Faculty Name:

Elisa Konofagou

Faculty Email:

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Lab:

Ultrasound and Elasticity Imaging Laboratory

Project Title:

Development of vessel-mimicking phantom for ultrasound imaging

Description:

Pulse Wave Imaging (PWI) is a technique that visualize the propagation of the pulse wave along arteries using high framerate ultrasound, deriving pulse wave velocity and blood flow profile to determine arterial stiffness and other parameters relating to arterial health. The goal of this project is to develop carotid artery phantoms with tissue matching acoustic properties to test PWI under a controlled environment. The study will explore complex phantom making techniques to mimic diseased arterial geometries and mechanical properties such as viscoelasticity. Current works involve CAD modeling molds and casting phantoms, designing experimental setups to study the pulse wave propagation in fluids and solids, and ultrasound data postprocessing. An example of the project is published at https://www.umbjournal.org/article/S0301-5629(23)00306-X/fulltext .

We seek students interested in the fabrication and experimental setup of the arterial phantoms as well as data processing and algorithm optimization aspect of PWI.

Location of Research:

Hybrid (both Remote and On Site)

# of hrs/week:

35

Department/Program:

Biomedical Engineering

Eligibility:

BS, First Year, BS, Second Year, BS, Third Year, BS, Fourth Year, MS

To apply, please contact:

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