# Monash Assistive Tech & Society (MATS) Centre

## Overview

The Monash Assistive Technology & Society (MATS) Centre brings together researchers from across Monash University with expertise in assistive technology research and education. It has more than 100 members from the Faculties of Information Technology (FIT), Arts, Education, MNHS (Medicine, Nursing and Health Sciences), Engineering and Business from campuses in Australia and Malaysia.

The overarching aim of the Centre is to support people with disabilities to live self-directed lives by understanding the role of technology as an enabler or barrier to social and economic participation and driving technological innovation that meets the needs of people with disabilities, their families, educators and employers.

The Centre is timely because of the increasing importance of digital technologies. In particular, emerging technologies such as artificial intelligence have the potential to mitigate many of the barriers people with disabilities currently face at school, university, in the workplace, and when accessing sports and cultural activities.

Centre activities are built around three interlinked pillars:

* **Community Impact**: Co-design is central to all Centre activities. The Centre will partner with disability organisations, and engage with individuals with disabilities, to ensure that all Centre activities address real world needs. Impact will be achieved through advocacy and policy development as well as the development of new assistive technologies.
* **Excellent Research**: Centre research will be focussed around assistive technologies. This includes understanding how and why people with disabilities use both mainstream and bespoke assistive technologies and the barriers to uptake as well as the development of innovative new assistive technologies.
* **Rich, Inclusive Education**: The Centre has a strong focus on education. It will work with Monash Disability Support Services (DSS) to provide Monash students with assistive technologies and engage in outreach activities designed to get more students with disabilities studying STEM as well as ensuring all Monash graduates appreciate the need for inclusive design.

## People

The Centre is led by Professor Kim Marriott (Director) and A/Professor Louisa Willoughby (Deputy Director). Kim is former Head of the Department of Human-Centred Computing in the Faculty of IT. Kim’s expertise is in the use of digital technologies to provide people who are blind or have low vision with access to graphical materials. Louisa leads a large group of Auslan researchers within the Faculty of Arts. An Applied Linguist, her research focuses on how mainstream institutions can best accommodate and respond to people who speak/use minority languages; and on the teaching of minority languages in education settings. Other members of the Centre management team are Dr Kirsten Ellis (Faculty of IT), Dr Natasha Layton (Rehabilitation, Ageing and Independent Living), A/Prof Matt Butler (Faculty of IT), A/Prof Gillian Kidman (Faculty of Education), and Thomas Perry (Monash Disability Support Services).

## Success Stories

The Centre builds upon a wide variety of prior research and educational activities at Monash University.

### Inclusive STEM – Tape Blocks

Every Australian deserves the opportunity to participate in science and technology, including people with physical and intellectual disabilities. Monash researchers have been developing STEM engagement activities to meet diverse needs. These include Tape Blocks by Dr Kirsten Ellis, 2022 Winner of the Eureka Prize for STEM Inclusion. Tape Blocks are EVA foam blocks wrapped in conductive tape with electronic components. They are an affordable, versatile and engaging way for anyone to make circuits, providing an accessible introduction to technology and the maker movement for people with disabilities. Components like buzzers and fans give an immediate indication of success for when people who are blind or have low vision create a circuit.

### Community – Multisensory Art Exhibitions

As part of an initiative to improve the accessibility of art galleries for people who are blind or have low vision, Monash University researchers have been working with the Bendigo Art Gallery to create multimodal experiences combining description, music, touch and interactive activities. This work included special workshops as part of the Mary Quant: Fashion Revolutionary exhibition in 2021 and Access Elvis sessions for blind and low vision visitors to experience the blockbuster Elvis: Direct from Graceland exhibition in 2022.

### Accessibility – 3D Printing for Touch Readers

Researchers at Monash University led the ARC Linkage Project investigating the use of 3D printing for accessibility for touch readers, in partnership with Round Table, the Victorian Department of Education, NextSense, Guide Dogs Victoria and See Differently. The project research provided evidence that 3D printed maps can be easier to understand than tactile maps and that 3D printed educational materials are engaging and encourage inclusion in the classroom. The research was applied to real-world uses of 3D printing, such as inclusive tactile maps for public events, tools for O&M practitioners to teach street crossing concepts, and manipulatives to encourage tactile literacy. The work culminated in guidelines for 3D printing for accessibility that are housed on the Round Table website. By the end of the project, Australia and New Zealand have become leaders in the use of 3D printing for accessibility.

### Inclusive Education – Universal Design for Learning

Universal Design for Learning reduces the need for reasonable adjustments and enhances the experience of all learners, including those with disability. Monash Education Psychology researchers have worked collaboratively to co-design a free online elearning program about the principles and practices of Universal Design for Learning in Higher Education.

### Advocacy – WHO

Monash researchers delivered a series of studies for the World Health Organization exploring COVID-19-related experiences of assistive technology (AT) users and suppliers across the globe, uncovering evidence that minority groups already living with health inequalities were unduly impacted by COVID-19.

### Communication – Auslan

The Monash Auslan team is Australia’s preeminent cluster of Auslan researchers. For over 10 years the team have led advancements in Auslan research and service provision. This work has been undergirded by three ARC projects (two in the area of deafblind signing and one on teaching Auslan to hearing adults) and extensive collaborations with a variety of industry partner organisations.

## Invitation

The Monash Assistive Technology & Society (MATS) Centre will be officially launching this year. We look forward to engaging more formally with partners within the accessibility community and with people with lived experience of disability to ensure that our work is consumer-led, focuses on solving real-world problems, and provides opportunities for people with disabilities to enter the research and STEM fields.

A Community Partnerships Committee will serve as an advisory committee of the Centre. The Committee will meet three times a year and ensure that the Centre’s activities remain focused on community needs. The membership of the Community Partnerships Committee will be drawn from the Centre’s external partners and represent the disability community, tech and government sectors.

Consumer representative groups, not-for-profit organisations and businesses with an interest in assistive technology are invited to register as MATS partners. These partners will be kept informed of MATS activities and invited to initiate and participate in research that is of value to you.

Please contact us if you are interested in getting involved.

## Key contacts

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