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Dear Prof. Dr. David Reinkensmeyer,

My colleagues and I would like you to consider our manuscript entitled "*Hidden Markov Model based Stride Segmentation on Unsupervised Free-living Gait Data in Parkinson's Disease Patients*" for publication as a full paper in your *Journal of NeuroEngineering and Rehabilitation*.

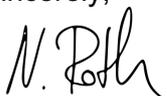
In our manuscript, we present a new Hidden Markov Model (HMM) based stride segmentation method for inertial sensor-based mobile gait analysis applications. We evaluated our proposed model, together with a state-of-the-art template matching method, on a free-living dataset of Parkinson's Disease patients containing almost 150.000 semi-automatically annotated strides. To better understand the influence of the context within free-living gait data, we extended our final evaluation by an in-depth analysis of the impact of walking bout length on the segmentation performance of the presented methods.

Our results showed a dependency of segmentation performance and walking bout length where our proposed probabilistic segmentation model was able to address the increased heterogeneity of strides within free-living gait data and outperformed the reference template matching method significantly. Potential future applications include the assessment of accurate spatio-temporal stride parameters where our work contributes to a robust detection of the required stride borders to improve the clinical use of long-term mobile gait analysis.

Each of the authors has read the final manuscript and concurs with its content. We confirm that the manuscript is entirely original, has not been copyrighted, published, submitted, or accepted for publication elsewhere. All authors have made substantial contributions to the conception and design of the study, or acquisition of data, or analysis and interpretation of data, drafting of the article or revising it critically for important intellectual content and the final approval of the version to be submitted.

We hope to fulfill the high standard of your outstanding journal with this manuscript and are looking forward to hearing from you.

Sincerely,



Nils Roth