

SHAUN MACDONALD

RESEARCH INTERESTS

Human Computer Interaction, Haptics, XR, Social and Affective Robotics, Health and Wellbeing, Usable Security

EDUCATION

PhD in Human Computer Interaction - *University of Glasgow School of Computing Science*

2018 - 2023

Thesis: 'Investigating Emotionally Resonant Haptics as Support for People with Social Anxiety'.

Supervised by Profs. Stephen Brewster and Frank Pollick

PUBLICATION HIGHLIGHTS

From 15 refereed publications in top tech venues including ACM CHI, ACM TOCHI, IEEE TVGC and USENIX Security.

TVCG Journal 2025 - *Beyond Mute and Block: Adoption and Effectiveness of Safety Tools in Social VR, from Ubiquitous Harassment to Social Sculpting* - M Weerasinghe, **S Macdonald**, C Fiani, J O'Hagan, M Chollet, M McGill, M Khamis

ISMAR 2024 Conf. - *Evaluating Transferable Emotion Expressions for Zoomorphic Social Robots using VR Prototyping* - **SA Macdonald**, R Bretin, S ElSayed

RO-MAN 2024 Conf. - *Soothing Sensations: Enhancing Interactions with a Socially Assistive Robot through Vibrotactile Heartbeats* - J, Borgstedt, **SA Macdonald**, K Marky, F Pollick, S Brewster

CHI 2024 Conf. - *"Pikachu would electrocute people who are misbehaving": Expert, Guardian and Child Perspectives on Automated Moderators for Safeguarding Children in Social Virtual Reality* - C Fiani, R Bretin, **S Macdonald**, M McGill, M Khamis

TOCHI Journal 2024 - *Prototyping and Evaluation of Emotionally Resonant Vibrotactile Comfort Objects as a Calming Social Anxiety Intervention* - **S Macdonald**, E Freeman, F Pollick, S Brewster

USENIX Security 2023 Conf. - *In the Quest to Protect Users from Side-Channel Attacks - A User-Centred Design Space to Mitigate Thermal Attacks on Public Payment Terminals* - K Marky, **S Macdonald**, Y Abdrabou, M Khamis

🏆 **Augmented Humans 2023 Demo** - *Conducting and Mitigating Portable Thermal Imaging Attacks on User Authentication using AI-driven Methods* - **SA Macdonald**, NMT Alotaibi, Md S Islam, M Khamis

🏆 **CHI 2023 Conf.** - *Keep it Real: Investigating Driver-Cyclist Interaction in Real-World Traffic* - A Al Taie, Y Abdrabou, **SA Macdonald**, F Pollick, S Brewster

ICMI 2020 Conf. - *Eliciting Emotion with Vibrotactile Stimuli Evocative of Real-World Sensations* - **SA Macdonald**, S Brewster, F Pollick

TEACHING and SUPERVISION

Guest Lecturer - University of Glasgow Hons Courses

2023 - 2024

Virtual Reality in Mobile HCI, Wearable Computing in Mobile HCI, Research Methods and Techniques

Supervised 5 MSc/MSci Dissertation Research Projects - University of Glasgow

2022 - 2023

Topics included VR prototyping of accessible interfaces, affective robotic touch and enhancing museums with haptics

Teaching Assistant and Tutor - University of Glasgow Level 1 CS Courses

2019 - 2020

RESEARCH POSITIONS & PROJECTS

- IAA AZRAM Augmented Zoomorphic Robots with Affective Interaction Using Mixed Reality** 2025
Principle Investigator and Developer collaborating with researchers in Abertay University and Ontario Tech
- Leading a cross-institution project explores how immersive XR technology can facilitate the rapid prototyping of emotional interaction for social robots while circumventing logistical robot development challenges.
- ARTIFY- Cross-Disciplinary Stakeholder Prototyping of Advanced Manufacturing with AR** 2024
Research Associate, University of Glasgow School of Engineering, PI: Dr Rami Ghannam
- Designed a novel and flexible semantically driven XR prototyping system for manufacturing systems.
- MetaSafeChild - Safeguarding Children from Harassment in Virtual Reality** 2024
Research Associate, University of Glasgow School of Computing Science, PI: Dr Mohamed Khamis
- Conducted rich qualitative analysis on user experiences with VR harassment and mitigations, with findings to be published in IEEE Transactions on Visualization and Computer Graphics.
- ScreenSafe - FCDO Usable Security Collaboration Project** 2024
Research Associate, University of Glasgow School of Computing Science, PI: Dr Mohamed Khamis
- Responsible for study design, execution and analysis of a novel usable security mobile application in a collaboration project alongside the Foreign, Commonwealth and Development Office.
- Preventing Thermal Attacks on Passwords with Machine Learning** 2022 - 2023
Research Associate, University of Glasgow School of Computing Science, PI: Dr Mohamed Khamis
- Conducted mixed method data analysis and dissemination of project research submitted to top venues.
 - Presented and demonstrated research at conferences, to policy-shapers, and on German tv program *Galileo*.
- E-Detection Tool for Emerging Mental Disorders Study** 2021 - 2022
Research Assistant, University of Glasgow School of Computing Science, PI: Prof. Peter Uhlhass
- Designed and prototyped the front-facing study website, brand identity, professional vector-animated information video and advertising materials. Implemented research instruments in survey platform REDCap and interfaced with participants, developers, IT staff and project members to resolve technical conflicts and propose solutions.
- Emotionally Resonant Vibrations as a Calming Intervention for People with Social Anxiety** 2018 - 2023
PhD Research Thesis, University of Glasgow, Supervisors: Profs. Stephen Brewster and Frank Pollick
- Investigated novel emotional haptic stimuli as a calming intervention for social anxiety during social exposure.
 - Topics: Social anxiety, HCI interventions and traditional treatment, emotional regulation, affective haptics.
 - Activities: Mixed methods analysis, user studies, participatory design, semi-structured interviews, structured online surveys, simulated social exposure laboratory study, presentation of research at top HCI conferences.
- Investigating Perception of Electrotactile Stimuli** 2018
Research Intern, University of Glasgow, PI: Dr Graham Wilson
- Researched electrotactile cues, conducting literature review, implementation, study design and evaluation.
- Tamu To-Do: Gamification of a To-Do List with Emotional Reinforcement** 2017 - 2018
BSc Research Dissertation, University of Glasgow, PI: Prof. Stephen Brewster
- Designed and implemented iOS app *Tamu To-Do* to investigate how a virtual pet providing emotional reinforcement impacted user behaviour in a to-do list app using formative user evaluation and field study. Presented at CHI 2019.
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AWARDS

Honourable Mention - CHI 2023 (*Keep it Real*)

Best Demo Award - AH 2023 (*Conducting and Mitigating Portable Thermal Imaging Attacks*)

People Make Research 2023 and 2022 Nominee - University of Glasgow

FUNDING & PROPOSALS

Awarded Funded

Impact Acceleration Award (£50,000, 11 months for the AZRAM XR robot project with industry partner Synthiam).

SISCA Research Themes Award (~£200 award, funded recruitment for user study).

Saltire Scholarship from Entrepreneurial Scotland (~\$8000 award, 10 week placement at Vepica, Houston, USA).

Contributor to Submissions

ESPRC Standard Grant (~£320,000, Research Co-I on proposed usable security project alongside Dr. Mohamed Khamis).

ESPRC Standard Grant (~£320,000, Contributor on health data visualisation project alongside Dr. Xianghua Ding).

2x REPHRAIN Proposals (~£79,000, Contributor and named researcher).

PROFESSIONAL RESEARCH ACTIVITIES

Organising Chair Roles: Poster Chair - MUM 2025, Local Chair ETRA 2024, Local Chair ACII 2024

Associate Chair - INTERACT 2023, DIS 2024, DIS 2025

Reviewer - 50+ papers reviewed, 6 special recognitions. Venues include: CHI 2025-2019, IJHCS, DIS 24, ISMAR 24, IMWUT 23, CHI PLAY 23, INTERACT 23.

Invited Event/Conference Speaker - Pint of Science Festival 2024, ICRA 2024 Applications and Future Directions of Affective Technologies Workshop, GWiCS Seminar 2024, GIST Seminar 2024, Guest Lecture at Abertay University 2023.

- Currently leading and directing the IAA AZRAM project, conducted the writing and submission of the proposal and initiated collaboration with external industry and institution partners *Synthiam* and *Abertay University*.
 - Organising committee member of *Glasgow Women in Computing Science* seminars series, a group supporting researchers and discussing issues which face them, especially those which disproportionately affect diverse groups.
 - Research featured in online and print media (e.g., Daily Mail, Daily Record) and I have presented my work at public venues, conferences and via video interviews for German TV programme *Galileo* and news site *Newseria*.
 - Leader of research group/project meetings (SIRIUS Lab, Multimodal Interaction Group, ENTER Study, ICE Group).
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SKILLS & OTHER VOLUNTEERING

Technical Skills - NVivo, Unity, Quest, Python, R, Arduino, Swift, Qualtrics, SCR Analysis, Tobii Eye Tracking.

- Created research artefacts using XR, vibrotactile and thermotactile actuators to facilitate studies.
- Coded software artefacts such as VR environments and prototyping frameworks, AR affective experiences, mobile apps and experimental software in Unity, Python and Swift, to facilitate and analyse user studies.

Digital Content Creation - Premiere, Blender, Photoshop, Blender, LaTeX, Canva, Audacity, Wordpress, Meta Business.

- Have produced numerous high quality promotional and informational videos and materials featuring professional editing and vector animation for research projects, events and charities (ENTER, GWiCS, ETRA, etc).
- Used Blender to produce 3D models and 2D animations to bring virtual artefacts to life for immersive XR studies.

Charity and Caring Work

The Uphill Trust Trustee and video producer for charity since 2013, funding a sustainable school in rural Uganda.

Swing4Saltire Produced posters, leaflets, invitations and video for a charity golf event, raising a record \$20,000.

Carer Disability carer, holding a high level of responsibility for health of a dependant while working full time. Requires empathy, determination, time management and crisis management.