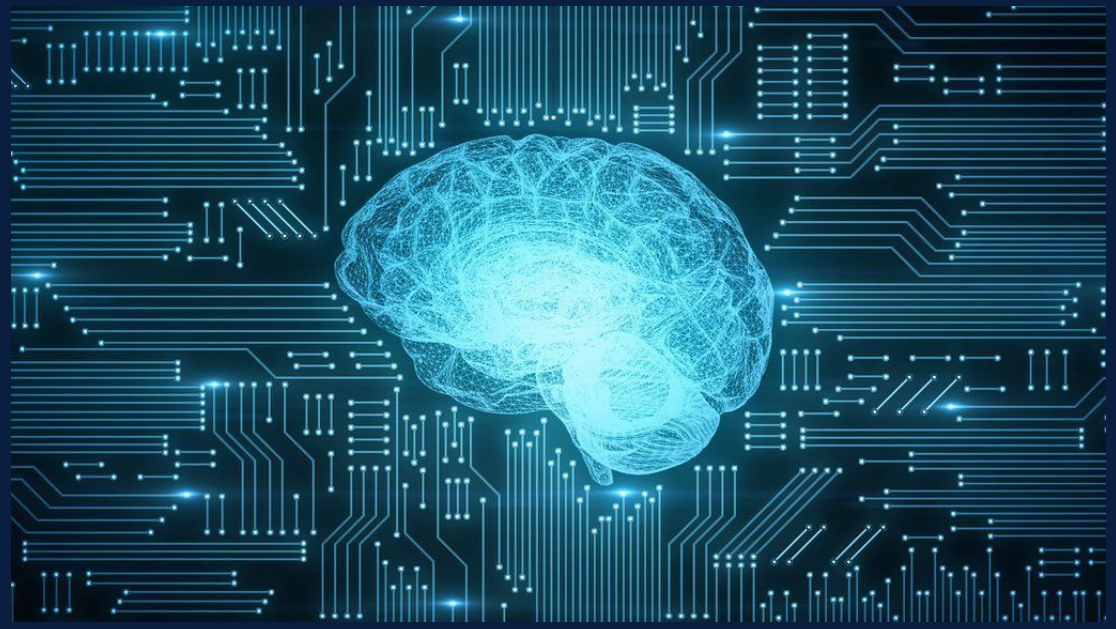
- Unity
- Visual Studio 2022
- C#
- Openrouter.ai (model Meta: Llama v2 70B Chat (beta))
- Hugging Face SDK
- Amazon Polly for text-to-speech conversion
- Oculus Quest VR headset

Unity

FIU Engineering & Computing

Shortcomings

- The current system is not deployable on the VR headset individually.
- The current AI implemented into the Unity system is not fully reliable.
- The current system is unable to complete a full situation due to AI inconsistency in responses, and therefore inability to assess a de-escalated situation.



FIU Engineering & Computing

Thank you!