

COUPLING IMAGE PROCESSING AND COMPUTATIONAL MODELING FOR BIOMEDICAL APPLICATIONS

SUZANNE M. SHONTZ^{*} AND CRISTIAN A. LINTE[†]

^{*}University of Kansas
Lawrence, KS 66045 United States of America
shontz@ku.edu, <https://people.eecs.ku.edu/~shontz>

[†]Rochester Institute of Technology
Rochester, NY 14623 United States of America
calbme@rit.edu, <https://www.rit.edu/directory/calbme-cristian-linte>

ABSTRACT

In recent years, there have been numerous advances in medical imaging. Several examples include, but are not limited to, the development of whole-body positron emission tomography (PET) scanners, the use of amyloid PET imaging in the early detection and management of Alzheimer's disease, as well as the increasing popularity of portable imaging equipment and wearable medical devices. In concert with these advances, the use of 4D diagnostic imaging has enabled researchers to obtain high-resolution, detailed visualizations of organs and tissues of interest. Advances in mesh generation algorithms have made it possible to generate high-order and high-quality, feature-preserving meshes on computational models based on medical images for use in biomedical simulations. Artificial intelligence and virtual reality are being used extensively in the development of computational biomedical models and conceptualization of anatomical structures. These advancements are playing an important role in patient-specific disease diagnosis and treatment planning. The goal of the minisymposium is to gain insight into recent developments in medical image processing and computational modeling for biomedical applications by bringing together experts from mathematics, computer science, imaging science, and engineering to discuss the latest trends.