

Part A: To be completed by the person in the School/Department responsible for co-ordinating the Annual Progress Review of postgraduate researchers	
Name: Miguel Angel Perez Xochicale	ID: 1386479
Lead Supervisor: Chris Baber Co-supervisor: Martin Russell	
This form to be returned to: 12 June 2017	By date: 12 June 2017
Part B: To be completed by the PGR (and given to the Lead supervisor two weeks before the Progress Review)	
Degree for which registered: Ph.D. Department of Electronic, Electrical + Computer Engineering	
Mode of study: FT/PT (*) Full Time	Split location/Distance learning (*) --
Start date for this degree: 10/11/2014	
End of maximum period of registration: 09/11/2018	
Thesis title: Automatic Classification of Movement Variability in Human-Humanoid Interaction	
Date of review meeting: 12 June 2017	Date of last progress review: 1 October 2016
<p>(1)Please report below the work you have completed since last Progress Review OR, if this is your initial Progress Review, the work you have completed since you began your current research programme. Please list your publications since the start of your research course.</p> <p>The progress of my research endeavours for my PhD has been mainly related to the improvement of conduction of experiments and the implementation of algorithms for data analysis, both of which are described below:</p> <ol style="list-style-type: none"> 1. CONDUCTION OF EXPERIMENT(S) I conducted an experiment of Human-Humanoid Imitation in a face-to-face activity where simple arm movements (horizontal and vertical movements) were imitated by twenty participants. Four NeMEMSi wearable inertial sensors were used to collect data from the participants and NAO (the humanoid robot). 2. DATA ANALYSIS. <ol style="list-style-type: none"> 2.1 TIDE UP Data from the NeMEMSi inertial sensors were synchronised and tidied up using R and MATLAB. The R package "data.table" has been used to tide up data from the 20 participants whom perform four activities: 1) horizontal movement at normal speed; 2) horizontal movement at faster speed; 3) vertical movement at normal speed; and 4) vertical at faster speed. Similarly, the whole data has been interpolated to get the same vector length per activity. 2.2 POSTPROCESSING Savitzky-Golay and low-pass butterworth filters were applied in order to smooth the data and to separate the low frequency components of the acceleration and angular acceleration sensors. Additionally, the first and second derivative were applied to the data. 	

PUBLICATION(S):

M. P. Kochicale, C. Baber and M. Oussalah

Understanding movement variability of simplistic gestures using an inertial sensor

PerDis '16 Proceedings of the 5th ACM International Symposium on Pervasive Displays, June, 2016,Oulu, Finland.

M. P. Kochicale, C. Baber and M. Oussalah

Analysis of the Movement Variability in Dance Activities Using Wearable Sensors

Conference Paper (PDF Available) · October 2016

The 2nd International Symposium on Wearable Robotics, October 2016, Segovia, Spain

M. P. Kochicale, C. Baber and M. Oussalah

Towards the Quantification of Human-Robot Imitation Using Wearable Inertial Sensors

The 12th Annual Conference on Human-Robot Interaction (HRI2017), March 2017, Vienna, Austria

(2)Please give details of research training you have undertaken since the last Progress Review, OR, if this is your initial Progress Review, since you began your current research programme.

Since November 2015, I have been booking one or two appointments per month at the "one to one English tutorial" which are helpful to discuss and find issues in the following areas of the use of English language: grammar, vocabulary, academic style and organisation.

(3)Please list the research training you have yet to undertake.

* None

(4)Is there a financial cost to this future training (e.g. registration fees for a conference)?

Yes *

No

If YES, please confirm that you have identified funds to cover these costs or have agreed a plan with your Supervisory team to apply in a timely manner for the necessary funds. *

Professor C. Baber has fully covered the expenses for the previous conferences. In the remaining time for my PhD, I am planning to submit two conference papers where expenses can be covered either by Professor C. Baber or by Dr. M Oussalah or in worst case by myself.

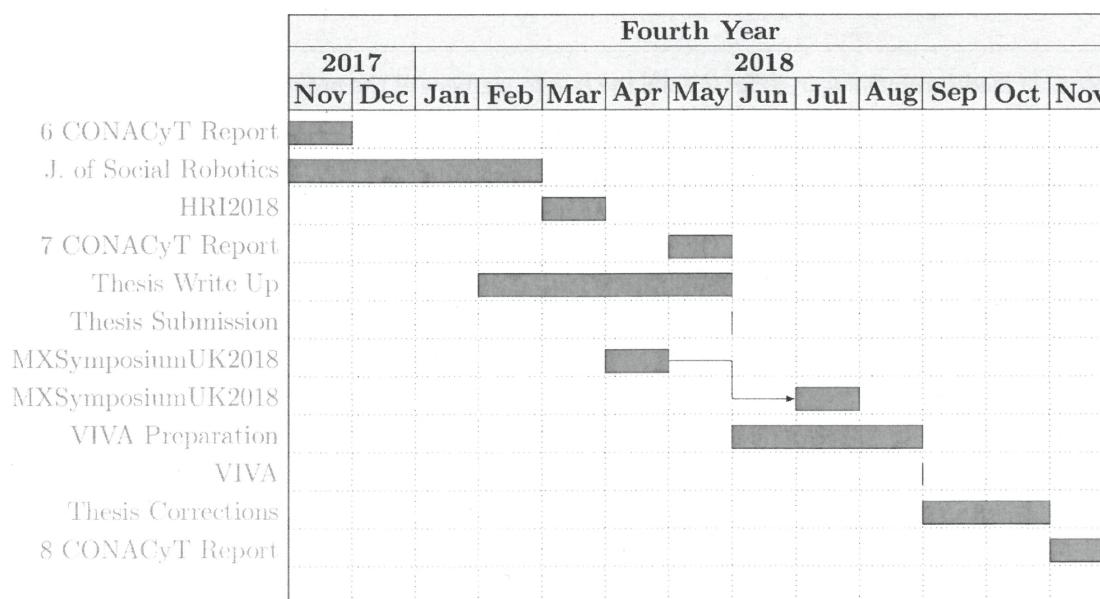
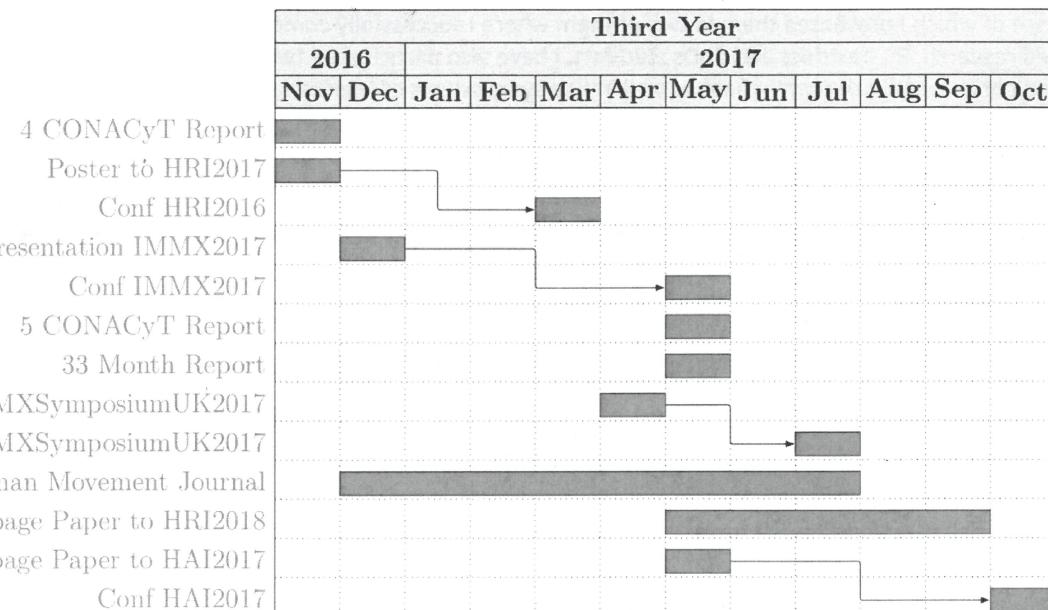
(5)Please give an outline of your planned work for the next semester.

1. May 2017
 - 1.1 Present advances of my work at the second forum of talented Mexicans "Innovation Match MX 2017".
 - 1.2 Implement the smooth and derivative data functions for data of the 20 participants.
 - 1.3 Run a pilot experiment using OpenFace where the head pose estimation is used in order to have a better understanding about the relationship of movement variability between the complexity of arm movements and the level of attention per participant.
2. June 2017
 - 2.1 Implement dynamic invariants' algorithms such as: the lyapunov exponent, poincare maps, recurrence maps in order to analyse data of the 20 participants.
 - 2.2 Create synthetic data for periodic, quasi periodic and chaotic time series and apply the dynamic invariants' algorithms.
 - 2.3 Using the data of the 20 participants, a comparison will be performed of techniques in time-domain, frequency-domain and nonlinear dynamics.
3. July 2017
 - 3.1 Polish the manuscript to the Human Movement Science Journal and send a draft version to Chris Baber and Mourad Oussalah for their acute comments.
 - 3.2 Polish the manuscript.
 - 3.3 Submit manuscript in the last week of July.
 - 3.4 Design experiment and collect data for the Human-Robot Interaction HRI2018 conference (rate of acceptance: 24%).
4. August 2017
 - 4.1 Data analysis and generation of results for the 8-page paper submission to the HRI2018.

5. September 2017
Polish and submit a full paper to HRI2018 (deadline October 6, 2017)
6. October 2017
 - 6.1 Install tensorflow on Ubuntu 16 x64
 - 6.2 Implement examples of convolution neural networks in tensorflow.
 - 6.3 Implement examples of time series with the use of convolutional neural networks.

(6)Please give a timetable for your work between now and the end of your maximum period of registration (i.e. deadline for submission of your thesis), or attach an existing plan.

The following Gantt charts show the plans for the third and four year of my PhD.



(7)If applicable, please add your comments about the progress you have made since this form was last completed and how it compares with your predictions then. Please include details of any problems encountered and action taken to mitigate these.

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(8)Have you considered and discussed with your supervisor relevant ethical issues connected to your research, in particular whether ethical approval is required?

Yes, we have discussed the ethical issues of my last experiment with people of different age and stage of health.

Yes, we have discussed the ethical issues of my last experiment with people of different age and stage of health. Particularly, the performance of activities to observe both the fatigue and boredom effect.

(9)Have you updated your DNA (GRS1A) in light of activity undertaken since the last progress review?

NO

(10)Please consider the impact of your research and how this impact is demonstrated to both specialist and non-specialist audiences (e.g. publications, conference presentations, public engagement and outreach activities).

From the start of my PhD, I believe that my research outcomes are still far from being scientifically impactful. Nonetheless, I would like to note that I have been presenting insightful results towards the automatic quantification of movement variability in human-humanoid interaction. With this in mind, my work has been accepted in three conference of which I presented them in two of them where I successfully communicated the lines of my research to renowned research, PI, postdocs and PhDs students. I have also participated two times in the internal research poster conference of University of Birmingham as well in two symposiums of Mexican students in the UK where I managed to speak to non-specialist audiences. I have made some public engagement at the Open Days of University of Birmingham. Last but not least, I am going to volunteer at the Science Museum in the Robots exhibition twice a month from May 2017 to September 2017.

(11)Do you know who your Mentor is and do you have their contact details if you need to consult with them?

Yes *

No

If NO, please contact your School PGR administrator in order to obtain your Mentor's name and contact details.

Part C: Only applicable to postgraduate researchers completing taught elements.

(12)Please list all the modules you have attended this academic session. Please include the mark achieved where this is known.

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(13)Total number of credits attempted this academic session:

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(14)Number of credits remaining in order to fulfil the taught element of the programme:

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(15)Modules and credits to be attempted next academic session:

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Signed: 

Date: Tuesday, 10 May 2017

Part D: To be completed by the LEAD supervisor before the Progress Review meeting.

(1)Please comment on the accuracy of the postgraduate researcher's assessment of his/her progress, in your opinion.

This is novel work and challenging. However, Miguel is progressing well. He is aware of what he needs to do to conduct the work and is keen to present his findings whenever possible.

(2) Formative Plagiarism Process

Has the PGR submitted a document (e.g.: 1st year report) through Turnitin?

Yes

No

Have the results of the Turnitin report been reviewed & discussed with the PGR?

Yes

No

Where there any issues or areas of concern raised?

Yes

No

If YES, please indicate what feedback was given to the PGR.

NB: Supervisors can contact the School Plagiarism Officer(s) for advice if there are areas of concern.

(3) Please comment on the postgraduate researcher's progress and achievements in the taught elements of the programmes.

N.B. Regulations state that "Where the postgraduate researcher is registered for research training or other taught modules as part of his or her programme of study, the postgraduate researcher must attain a satisfactory standard (achieve credit) in each module before being recommended for the award of the degree"

(4) It is the supervisor's responsibility to ensure that the PGR applies for ethical approval for their project. Ethical review should be sought by the end of year 1 for full time PGRs (pro-rata for part time PGRs).

Has ethical approval been granted for this project?

Yes

No

Initial data collection was conducted as part of a taught module, for which ethics approval is followed. For the coming studies, an application is in process.

(5) Please rate the postgraduate researcher's progress since the last Progress Review, OR, if this is their initial Progress Review, since they began their current research programme:

Excellent

Satisfactory

Requires improvement

Giving cause for concern

If "Giving cause for concern" state what steps the postgraduate researcher should now take to ensure a satisfactory outcome.

(6)Please state whether you feel the postgraduate researcher has completed a satisfactory level of research training and whether there are any gaps still to be filled. This should include an ability to demonstrate the impact of their research to a specialist and non-specialist audience.

Meguel has demonstrated ability to conduct independent research. He has developed software required and taught himself the fundamental algorithms being applied. While his written work can still be improved, his presentations are much clearer and more confident.

(7)Please give your estimate of when the thesis is likely to be submitted. When completing this section please take account of the end of the maximum period of registration and deadline for submission of the thesis. N.B. A submission after the end of the maximum period of registration would require an approved extension.

He is due to complete in 2018. I have no reason to doubt this.

Name (Black Capital) CHRIS BABER

Signature



Date: 5/8/17

Part E: To be completed by the ASSESSOR during the Progress Review process.

(1)Issues discussed at the Progress Review:

continued registration must be confirmed once the second progress review had been completed. If progress were to remain unsatisfactory, the postgraduate researcher may be required to withdraw (see Regulation 7.4.9).

- Transfer to a master's programme from a doctoral programme** (postgraduate researcher would have the right of appeal) (see Regulation 7.4.8 (e)).
- Transfer to a doctoral programme from a master's programme** (see Regulation 7.4.8(b)).
- Withdraw.** This recommendation would have to be taken in accordance with the relevant University regulation. The postgraduate researcher would have the right of appeal (see Regulation 7.4.9 and Code of Practice for Reasonable Diligence).

Date:

Signatures:

Lead supervisor:

Co-supervisor:

Part G: To be completed by the Progress Review Panel

(1) Comments, if any:

(2) I agree with/ wish to vary the recommendation made by the Supervisor in Section 5 as follows:

Date:	Signature(s):
Part H: To be signed by the postgraduate researcher	
I confirm that I have read the comments of my supervisor and the Head of School (or nominee).	
Date:	
Signature:	

It is the School's responsibility to:

- obtain the postgraduate researcher's signature in Section 7
- provide a copy of the completed form to the postgraduate researcher
- place a copy in the School/Department files or an electronic copy kept
- action the appropriate progress decision on BIRMS or where the recommendation is downgrade from doctoral to masters or required to withdraw to refer the recommendation to the Research Progress & Awards Sub Panel via the Research Student Administration Team.