

# Virtual Tabletop for Dungeons and Dragons

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## 1 Laboratory Background

The MIRRORLab at the Colorado School of Mines is a Human-Robot Interaction research laboratory that studies human-robot communication through the combination of various computational techniques (including integrated cognitive architectures, mixed reality visualization, and reasoning under uncertainty) with theories and methods from other fields (such as philosophy, linguistics, cognitive psychology, human factors psychology, social psychology, moral psychology, design, anthropology, and feminist theory).

## 2 Project Overview

In recent work, we have begun to investigate how therapists use teleoperated robots in the context of ASD therapy. In a turn of events that I think will be of interest to many Mines CS students, I believe that many of the challenges that therapists face when using robots in ASD therapy are similar to those faced by Dungeon Masters when using virtual tabletops to run games of Dungeons and Dragons. We are thus hoping to perform some research in the next year assessing this hypothesis, and potentially using some of the insights we're gathering on how to design robot teleoperation interfaces in order to also improve virtual tabletops, and maybe even use techniques from virtual tabletops to improve robot teleoperation interfaces.

In this project, we would like students to build a virtual tabletop that can be used to run D&D games, similar to Owlbear Rodeo or Roll20, that can be easily extended by our research team to implement design insights gleaned through our research.

This will require creating an online web application that can be used to synchronously and asymmetrically allow DMs and players to control and display maps and tokens. As a stretch goal, students would facilitate other functionality such as fog-of-war, chrometab music streaming, and other key DM capabilities.

- **Recommended Team Size:** 4+
- **Work From:** anywhere.

- **Desired Skillset:** Full-stack web development skills including HTML, Javascript, CSS, SQL, and a server-side language. Not all students need all capabilities.