Project Title: A novel approach for biomechanical gait analysis, among people with Huntington Disease (HD)	**Code: SPH14**
Host School / Institute: Sydney School of Public Health/ Brain and Mind Centre	**Address:** Brain and Mind Centre, Mallett Street, Camperdown
Certificates & Clearances required: No	
Primary Supervisor: Prof Clement Loy	
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Co-Supervisor/team: Associate Professor Simon Poon, School of Computer Science	
Project Type: Data Analysis; Clinical	
Project Category: Bioinformatics; Genetics	
Skills / Attributes of a successful student: Background in computer science	
Project Keywords: Gait analysis; Machine Learning	

Project Description: Recurrent falls is a major source of morbidity and a common reason for early nursing home admission, among people with HD. This project builds on the HD-FALLS study, where clinical (neurologic and physiotherapeutic) measures, biomechanical gait parameters (Zeno pressure mat), and fall frequencies have been collected, pre- and post- physical rehabilitation, for 50 admissions. Standard biomechanical gait analysis focuses on spatiotemporal gait parameters such as cadence and stride length. However the pressure mat also records pressure variation, within individual footsteps. Our initial exploratory analysis suggests this variation within each footstep, may provide additional information for gait analysis.

The proposed project will extend this work, potentially leading to a new biomarker for falls prediction. The summer scholar, through this project, will learn about machine learning and gait analysis.The project is expected to result in a conference presentation or publication. There is also scope for this project to be extended into a research degree.