

Good Morning,  
You are invited to attend our weekly ECE Graduate Seminar.

**Old Dominion University**  
**College of Engineering and Technology**  
**Department of Electrical and Computer Engineering**

All lectures to be held at 3:00pm on Fridays online at [ODU DL: ECE 731 831 Grad Seminar](#)

For more information, contact Dr. Chung Hao Chen at (757) 683-3475 or email [cxchen@odu.edu](mailto:cxchen@odu.edu).

**Friday, December 10, 2021 Seminar Topic:**

**FABRICATION AND APPLICATION FOR GEOMETRICALLY SCOLIOTIC SYNTHETIC COMPUTED TOMOGRAPHY VOLUMES** by Austin Tapp, PhD Candidate in Biomedical Engineering at Old Dominion University

**Abstract:**

Scoliosis, an abnormal curvature of the spine, is treated with bracing or surgical procedures. These correction strategies are limited by current medical imaging, which fails to elucidate the soft tissue anatomy known to play a critical role in spinal stiffness. Soft tissues must be localized on a patient-specific basis to determine ideal treatments for individuals with scoliosis. Fortunately, recent studies have proposed top-down segmentation methods that surmise soft tissues from routine, pre-operative computed tomography (CT) volumes. However, there is no standard to evaluate these soft tissue segmentations and ensure their clinical utility. Therefore, this study presents methods for the production of synthetic CT (sCT) volumes, which are geometrically scoliotic and contain ground truth information for both hard and soft tissues. The sCTs are used to assess the accuracy of surmised soft tis