

# **Project Plan: The Role of Agency and Interactivity for Virtual Training of Teaching in High Poverty Schools**

Fall 2021 - Spring 2022

## Research Team

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## Learning Goals

### **Broad goals for the Aresty Research Assistant Program**

- Enhance skills related to computer science
- Learn to professionally interact with people who are more experienced
- Have a real world effect via the project I am working on

### **Specific Goals for this Project**

- Learn NLU (Natural Language Understanding) Rasa in python
- Train the NLU using models so it can better understand the teacher-student environment
- Apply machine learning concepts (deep learning/neural networks) to work on creating an autonomous training tool

## Description of Project

In underprivileged schools, teachers struggle to deal with student's disruptive behaviors. Traditional forms of teacher training have failed to effectively combat this issue, leaving schools with disengaged students who are struggling to learn and a scarcity of effective teachers.

We hope to develop a more efficient way to train teachers to properly handle the varying types of situations they can find themselves in. In order to do this, we will create a virtual training platform, where teachers can interact with an AI (a student) that will place them in real world situations and conversations. There will exist a visual aspect, including facial expressions and hand gestures, as well as the interactive aspect, including an unscripted conversational tool. There will be 2 phases of this project. For Phase 1, we will work on creating the visual part of the virtual training platform, using scripted scenarios to allow teachers to view how complex situations will be handled. For Phase 2, we will be working on the AI, having a student that will respond to the teacher based on the open-ended responses they provide.

## Student Responsibilities (minimum 5 hours per week)

Throughout the year, I will mainly be focusing on Phase 2 of this project. In order to allow the virtual training tool to be autonomous, I will begin the semester by learning NLU (Natural Language Understanding) Rasa. After creating a basic chat bot that can hold relatively simple conversations, I will move on to making the chatbot more interactive. I will use prewritten models and I will develop my own unique models for this project to train the virtual students. As I am working on this, I will also collaborate with other team members on integrating a text to speech as well as speech to text tool.

## Required Readings and Meeting Schedule

We will meet as a group once a week, plus extra times as needed

- For the remainder of the academic year, we will meet on Thursdays from 9:00 PM to 10:00 PM
- We will meet additional times as needed, with either the full team or the interface team