Rukshani Somarathna

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Biography

I am currently a Postdoctoral Fellow at the Imaging and Computer Vision (ICV) Research Group, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Data61, Australia. My research focuses on Artificial Intelligence (AI), AI for Science, Human Centred Computing, Affective Computing, Immersive Technologies, and Signal Processing.

Education

- **Doctor of Philosophy (PhD)**: School of Computer Science and Engineering, University of New South Wales (UNSW), Sydney, Australia (2020.02 – 2023.10)

- **Honours Degree of Bachelor of Science in Information Technology**: University of Moratuwa, Sri Lanka. GPA: 3.89/4.2 (First Class) (2013.05 – 2017.06)

Selected Publications

- **R. Somarathna**, and G. Mohammadi, "Exploring Emotions in Multi-componential Space using Interactive VR Games" *(Under review at a Q1 journal)*

- E. Morgenroth*, **R. Somarathna***, D. Van De Ville, G. Mohammadi, and P. Vuilleumier, "Emotion is a multi-componential experience guided by appraisal: evidence from multi-level annotation during naturalistic stimulation" *(Under review at a Q1 journal, *Equal contribution first author)*

- M. Xi, M. Perera, B. Matthews, R. Wang, V. Weiley, **R. Somarathna**, H. Maqbool, J Chen, U. Engelke, S Anderson, M. Adcock, and B. Thomas, "Towards Immersive AI", IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct). USA. 2024, [A*]

- **R. Somarathna**, X. Li, M. Bamdad and G. Mohammadi, "EmoFoot: Can Your Foot Tell How You Feel when Playing Virtual Reality Games?". 26th International Conference on Mobile Human-Computer Interaction (MOBILEHCI Adjunct '24), Melbourne, VIC, Australia, 2024, [B]

- **R. Somarathna**. Exploring Emotions and Engagement: A Multi-componential Analysis Using Films and Virtual Reality. Diss. UNSW Sydney, 2024.

- **R. Somarathna**, and G. Mohammadi, "Towards Understanding Player Experience in Virtual Reality Games through Physiological Computing," 2024 IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events (PerCom Workshops), 2024, [A*]

- **R. Somarathna**, P. Vuilleumier, and G. Mohammadi, "EmoStim: A Database of Emotional Film Clips with Discrete and Componential Assessment," IEEE Transactions on Affective Computing, 2023. [Q1]

- **R. Somarathna**, Elvitigala, D. S., Y. Yan, A. Quigley and, G. Mohammadi "Exploring User Engagement in Immersive Virtual Reality Games through Multimodal Body Movements" 29th ACM Symposium on Virtual Reality Software and Technology, New Zealand, 2023. [A]

- **R. Somarathna**, A. Quigley, and G. Mohammadi, "Multi-componential Emotion Recognition in VR Using Physiological Signals," In Australasian Joint Conference on Artificial Intelligence, Springer, 2022. [National]

- Elvitigala, D. S., **R. Somarathna**, Y. Yan, G. Mohammadi and A. Quigley, "Towards using Involuntary Body Gestures for Measuring the User Engagement in VR Gaming,". The Adjunct Publication of the 35th Annual ACM Symposium on User Interface Software and Technology, 2022. [A*]

- **R. Somarathna**, T. Bednarz, and G. Mohammadi, "Virtual Reality for Emotion Elicitation - A Review," IEEE Transactions on Affective Computing, pp. 1-21, 2022. [Q1]

- **R. Somarathna**, T. Bednarz and G. Mohammadi, "An Exploratory Analysis of Interactive VR-Based Framework for Multi-Componential Analysis of Emotion," 2022 IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events (PerCom Workshops), 2022, pp. 353-358. [A*]

- **R. Somarathna**, T. Bednarz, and G. Mohammadi. "Multi-Componential Analysis of Emotions Using Virtual Reality," 27th ACM Symposium on Virtual Reality Software and Technology, Japan, 2021. [A]

- **R. Somarathna.** "A Multi-Component Approach to Emotion Recognition". Accepted for the Doctoral Consortium of the 32nd Australian Conference on Human-Computer Interaction (OzCHI 2020). [National]

- **R. Somarathna**, P. Vuilleumier, T. Bednarz, and G. Mohammadi, "A Machine Learning Model for Analyzing the Multivariate Patterns of Emotions in Multi-Componential Framework with Personalization," Available at SSRN 4075454, 2022

- **R. N. Somarathna.** "Path Planning and Obstacle Avoidance Scheme for Autonomous Robots using Raspberry Pi," arXiv preprint arXiv:2012.10863, 2020.

Professional Experience

- **CERC Postdoctoral Fellow**: CSIRO Data61 (2024.04 – Present)
- **Postdoctoral Writing Fellow (Level A)**: School of Computer Science and Engineering, UNSW (2023.10 – 2023.12)
- **Research Assistant**: School of Clinical Medicine, UNSW (2021.11 – 2023.06)
- **Software Engineer**: Cambio Software Engineering (2017.07 – 2020.01)
- **Software Engineering Intern**: Research and Development - AI, Virtusa (2016.02 – 2016.08)

Professional Services

- **Career Mentor:** UNSW Career Discovery Mentoring Program, 2024
- **Projects Demonstrator:** CSIRO Next Generation Graduates Program, 2024
- **Co-supervisor:** UNSW Undergraduate Thesis, 2023
- **Local Chair Committee Member:** ISMAR 2023
- **External Reviewer:** CHI, MobiCom, MobileHCI, MerCon, OzCHI
- **Student Volunteer:** SIGGRAPH Asia 2023, ISMAR 2021, CSCW 2021, IEEE InTech Forum 2020
- **AD/AE Appendices Committee Member:** SC 2021
- **Academic Mentor:** ScholarX, Sustainable Education Foundation, 2022
- **Delivery Support Staff:** UNSW Computing Research Expo, 2022
- **Keynote Speaker:** UNSW GERRIC AI Workshop, 2022
- **Academic Mentor:** ScholarX, Sustainable Education Foundation, 2021

Professional Memberships

- Institute of Electrical and Electronics Engineers (IEEE) (93648775)
- Association for Computing Machinery (ACM) (9375252)
- Special Interest Group on Computer-Human Interaction (SIGCHI) (9375252)
- IEEE Computer Society
- IEEE Women in Engineering
- IEEE Young Professionals

- IEEE Student Chapter, University of Moratuwa
- IEEE Student Chapter, UNSW

Selected Honours and Awards

- **Shortlisted Finalist:** Asian Deans' Forum, The Rising Stars, 2024
- **IEEE TCPP Student Travel Grant:** PerCom24, 2024
- **Graduate Research School Development and Research Training Grant (DRTG):** UNSW, 2022
- **Symposium Selectee:** Google Research India: Graduate Symposium, 2021
- **Selectee:** TILES S3B2-ML: Summer School on Sensor-Based Behavioral Machine Learning, 2020
- **UNSW Tuition Fee Scholarship:** UNSW, 2020
- **UNSW Research Stipend Scholarship:** UNSW, 2020
- **Top Ten:** Android Study Jams Hackathon, Google Developers Group, 2015
- **Dean's Award**: Faculty of Information Technology, University of Moratuwa, 2013, 2014, 2015, 2016

Selected Projects

- **Cambio Cosmic**: A comprehensive healthcare system that supports patient and medical record administration of medical units. [Java, Spring, Hibernate, MSSQL, TestNG, Junit, YAML, Angular, RESTful Web services, Git, Docker, SVN, Sonar, Bitbucket, MSSQL Profiling tools, Cambio CUTs, JIRA, Swagger] (2017 – 2020)
- **Finding the "Person of Interest"**: A system to identify the current location of a lost person by self-organizing agents which will navigate in the assigned area and communicate with each other and find the given person of interest using the image processing technology. [OpenCV, C++, Python, Raspberry Pi, Java, Apache ActiveMQ] (2017)
- **The Ultimate Sense (TUS)**: A chatbot application with cognitive capabilities, integrated into an iOS application as a personal assistant. [IBM Watson services, Python, NLTK, Java, JavaFX, Node.js, Swagger, AngularJS, MongoDB, WSO2 CEP, iOS] (2016)
- **Fast Flower Delivery System**: A system to deliver the products to customers analyzing the past and real-time performance details of drivers using the Complex Event Processor (CEP) of WSO2. [Android, Siddhi Language of CEP, JSP, HTML, CSS, AJAX, MySQL, Google Maps API, Java, Web Socket] (2014)
- **M-Cooker – The Automated Cooking Machine**: An automated cooking machine that can cook a meal by giving the command manually and remotely using a mobile. [PIC Microcontrollers, Motor controlling technology, DTMF, LCD display] (2013)

Selected Extra-curricular Activities

- **Editor**: IEEE Student Branch UNSW Sydney, 2021
- **Writer**: Fit2School, University of Moratuwa, 2015
- **Writer**: Analytics Vidhya and Medium, 2021 – 2022