

# UNIVERSITY OF SOUTH FLORIDA

## Defense of a Doctoral Dissertation

On the Reliability of Wearable Sensors for Assessing Movement Disorder-Related Gait Quality and Imbalance: A Case Study of Multiple Sclerosis

by

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Approximately 33 million American adults had a movement disorder associated with medication use, ear infections, injury, or neurological disorders in 2008, with over 18 million people affected by neurological disorders worldwide. Current gait assessments used by physical therapists, such as the Multiple Sclerosis (MS) Walking Scale, provide only semi-quantitative data, and cannot assess walking quality in detail or describe how one's walking quality changes over time. This work consists of three key research objectives. First, we investigate performance and step count and segmentation difi fo(M)-1.8 g(M)-2.7ai