Promoting Algorithmic Fairness in Educational Technology

- Ting-Hao (Kenneth) Huang, *College of Information Sciences and Technology*
- Roger Beaty, *College of the Liberal Arts*

Abstract: Creativity is now the most distinguishing and valuable attribute of the workforce in the global economy. To effectively prepare the workforce, there is a critical need for educational tools that can help to identify what works (or does not) to foster creativity in education. A key barrier to equity in 21st century education is inclusivity of diverse students. The tools teachers currently use to foster creativity were not designed for culturally and linguistically diverse individuals—putting underrepresented minority (URM) students at a disadvantage. Likewise, as AI is increasingly used to support student learning, it is essential that such technology is equitable and not racially unbiased (i.e., algorithmically fair), particularly in high-stakes situations involving student evaluation. Promoting culturally responsive and algorithmically fair assessments—educational tools that measure student potential fairly across diverse cultural contexts—is crucial for equity of opportunity in 21st century education.

Our goal is to empower educators with the technology and knowledge to foster creativity in students from diverse cultural and linguistic backgrounds. Our proposal brings together the complementary expertise of two CSRAI faculty who study creativity from different perspectives: Dr. Ting-Hao 'Kenneth' Huang (IST) and Dr. Roger Beaty (Psychology). Seed funding will provide critical pilot data to support a grant application to the NSF (Directorate for Education and Human Resources). Our seed project has two specific aims: 1) to design an AI-Powered tool to support effective scientific writing with URM students; and 2) to develop a natural language processing (NLP) tool to evaluate creative thinking in science education—using best-practices in NLP debiasing to promote algorithmic fairness for URM students.