

**ECE Capstone program
Spring 2018
Project Abstract & Info**

Please provide the following information to be shared with on capstone information exchange platform:

1. Project number:

S18-59

2. Project title (as will appear on the poster):

Enhancement and Segmentation of Bone Features from Computed Tomography Scans for Orthopedic Surgery

3. Team members:

Weitian Li, Xinwei Zhao

4. Adviser(s) name(s):

Ilker Hacihaliloglu

5. Up to 5 keywords that will help to classify the project scope:

Orthopedic Surgery, Enhancement, Segmentation, Bone Feature, CT Image

6. Project abstract (up to 250 words) to be shared with judges:

The continued growth of orthopedic surgery is an important reason for its high cost, along with the growth of orthopedic product market including the development of the surgical implant market. Under such condition, computer assisted orthopedic surgery (CAOS) system have been developed. The project focuses on the processing and analysis of computed tomography (CT) images of bone anatomy, mostly used to generate a pre-operative plan. The success of the surgical process is dependent on how accurately the surgeons execute this plan. Therefore, enhancement and segmentation of bone surfaces from CT data is an important process in all CAOS systems. The overall objective of this project is to demonstrate that enhancement of bone appearance from CT data leads to improved segmentation of bone surfaces. The proposed software platform can be easily integrated into existing CAOS systems for improved pre-operative planning.

We anticipate that the boundary between the bone features and the other part in the CT image is clearer and more complete, which would provide the orthopedists with a better basis for disease judgment to reduce the time costs of orthopedist and provide more accurate treatments for patients.