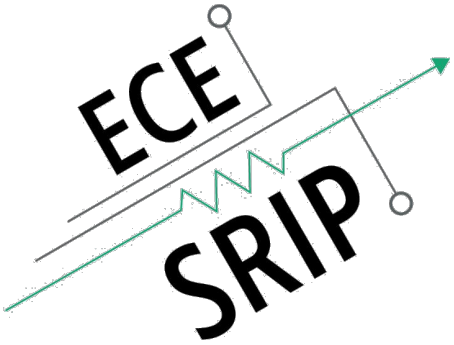


## FACULTY MENTOR

Nguyen, Truong

## PROJECT TITLE

Camera Systems for 3D Scene Reconstruction

## PROJECT DESCRIPTION

3D scene reconstruction is a powerful technique utilized in a vast array of applications, including smart transportation, autonomous driving, virtual/augmented reality, etc. The first step towards getting an accurate 3D model is to capture images of the scene from different perspectives.

There are two major challenges in this process:
1. The limitations of available ports on a personal computer make it impossible to connect all cameras directly to one workstation. Therefore, camera data needs to be first merged via an external hub prior to being then either transmitted to the computer or stored in a hard drive.
2. All cameras need to be synchronized so that they capture the scene at the same moment. This is crucial when motion is involved in the scene reconstruction.

Our lab would like to recruit an undergrad/MS student. During this project, you will learn the whole algorithm pipeline of 3D modeling and reconstruction: from capturing videos, to point-cloud estimation, to scene reconstruction. There will be plenty of hands-on experience as well.

Responsibilities:
1. Build a data hub for multiple USB cameras
2. Develop a synchronization mechanism for multiple cameras
3. Learn algorithm pipeline from capturing images to generating 3D models and performing scene reconstruction