UNIVERSITY OF BIRMINGHAM

Electronic, Electrical and Systems Engineering

21 MONTH PROGRESS REPORT

Name of Student: **Miguel Pérez Xochicale**			
Title of Project: **Automatic Classification of Human Movement Variability in the context of Human-Robot Interaction**			
Supervisor: **Prof Baber / Dr Cooke**		Academic Advisor: **Prof Russell**	
Start Date of Research Programme: **03/11/14**			
Date Report Submitted: **07/09/16**			
Development Needs Discussed and Planned			

Supervisor/Academic Advisor - Comments

Further development has been completed. This has led to the collection of data, but there have been problems with aligning these data. Consequently, a new set of IMUs have been bought from the supervisor's research budget. Data that have been collected have been subjected to several analyses, although nothing conclusive has been reported. This has been a problem in that there is not a coherent or complete story that can be reported. This is a shame because when Miguel has presented his work, in the posters, it has been very well received. He is planning journal papers (with a view to submission later this semester).

The report contains a section headed 'Extensive, up to date literature survey'. This is, rather, consideration of current approaches to Human Activity Recognition (although the literature is much larger than Miugel's coverage suggests), a review of the performance of the neMEMSi IMU and a brief mention of machine learning. Miguel has experimented with the HTK toolkit to produce HMMs from his data, but this has not developed very far.

The report concludes with an outline plan to collect more data. The intention behind the plan is sound and, with the introduction of robot NAO as an additional resource to the project, the direction of the work is taking a slight detour. The focus of the work remains on nonlinear dynamic models of human movement to capture variability. I think that it would have been beneficial to provide some summary descriptions of the data collected to date, particularly in terms of basic measures of performance, e.g., in terms of mean, s.d., and s.d. of s.d. (which defines 'jerk' in movement) and to use these measures to characterise participants' performance prior to the time-series analyses. This would provide an appropriate baseline against which other analyses can be judged. I am not sure why Miguel chooses not to do this.

Signed:	Chris Baber	Date:	1/10/2016

Comments from: Dr H Ghafouri-Shiraz, Postgraduate Research Programme Manager

Signed:		Date:	