

DEPARTMENT OF ENGINEERING AND COMPUTING EDUCATION  
COLLEGE OF ENGINEERING AND APPLIED SCIENCE

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

APPLICATION DEADLINE: 03/01/2023

PROJECT TITLE: Spatial Training in Education: Spatial Tasks, Apps, and Assessment (STAA)

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**Project Description**

Spatial ability has been considered one dimension of multifaceted intelligence and is known as a critical skill for one's successful performance in science, technology, engineering, mathematics, and Medicine (STEMM) education and at work. Therefore, numerous studies employed spatial training to improve students' spatial ability, which might improve their STEMM performance. This project aims to (a) systematically review various spatial training in STEMM education, (b) estimate the effects of the training on student performance, and (c) develop an efficient spatial task as a means to accurately assess students' spatial ability.

This project will start with searching and locating experimental research articles on spatial training. An undergraduate research assistant will systematically document characteristics of spatial training in the identified research articles, such as (a) target population, (b) STEMM content areas, (c) the types of spatial tasks (e.g., gaming, animation in surgical training, augmented reality, virtual reality, apps for engineering design graphics, etc.), (d) types of spatial assessment tools, and (e) changes in student performance due to spatial training. By reviewing spatial training, the student will be able to contribute to the development of a new spatial task or training tool for improving one's spatial ability using CAD software. The student will also have opportunities to collaborate with graduate students who work on different projects in Dr. Yoon's research group.