



IN022-EC-X

3D Slicer: A Community-Based Open Source Platform for Processing and 3D Visualization of DICOM Images

All Day Room: IN Community, Learning Center Custom Application Computer Demonstration

Participants

Sonia M. Pujol, PhD, Boston, MA (*Presenter*) Nothing to Disclose

Steve D. Pieper, PhD, Cambridge, MA (*Abstract Co-Author*) CEO, Isomics, Inc Employee, Isomics, Inc Owner, Isomics, Inc Research collaboration, Siemens AG Research collaboration, Novartis AG Consultant, MeBio Research collaboration, Boston Scientific Corporation Consultant, Boston Scientific Corporation

Andras Lasso, PhD, Kingston, ON (*Abstract Co-Author*) Nothing to Disclose

Andriy Fedorov, PhD, Cambridge, MA (*Abstract Co-Author*) Nothing to Disclose

Ron Kikinis, MD, Brookline, MA (*Abstract Co-Author*) Nothing to Disclose

For information about this presentation, contact:

spujol@bwh.harvard.edu

TEACHING POINTS

3D Slicer is an open-source software platform for medical image processing and 3D visualization used in clinical research worldwide. The purpose of the exhibit is: To review a brief history of the 3D Slicer platform and its application to medical imaging; To learn how to perform segmentation and GPU-based volume-rendering of DICOM images; To explore interactive 3D views in virtual and augmented reality; To export 3D models for 3D printing; To gain knowledge of radiomics feature extraction and artificial intelligence analysis; To perform cloud-based computing in a Docker container and via Jupyter notebook; To understand how to use 3D Slicer in clinical research applications.

TABLE OF CONTENTS/OUTLINE

Overview of the 3D Slicer community-based open source platform. DICOM standard interoperability: import/export and structured reporting. Radiological viewing capability for multimodal imaging data. Annotations and automated measurements. GPU-based volume rendering and 4D rendering. Segmentation and 3D printing. Radiomics and artificial intelligence. Virtual and augmented reality. Cloud-based computing in a Docker container and via Jupyter notebook. Clinical applications in Radiology and Image-Guided Therapy. Community Resources: Slicer Forum, Slicer Documentation, and Slicer Training Compendium.

Printed on: 01/18/21