

Fair and Equitable Medical School Admission: Unbiased and Culturally-Sensitive Situational Judgment  
Test Scoring with Casper Assessments

**SCOPE OF WORK**

August 1, 2022 - July 31, 2023

**Overview of Research Proposal:**

the central aim of this project is to address the potential cultural biases in scoring open-ended SJTs using the Altus Assessments' Casper Assessments. This project investigates (1) whether and what types of argument patterns are present by the examinees with unique cultural backgrounds and (2) whether human raters introduce noticeable biases toward the responses that are common or popular in cultural groups. In this project, we introduce a novel framework that combines Natural Language Processing (NLP) approaches with advanced psychometric models. The proposed analytic framework is designed to systematically understand the unstructured open-ended SJT responses and associate the common argument patterns that exist in each cultural group with the rater's scoring decision. Specifically, we adopt a specific type of recurrent neural network model to identify and structure the responses based on the argument segments (i.e., major claims and support). Then, a self-organized map algorithm is adopted to identify the common argument cluster patterns. Last, we adopt the generalized many-facet Rasch model (GMFRM) to understand the characteristics and the severity of the rater biases. The analysis will be conducted using the balanced set of exam cycles and the outcome will be compared based on varying exam conditions and scenarios.