

HORIA ALEXANDRU MAIOR

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EDUCATION

University of Nottingham, UK

2012-2017

Multidisciplinary PhD Researcher at 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*”

Thesis submitted. PhD defence (VIVA) will take place in June 2017.

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

My research lies in the intersection between Human-Computer Interaction (HCI), Brain-Computer Interface (BCI), and Human Factors. I am looking into the integration of non-invasive brain and physiological sensors, such as functional Near Infrared Spectroscopy (fNIRS), in the field of HCI. More specifically, I am interested in how we can use such devices to sense physiological responses to human cognition and mental workload, and use this continuous, quantitative measure, as an additional channel of information about the user during interaction.

- 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, CHI 2016, CHI 2015, CHIPLAY 2015, CHI 2014, NeuroErgonomics 2016, 2FNIRS 2015, IEEE RAS 2014, EHF 2014.
- Often involved in the review process for multiple conferences and journals - I have been awarded the **Excellent Reviewer Award** at ACM-CHI 2017 - I have reviewed for 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 IiX 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 2016 and 2017.
- **Memberships** - Association for Computing Machinery (ACM), Chartered Institute of Ergonomics and Human Factors.

PUBLICATIONS

Peer reviewed Conference Papers, Journal Papers

- **Maier, 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., **Maier, 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%)
- **Maier, 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.**, 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 Simposium. 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

The Mixed Reality Lab

Nov 2017 - Nov 2019

University of Nottingham

- Project title: *Brain-Tracker: A fit-bit for the Brain based on physiological sensors, tracking the mental workload of everyday tasks*.
- I have been awarded the Doctoral Prize, a prestigious opportunity offered by the UK Engineering and Physical Sciences Research Council.
- This facilitates 2 years of self-directed research funding with the Mixed Reality Lab in the University of Nottingham.
- Conducting multidisciplinary research that fall between Human-Computer Interaction, Brain Computer Interfaces, and Human Factors.
- 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 every day.

Lecturer in Computer Science

Computer Science

Feb 2017 - Sep 2017

University of Nottingham Ningbo, CHINA

- The module coordinator for two modules: AE1FSE Software Engineering and AE3COM Computability
- Supervise Undergraduate and Postgraduate Students (UK campus);

- Perform 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.

Visiting Researcher

Mixed Reality Lab

Feb 2017 - Sep 2017

University of Nottingham UK

- Supervising two Practice Led Projects (two PhD students);
- Working remotely on the Brain Computer Interface projects in the Mixed Reality Lab.
- Conducting research and writing academic papers with the build up network of researchers in the Computer Science Department in Nottingham.

Research Fellow

Computer Science

Sep 2016 - Feb 2017

Horizon Digital Economy Research Hub, University of Nottingham, UK

- Wayward Project - This project investigated the use of Computer Science techniques that capture doctors and healthcare professionals’ workload in hospitals, in order to learn and improve the out of hours secondary care, tasking and tasking allocation for doctors and medical professionals, and generally the efficiency of out of hours healthcare in the UK.

Students Supervision

Student Project Supervision

2014-2016

University of Nottingham

- Continuously involved in supervising and mentoring students at all levels. A few of the projects included:
- “Evaluating Mental Workload through Psycho-physiological Measurements using a Sensory Device”. Final year Undergraduate project
- “Using fNIRS in Usability Testing: Understanding the Effect of Web Form Layout on Mental Workload”. Masters Thesis - HCI Prize for the BEST MASTERS DISSERTATION

Guest Lecturing

Lectures

Jan 2015 - Feb 2017

University of Nottingham

- Introduction to Computer Programming
- G54MXR Mixed Reality, Lecture: Brain Computer Interfaces for Human Computer Interaction
- G51FSE Introduction to Software Engineering

Teaching

Teaching Assistant

Sep 2013 - Feb 2017

University of Nottingham

- G51FSE Introduction to Software Engineering (Java, Object Oriented Programming) (2015-2016)
- G54PRG Programming, University of Nottingham (C/C++)
- G51CSA Computer Systems Architecture (ARM Assembly Language)
- G51FSE Introduction to Software Engineering (2014-2015)

Outreach experience

International Officer for the School of Computer Science

March 2016

University of Nottingham

- Create campaigns to meet and attract excellent potential undergraduate and postgraduate students to join our Computer Science programmes at Nottingham University.
- Attending universities fairs abroad (<http://en.riuf.ro/>), to present to schools and potential students.

Student Engagement

Programming Coach, Programming Contest Organizer

2012 - 2017

- Every year I get involved in organizing a few programming contests, both, locally (University of Nottingham), and national (UK).
- ACM-ICPC Site Director at UKIEPC2016 and UKIEPC2015 - Nottingham, UK - <http://ukiepc.info/>

- ACM-ICPC Coach at NWERC 2015 (Linkping, Sweden), NWERC 2013 (Delft, Netherlands) - <http://2013.nwerc.eu/>
- Contestant at the 2012 ACM ICPC - NWERC in Bremen, Germany - <http://2012.nwerc.eu/>

AWARDS, HONOURS AND GRANTS

EPSRC Doctoral Prize Award

Nov 2017 - Nov 2019

The Mixed Reality Lab

University of Nottingham

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

“Helf Elf”

September 2015

Postgraduate Ingenuity Prize for BEST New Business Idea

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

Research Travel Grants

- £1000 Travel Grant from the School of Computer Science, University of Nottingham. (2016)
- £1000 Travel Grant from the School of Computer Science, University of Nottingham. (2015)
- £800 University of Nottingham - Postgraduate Travel Grant Competition. (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, Statistics SPSS, Adobe Illustrator

Equipment

EEG and fNIRS Brain Scanner, Empatica, Smart Watch, others.

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 development of Technology 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

Courses Co-Chair

May 2017 - May 2018

Montreal, CANADA

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

ACMCHI Conference on Computer-Human Interaction

Student Volunteer at chi4good

May 2016

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

Web developer

Sep 2014 - June 2015

Nottingham

- 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.

IIT-Bangalore and Horizon Digital Economy Research Hub

Research Intern

Jan 2014 - May 2014

Electronic City, Bangalore, INDIA

- Digital Economy Research based in Bangalore, India.
- Project: The INTERNET of THINGS and the Smart Grid.
- Publication: **Maier, 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

Research Intern

June 2011 - Sep 2011

Swansea, UK

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