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Advancing Image-Guided Gynecologic Brachytherapy: Enabling Adaptive Treatment with Ultrasound Technologies

Thursday 12 June 2025 13:30 (45 minutes)

Despite evidence that internal radiation therapy (brachytherapy) used in gynecologic cancer treatment is integral to successful therapy, use of these techniques has been declining and access to advanced imaging to guide adaptive therapy is limited. The decline in popularity is in part owing to the complexity of the procedure, requiring aids to make accessible imaging available and interpretable, as well as low-cost yet effective training tools to improve uptake. This talk will focus on the creation of tools to aid radiation oncology and medical physics teams to adaptively assess treatment quality intraoperatively and provide high quality therapy, particularly in resource-constrained settings. The presentation will include an overview of novel 3D ultrasound imaging devices that have been recently translated into clinical trials for intraoperative feedback during gynecologic brachytherapy procedures and automated detection tools to aid in the interpretation of these images. I will also discuss opportunities to integrate multi-modality imaging with sensing and tracking technologies intraoperatively and into training initiatives, as well as opportunities to develop advanced image processing techniques with state-of-the-art deep learning methods to generate automated tools that facilitate understanding of the images available for image-guidance and image-based planning.

Keyword-1

Keyword-2

Keyword-3

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