HORIA ALEXANDRU MAIOR

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EDUCATION

University of Nottingham, UK   *2012-2017*

Multidisciplinary PhD in Digital Economy with the Mixed Reality Lab & School of Computer Science

Horizon Digital Economy Research Centre for Doctoral Training

Thesis: *"Real-Time Physiological Measure and Feedback of Workload"*

Disciplines: Human Computer Interaction (HCI), Brain Computer Interfaces (BCI), Computer Science.

Swansea University, UK   *June 2012*

B.Sc. in Computer Science

Dissertation: Modelling and Simulation of Railways Signalling *"Safe Trains - a CSP Approach"*

Award: First class honours degree

RESEARCH INTERESTS

Brain and Physiological data use for Human Computer Interaction

I am a multidisciplinary researcher based in the Mixed Reality Lab at the University of Nottingham, UK. As a result of the Horizon Centre for Doctoral Training PhD, my research is uniquely placed, sitting between Computer Science, Human-Computer Interaction (HCI) and Brain Computer Interfaces.

In 2017 I have secured the prestigious EPSRC Doctoral Prize Award which has offered me the support for my 2-years proposed research agenda based in the Mixed Reality Laboratory at the University of Nottingham. The Prize is an opportunity for the most outstanding EPSRC-funded PhD graduates to receive up to two years of additional support following their PhD and kick start their own independent research career. Subjects covered include Science, Engineering, Technology and Medicine within the EPSRC remit.

The winning project, *Brain-Tracker: A fit-bit for the Brain based on physiological sensors, tracking the mental workload of everyday tasks* explores the scientific grounding for an inevitable future technology: a Mental Fitbit (MFB) for the Brain.

- Recently **visited and presented** at the MIT Media Lab, Air Lab in Drexel University, Conquir Lab in Drexel University, School of Computer Science at the San Francisco University, the HCI Lab at Tufts University.

- I have **presented** at venues such as CHI 2018, fNIRS2018, CHI 2016, CHI 2015, CHIPLAY 2015, CHI 2014, NeuroErgonomics 2016, 2FNIRS 2015, IEEE RAS 2014, EHF 2014.

- Often involved in the review and senior review process for multiple conferences and journals - I have been awarded the **Excellent Reviewer Award** - I have reviewed for CHI 2019, CHI 2018, UIST 2018, 2017, 2016 International Journal of Human-Computer Studies, CHI-PLAY 2017, ACM-CHI 2016 (**Senior Reviewer** for LBW), UIST 2016, ACM-CHI 2015, ACM-CHIPLAY 2014, IEEE CASE 2014, and IIiX 2014.

- Always involved into **organising Academic Conferences** - I was the **Associate Chair** for Courses at the ACM-CHI 2018 where I have previously acted as a Student Volunteer in 2017 and 2016.

- **Memberships** - Association for Computing Machinery (ACM), Chartered Institute of Ergonomics and Human Factors, fNIRS Society.

PUBLICATIONS

Peer reviewed Conference Papers, Journal Papers

· Benerradi, J. **Maior, H.A.**, Marinescu, A., Clos, J., Sharples, S., Wilson, M.L. *Adventures in Real-Time Machine Learning of Mental Workload using fNIRS Data*. Submitted to CHI2019 (Under Review).

- Midha, S., Wilson, M.L., **Maior, H.A.**, Sharples, S. *Detecting Variation in Mental Workload within Everyday Work Tasks with fNRIS* Submitted to CHI2019 (Under Review).
- **Maior, H.A.**, Wilson, M.L., Sharples, S. *Workload Alerts - Using Physiological Measures of Mental Workload to Provide Feedback during Tasks*. ToCHI2018 Transactions on Computer-Human Interaction.
- Lukanov K., **Maior, H. A.**, and Wilson, M. L. *Using fNIRS in Usability Testing: Understanding the Effect of Web Form Layout on Mental Workload.* In: CHI'16 ACM SIGCHI Conference on Human Factors in Computer Systems, San Jose, California, May 2016.(Acceptance rate 20%)
- **Maior, H. A.** Pike, M., Wilson, M. L., and Sharples, S. *Examining the Reliability of Using fNIRS in Realistic HCI Settings for Spatial and Verbal Tasks.* In: CHI'15 ACM SIGCHI Conference on Human Factors in Computer Systems, Seoul, Korea, April 2015. (Acceptance rate 20%)
- **Maior, H. A.** and Rao, S. (2014.) *A Self-Governing, Decentralized, Extensible Internet of Things To Share Electrical Power Efficiently.* In IEEE CASE 2014 International Conference on Automation Science and Engineering, 18th August 2014. Taipei Taiwan.
- Pike, M., **Maior, H. A.**, Porcheron, M., Sharples, S. and Wilson, M. L. (2014). *Measuring the effect of Think Aloud Protocols on Workload using fNIRS.* In: CHI'14 ACM SIGCHI Conference on Human Factors in Computer Systems, April-May 2014, Toronto. (Acceptance rate 20%)
- **Maior, H. A.**, Pike, M., Wilson, M. L., and Sharples, S. *Continuous detection of workload overload: An fNIRS approach.* In Contemporary Ergonomics and Human Factors 2014: Proceedings of the international conference on Ergonomics & Human Factors 2014, Southampton, UK, April 2014.

Workshop papers, Abstract Papers, Magazine Articles
- **Maior, H.A.**, Ramchurn, R., Cai, M., Wilson, M.L., Martindale, S., Benford, S. *fNIRS and Neurocinematics.* The fNIRS 2018 conference, Tokyo, Japan, October 2018.
- Midha, S., Wilson, M.L., **Maior, H.A.**, Sharples, S. *Detecting Variation in Mental Workload Levels within Everyday Work Tasks using fNIRS.* The fNIRS 2018 conference, Tokyo, Japan, October 2018.
- **Maior, H.A.**, Wilson, M.L., Locke, C., Swann, D. *Brain activity and mental workload associated with artistic practice.* CHI 2018 Artistic Brain Computer Interfaces Workshop. SIGCHI Conference on Human Factors in Computer Systems, Montreal 2018.
- Wilson, M.L., Sharon, N., **Maior, H.A.**, Midha, S., Craven, M.P. *Mental workload as personal data: designing a cognitive activity tracker.* CHI 2018 Mental Health Simphosium. SIGCHI Conference on Human Factors in Computer Systems, Montreal 2018..
- Wilson, M.L., Alsuraykh N., **Maior, H.A.**, *Measuring mental workload in IIR user studies with fNIRS*. Conference on Information Retrieval 2017.
- **Maior, H.A.**, Sharples, S., and Wilson, M.L. *Subjective and Objective Methods to Continuously Monitor Workload*. Neuroergonomics 2016: The brain at work and in everyday life, Paris, France 2016.
- **Maior, H.A.**, and Stringer, P. (2015) *The Values of Games for Health and Well Being.* Interdisciplinary Reflections on Games and Human Values - Workshop , The ACM SIGCHI Annual Symposium on Computer-Human Interaction in Play (CHI PLAY), London, 2015.
- **Maior, H.A.**, Wilson, M.L. and Sharples, S. (2015) *fNIRS in Human Factors.* 2FNIRS Workshop, Toulouse, France April 2015.
- **Maior, H.A.**, Pike, M. *Measuring Work Overload.* The Ergonomist Magazine, May 2014.
- **Maior, H.A.**, Pike, M., Wilson, M.L. and Sharples, S. (2013) *Directly Evaluating the Cognitive Impact of Search User Interfaces: a Two-Pronged Approach with fNIRs.* EuroHCIR 2013 Workshop, Dublin, Ireland, August 2013

ACADEMIC RELATED EXPERIENCE

EPSRC Doctoral Prize Award   Nov 2017 - Nov 2019
The Mixed Reality Lab   *University of Nottingham*
- The EPSRC Doctoral Prize scheme supports fellowships of two years' duration for exceptional researchers who have recently finished an EPSRC-funded PhD.

· Winning Project: *Brain-Tracker: A fit-bit for the Brain based on physiological sensors, tracking the mental workload of everyday tasks.*
· As part of this fellowship, am an associate researcher in the Mixed Reality Laboratory conducting multidisciplinary research that contributes the scientific grounding for an inevitable future technology: a Mental Fitbit for the brain.
· My research is placed between Human-Computer Interaction, Brain Computer Interfaces, and Human Factors and I am focused on using brain and physiological data collected using non-invasive wearable devices, in order to understand and track the amount of stress and mental workload we go through during day-to-day activities.
· Part of this fellowship, I spent some time as a visiting scholar for 1 month, visiting top laboratories in the field around the US, including: the MIT Media Lab, Tufts University, the Air Lab and Conquir Lab in Drexel University and the Department of Computer Science at the University of San Francisco. I used this time to present research, expand my network, and build new collaborations with top researchers in the field.

Teaching Fellow in Computer Science   Feb 2017 - Sep 2017
Computer Science   *University of Nottingham Ningbo, CHINA*

· Module coordinator for two modules: AE1FSE Software Engineering and AE3COM Computability.
· I supervised undergraduate and postgraduate student projects (both UK and China campus);
· Responsible of administrative duties; I was the Social Chair of the department, responsible for organizing Student-Staff activities outside the teaching hours. I organized a few movie nights and planned for a monthly 'Show and Tell' - where the invited academic presents in 30 minutes their passion for CS to the students.

Research Assistent   Sep 2016 - Feb 2017
Computer Science   *Horizon Digital Economy Research Hub, University of Nottingham, UK*

· I was part of **the Wayward Project** - This project was focused on understanding doctors and healthcare professionals' work in hospitals contexts - and in particular their use of different technology (COW's, mobile phone usage etc.), with the ultimate goal of reducing their workload by facilitating technology that better fits their needs.
· part of this role, I was observing doctors during out-of-hours care in the two major hospitals in Nottingham, and monitored and analysed doctors interaction with different technologies.

Students Supervision   2014-2018
Student Project Supervision   *University of Nottingham*

· I have supervised Practive Led Projects of PhD students, some of which transformed into research publications.
· I have supervised Masters students, in particular one of them was awarded the HCI Prize for the best dissertation in the School. His thesis was then transformed into a strong research publication "Using fNIRS in Usability Testing: Understanding the Effect of Web Form Layout on Mental Workload".
· But I have also supervised undergraduate dissertations and group projects.

Guest Lecturer   Accross Multiple Institutions

· I am often invited to give a guest lectures at Nottingham University in various modules, including Software Engineering, Introduction to Programming, Mixed Reality, and Brain Cpmputer Interfaces.
· I have also delivered a guest lecture on "Brain Computer Interfaces for Human Computer Interaction" at Drexel University, University of San Francisco and University of Nottingham Ningbo Campus.

Teaching   Sep 2013 - Feb 2017
Teaching Assistant   *University of Nottingham*

· Introduction to Software Engineering (Java, Object Oriented Programming)
· Programming, University of Nottingham (C/C++)
· Computer Systems Architecture (ARM Assembly Language)

Outreach experience

International Officer for the School of Computer Science

March 2016

University of Nottingham

· Attended campaigns to meet and attract potential undergraduate and postgraduate students to join our Computer Science programmes at Nottingham University.
· Attending universities fairs abroad (`http://en.riuf.ro/`), presenting to schools and having outreach with prospective students.

Student Engagement

Programming Coach, Programming Contest Organizer

2012 - 2017

· Every year I get involved in organizing a few programming contests for the students at the University. Typically we run two, a local contest focused on the students from the University of Nottingham, and helping out with the second, a month later, which is the national UK based contest.
· ACM-ICPC Site Director at UKIEPC2018, UKIEPC2017, UKIEPC2016 and UKIEPC2015 - Nottingham, UK - http://ukiepc.info/
· We then take the best teams from our institution, we coach them and take them to the European regional ACM-ICPC: NWERC 2017 (Bath, UK), NWERC 2016 (Bath, UK), NWERC 2015 (Linkping, Sweden), NWERC 2013 (Delft, Netherlands) - http://2013.nwerc.eu/
· I used to be a contestant during my undergraduate degree, at the 2012 ACM ICPC - NWERC in Bremen, Germany - http://2012.nwerc.eu/

AWARDS, HONOURS AND GRANTS

EPSRC Doctoral Prize Award

The Mixed Reality Lab

Nov 2017 - Nov 2019

University of Nottingham

· £70 000 doctoral prize by the UK Engineering and Physical Sciences Research Council.
· This was offered towards self-funding my current research possition.
· Winning proposal was *Brain-Tracker: A fit-bit for the Brain based on physiological sensors, tracking the mental workload of everyday tasks.*

"Helf Elf"

Postgraduate Ingenuity Prize for BEST New Business Idea

September 2015

University of Nottingham

· £5000 Prize from CityCare Nottingham.
· £1000 Grant from Santander.
· Co-Founded Healthy Research CIC.

Research Travel Grants

University of Nottingham

· £1000 Travel Grant offered by the School of Computer Science in 2016.
· £1000 Travel Grant offered by the School of Computer Science in 2015.
· £800 Postgraduate Travel Grant Competition offered by the Postgraduate School in 2014

2013 - 2015

Summer Schools

· Digital Economy Web Science and Big Data Analytics, July 2015.
· Digital Economy Summer School: Digital Revolutions, Oxford, July 2013.

PERSONAL ATTRIBUTES

- Excellent Communication Skills;
- Ability to work with others as a team;
- Ability to work collaboratively in a multidisciplinary environment;
- Ability to work effectively in a multi-cultural environment;
- Ability to work to deadlines and to prioritise tasks;
- Ability to play a key, team member role in the department I work for;

TECHNICAL STRENGTHS

Computer Languages	Java, PHP, C#, C/C++ etc
Programming environments	Visual Studio, Eclipse, Webstorm, PHPStorm
Professional Software	Latex Document Writing, Overleaf, Statistics SPSS, Adobe Illustrator
Equipment	Brain and physiological sensing using EEG, fNIRS, Thermal Cameras, Heart and respir

INDUSTRY WORK, INTERNSHIPS, AND VOLUNTEERING

RatedDoctor.com   2015 - present
Chief Technology Officer   *Nottingham, UK*

· `www.rateddoctor.com`
· Rateddoctor.com is an location based Online platform that brings patients and specialists doctors together.
· Sitting between the CEO and the development team in order to control the technological development at Rated-Doctor.
· Overseeing innovation in rated doctor, heavily involved in R&D.
· Transforming knowledge and research into impact on people's lives.

ACMCHI Conference on Computer-Human Interaction   May 2017 - May 2018
Courses Co-Chair   *Montreal, CANADA*

· Organizing Courses at the CHI conference.
· Duties included coordinating the format, the program, the submission and generally all issues related to Courses at CHI.
· And of course meeting many people and having lots of fun!

ACMCHI Conference on Computer-Human Interaction   May 2016
Student Volunteer at chi4good   *San Jose, CALIFORNIA*

· Getting involved in preparing and helping out with successfully running the top conference in Computer-Human Interaction.
· Duties included coordinating the plenary and other conference talks, preparing materials for Workshops, conference registration, and of course meeting many people and having lots of fun!

AMPsuite LTD   Sep 2014 - June 2015
Part-time Web developer   *Nottingham*

· `www.ampsuite.com`
· Building web-based software tools for Records Label companies across the globe.
· Client-focused, understand client needs.
· Front end, back end - PHP, JavaScript, MySQL, html5.

IIIT-Bangalore and Horizon Digital Economy Research Hub   Jan 2014 - May 2014
Research Intern   *Electronic City, Bangalore, INDIA*

· Digital Economy Research based in Bangalore, India.
· Project: The INTERNET of THINGS and the Smart Grid.
· Publication: **Maior, H. A**. and Rao, S. *"A Self-Governing, Decentralized, Extensible Internet of Things To Share Electrical Power Efficiently. In IEEE CASE 2014"*

Invensys Rail and Swansea University   June 2011 - Sep 2011
Research Intern - undergraduate   *Swansea, UK*

· Modelling Railways Safety using formal language CSP (communicating sequential processes)
· Time simulating capacity of Railways using formal language Timed CSP.