

UNIVERSITY OF SOUTH FLORIDA

Major Research Area Paper Presentation

*Algorithmic Design and Optimization of Wireless Medical Technology in
Ambulatory Urodynamics*

by

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For the Ph.D. degree in Computer Science & Engineering

Lower urinary tract dysfunction (LUTD) is a debilitating medical condition that affects millions of individuals worldwide. Urodynamics is the current gold-standard for diagnosing LUTD, but uses non-physiologically fast, retrograde cystometric filling to obtain a brief snapshot of bladder function. Current state-of-the-art research in bladder monitoring includes ambulatory urodynamics using wireless implantable devices to evaluate bladder function during natural filling for long-term monitoring. However, there are various challenges and limitations to this multi-sensor approach. This research aims at developing a framework for automated event detection, data analysis and optimization of long-term bladder recordings to improve diagnosis and treatment of LUTD. In particular, this work proposes estimation of bladder detrusor signal from single-channel recordings using signal processing and neural network techniques, integration of accelerometry and bladder volume signals into the event detection framework using sensor fusion techniques, and optimization of sensing and event detection parameters using machine learning for system power reduction and reliability enhancement.

Wednesday, December 8th, 2021

10:00 -11:00 AM

Online (MS Teams)

Please email fzareen@usf.edu for more information

THE PUBLIC IS INVITED

Examining Committee

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