

Dominic Potts

Curriculum Vitae August 2020

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Profile

PhD student in Human Computer Interaction and interactive systems researcher at Lancaster University. Research interests are around interaction techniques in mixed reality and tangible augmented reality for both HMD and mobile devices. Currently investigating how to leverage the affordances of physical objects for interaction in AR, with a goal to develop digitally augmented artefacts. Previously completed research around eye-tracking, pervasive displays, and neurofeedback devices. Seeking internship opportunities around tangible and collaborative AR.

Highlights

- 3+ years of research experience in Human Computer Interaction and Augmented Reality technologies.
- Publication record in premiere HCI conferences and journals including: CHI, C&C, and PMC.
- Projects include: Exploring cube affordances in Augmented Reality, gaze interaction and radial menus in Virtual Reality, mobile and mixed reality neurofeedback devices, gaze interaction with Pervasive displays.
- Attended the AR summer school hosted by Auckland Bioengineering institute. Team was awarded as one of the best project and demonstrations. Went on to publish project as an extended abstract at C&C19.
- Reviewing experience in a variety of HCI conferences including: TEI, ISS, and NordiCHI.
- Broad international experience in both academia and industry in a number of different countries including: UK, USA, New Zealand, and Finland.

Publications

Sauvé, K., Potts, D., Alexander, J. and Houben, S., 2020, April. **A Change of Perspective: How User Orientation Influences the Perception of Physicalizations**. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (pp. 1-12). DOI: <https://doi.org/10.1145/3313831.3376312>

Potts, D., Loveys, K., Ha, H., Huang, S., Billingham, M. and Broadbent, E., 2019. **Zeng: AR neurofeedback for meditative mixed reality**. In *Proceedings of the 2019 on Creativity and Cognition* (pp. 583-590). DOI: <https://doi.org/10.1145/3325480.3326584>

Freire, M.L.M., Potts, D., Dayama, N.R., Oulasvirta, A. and Di Francesco, M., 2019. **Foraging-based optimization of pervasive displays**. *Pervasive and Mobile Computing*, 55, pp.45-58. DOI: <https://doi.org/10.1016/j.pmcj.2019.02.008>

Research Experience

2018 - Present Lancaster University School of Computing & Communication – PhD Candidate

Supervisor: Dr Steven Houben

- My main topic of interest and the focus of my PhD is Tangible Augmented Reality. Currently exploring how traditional TUI concepts can be applied in AR such as affordance. Working on two projects for submission to CHI'21: **Exploring cube affordance in AR** and **Deformable tangibles gesture elicitation for VE interaction**.
- Also working on a number of side projects including: **Radial, gaze-based interfaces in VR** and **Collaborative Mobile AR Session playback using direct video manipulation**.

Summer 2018 Lancaster University School of Computing & Communication – Undergrad Research Associate

Supervisor: Professor Corina Sas.

- Previously worked as a research associate exploring forms of neurofeedback to aid mindfulness meditation. The project was funded by AffectTech (www.affecttech.org) and involved the development of a Neurofeedback

application that uses the Muse EEG Headband to generate dynamic colour palettes based on EEG data for use in the meditative practice of mandala colouring.

Summer 2017 Aalto University Department of Computer Science, Helsinki, Finland - Research Intern

Supervisors: Professor Mario Di Francesco and Professor Antti Oulisvarta.

- Contributed to the development and evaluation of a pervasive display foraging model, based on information foraging theory, used for optimising pervasive display's layout and content. A proof of concept system was evaluated through user study using an eye-tracking system.
- Developed key skills in academic paper writing, conducting scientific studies and empirical evaluation of developed systems. Expanded on my communication skills, producing publishable work in a small timeframe.
- Worked independently to produce the eye-tracking system to evaluate the display optimisation model which I also helped develop by working as part of the research team.

Education

2018 - Present **Lancaster University, UK** – PhD Candidate, Human Computer Interaction, 2nd year
Mixed Reality & Tangible Interaction. Interactive Systems Group – Dr Steven Houben
Fully funded award – School of Computing and Communication

2015 - 2018 **Lancaster University, UK** - BSc (Hons) Computer Science with Industrial Experience
First Class (75.5%)
Bachelor Thesis: *Investigating the relationship between eye movement and subjective interest for application in Pervasive Displays* - Supervised by Prof. Hans Gellersen

2013 - 2015 **Aquinas College, UK**
A-levels: AAC (English, History, Computing)

International Experience

- **AR Summer School attendee, Auckland, New Zealand:**
14 day summer school hosted by Auckland University's Bioengineering Institute and Empathic Computing Lab and sponsored by Augmented Reality tech company MagicLeap. Rapid prototyping and development of AR applications and technologies.
- **Research Intern, Espoo, Finland:**
3-month Research Internship at Aalto University's Computer Science department through the International Students programme with the Aalto Science Institute.
- **Global Exploration scheme run by Lancaster's Innovation Hub, New York & Boston, USA:**
Part of a group of students to travel to Boston and New York representing Lancaster University to take part in an Innovation Challenge run by the Lancaster Innovation Hub which involved ideating and prototyping a unique product, service or concept. Researching current innovation in institutes such as MIT, WPI and a variety of successful start-ups on a wide range of topics from robotics to cloud computing.

Scholarships & Grants

Awarded February 2019 **Auckland Bioengineering Institute Travel Grant, Auckland University, NZ**
\$500 – 2 weeks

Awarded September 2018 **Faculty of Science and Technology Internship Grant, Lancaster University, UK**
£2500 – 10 weeks

Teaching and Professional Activity

Co-Supervision**Lancaster University**

- 2020** Matthew Templeton – Collaborative AR session Browsing – *EPRSC Internship*
2019/20 Amure Adebola – Hand Gestures in AR – *BSc Thesis*
2019 Matthew Templeton – Exploring Cube Affordance for Tangible AR – *Summer Internship*

Teaching Development

- Present** Associate Teaching Programme (ATP)
2018 Introduction to teaching at Lancaster University (ITL)

Teaching Assistant**Lancaster University**

- 2018-2020** SCC110: Software Development (18/19)
 SCC202: Human-Computer Interaction (18/19, 19/20)

Reviewing

- 2019 - 20** TEI, NordiCHI, ISS

Outreach

- 2018-20** **Interactive System Lab Tours** **Lancaster University**
 Conducted lab tours for prospective students and university visitors.
- 2019** **STEM Taster Day** **Lancaster University**
 Helped coordinate a taster event in HCI for High school students from disadvantaged areas of the UK. Conducted a workshop on digital fabrication of affective displays.

Presentations

- **Presenter and Demonstrator at Augmented Reality Summer School, Auckland Bioengineering Institute:**
 Developed, presented, demonstrated, and evaluated a mixed reality neurofeedback system based on 'Zen gardens' as an explorative prototype for mixed reality meditative practices. The demonstration day was open to the public with over 200 visitors trying our developed application. Our team was awarded for one of the best projects and demonstrations.
- **Presenter at 2-day poster exhibition, KAIST HCI group visit to Aalto:**
 Helped present and organise a 2-day poster exhibition at Aalto University in collaboration with KAIST. I worked with the research team and my supervisor to produce a poster for the exhibition of the current research, networked with academics from Aalto and KAIST and attended their exhibition lectures.
- **Presented work conducted during the Global Exploration scheme at Lancaster's Innovation Hub:**
 Following the Global Exploration scheme in Boston and New York, I lead a presentation along with my team showcasing our findings and new concepts for Smart City design. The presentation was attended by other Global Exploration students, members from Lancaster's Management School and Faculty of Science and Technology and leaders of the Innovation Hub.