Università degli Studi di Pavia
Computational Mechanics & Advanced Materials Group - DICAr

3D@UniPV
Virtual Modeling and Additive Manufacturing for Advanced Materials

CHT
Centre for Health Technologies
University of Pavia

SEMINAR

Automatic Segmentation of Lytic Tumors in the Femurs with nnU-net

Metastatic tumors in a femur may weaken it to the stage at which a pathological fracture may occur under daily activity. The strength of a patient's femur with metastatic tumors may be assessed by a finite element analysis (FEA) based on patient's CT scan and patient's weight. Such analyses may assist orthopedic-oncology surgeons in deciding whether a prophylactic fixation is required.

To improve the FEA accuracy and assist radiologists in identifying such tumors we aim at developing a deep neural network algorithm that may automatically classify and segment lytic metastatic tumors in the femur. This talk will describe the overall autonomous FE algorithm which analyzes patient-specific stiffness and strength of femurs, and will specifically concentrate on the nnU-net used to segment metastatic tumors (the red box part in the Figure below).
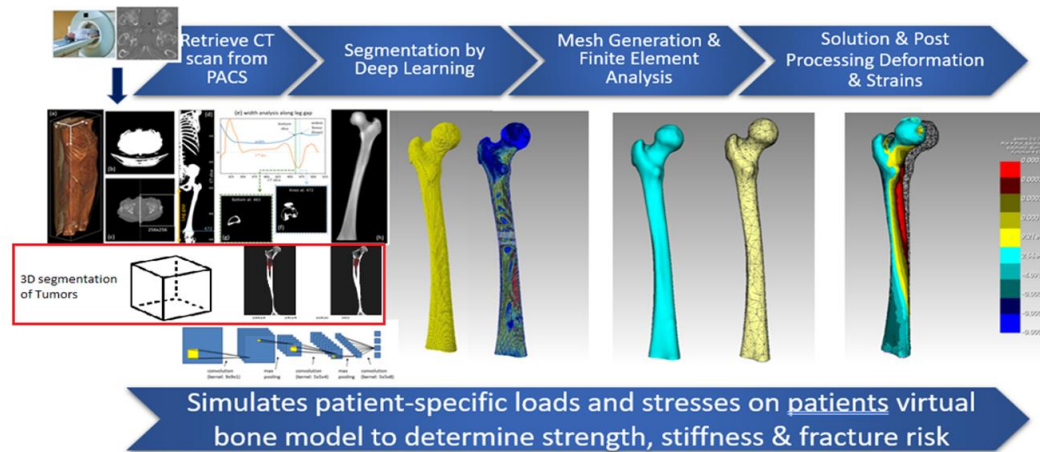
Oren Rachmil and Zohar Yosibash
Computational Mechanics and Experimental Biomechanics Lab
School of Mechanical Engineering
The Iby and Aladar Fleischman Faculty of Engineering, Tel-Aviv University, Israel

23/01/2023, 11:30
Aula MS1, DICAr
Via Ferrata, 3 – Pavia