

# The GWU Biomedical Informatics Center, CTSI-CN, and Washington DC VA Joint Informatics Seminar Series



## AI Fairness and Explainability in Medical Image Analysis: Insights from Multi-Modal Data in Orthopedics

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**Wednesday, May 22nd, 2024, noon – 1:00 pm EDT**

Link to join: <https://tinyurl.com/hmfjyz44>



The AI-powered segmentation to hip and knee bony anatomy has demonstrated very successful application in orthopedics, significantly impacting pre-operative planning and post-operative assessment. Despite the impressive progress in deep learning medical image segmentation, a crucial aspect remains largely overlooked: the presence of biases inherent within these AI-powered models. This talk addresses this critical concern by conducting a thorough re-examination of deep learning-driven segmentation of hip and knee bony anatomy using plain radiographs combined with demographic-based data, with a specific emphasis on identifying and mitigating potential biases related to sex and race.

Through extensive evaluation, it introduces targeted mitigation strategies aimed at alleviating biases associated with sex and race, thus promoting the generation of segmentation results that are fair, impartial, and conducive to patient safety using AI. The findings from this research are invaluable for advancing AI in healthcare, guiding the development of deep learning models that prioritize inclusivity, ethical standards, equity, and a bias-free healthcare environment. This, in turn, has the potential to improve clinical outcomes, promoting both clinical decision-making and research on osteoarthritis (OA).

Ahmad P. Tafti is an Assistant Professor of Health Informatics in the [Department of Health Information Management](#) within the [School of Health and Rehabilitation Sciences](#) at the [University of Pittsburgh](#), with a secondary appointment in the [Intelligent Systems Program \(ISP\)](#), at the [School of Computing and Information](#). He serves as the Interim Director of Scientific Affairs at the [Computational Pathology & AI Center of Excellence](#), and also leads the [Pitt HexAI Research Laboratory](#). He is affiliated with the [Center for AI Innovation in Medical Imaging \(CAIIMI\)](#), also serving as an Associate Member at [UPMC Hillman Cancer Center](#). Dr. Tafti also serves as the Vice Chair of [IEEE Computer Society](#) at Pittsburgh. He has a deep passion for AI-Powered healthcare informatics and health data science with better patient diagnosis, prognosis, and treatment using large-scale multiple clinical data sources and advanced computational algorithms. Dr. Tafti is the 2021 SiiM Imaging Informatics Innovator awardee, 2023 Oracle Eureka awardee, University of Pittsburgh CTSI awardee, Mayo Clinic Benefactor funded CDAs Orthopedics Career Development awardee, Mayo Clinic Transform the Practice awardee, an NVIDIA GPU awardee, and GE Healthcare Honorable Mention awardee.

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