



Music, Dementia, Technology

You said, we did

Dr Jennifer MacRitchie, Dr Justin Christensen, Jon Pigrem, Mike Neokleous, Luc deWitte, Andrew McPherson & Renee Timmers



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Who are we?

- A team of researchers in music, engineering, and healthcare based in the music department at the University of Sheffield since 2021.
- We work with community groups, memory cafes and dementia involvement groups in Sheffield (see Project Details if you want to know more about how)
- We want to know what new interfaces would be useful and enjoyable for people living with dementia and their loved ones to interact with music



How have we been involving people living with dementia?

- Visited dementia involvement and advisory groups in Sheffield to talk about the project ([SHINDIG](#) and [DRAiSY](#))
- Events held at the University to discuss various topics on music and technology
- Visiting several memory cafes across Sheffield
- Showing people new musical devices and asking for their opinions

CHANGES WE MADE IN RESPONSE TO YOUR COMMENTS & STORIES



Thinking about new technologies

- You said ->
 - Where are the pictures with older adults using these new technologies?
- What we did ->
 - Take lots of pictures of older adults using various devices

You've told us loads of different songs and artists you like to hear



Buddy Holly



Luther Vandross



Joni Mitchell



The Beatles



Fleetwood Mac



Tina Turner



Bill Haley and the
Comets



Alfie Boe



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What music do you want to listen to?

- You said ->
 - Sometimes I want calming, relaxing music
 - Sometimes I want to dance
 - Sometimes I want something beyond dancing or relaxing
- What we did ->
 - Made sure we have plenty of upbeat energetic music, as well as calmer soothing music
 - Opportunities for exploring music as well as relaxing/energizing



What do you want to do with music?

- You said ->

- I'm not musical
- I love listening to music
- Familiar music is great
- I also want to explore music
- I want to be creative

- What we did ->

- Our initial plan was to create new music instruments for learning melodies
- Instead -> a range of activities

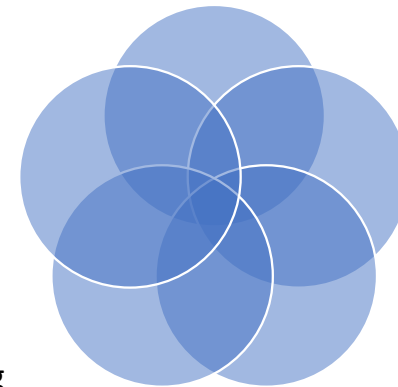
Music quiz

Create some
new music

Listening to
our favourite
songs with
others

"Play" the
band along
with the singer

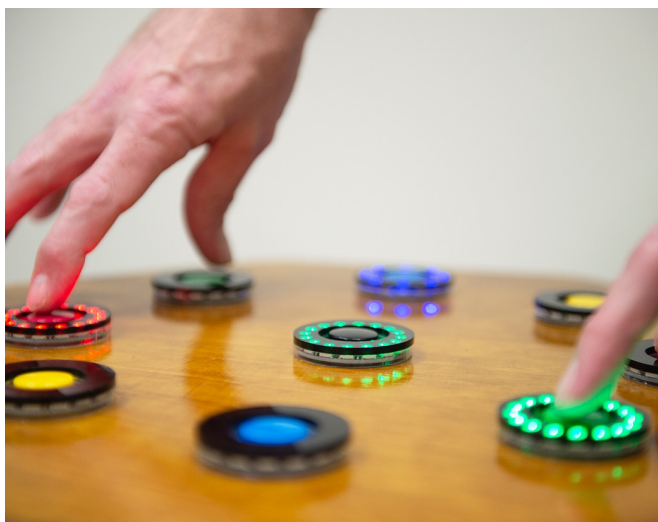
Singalong





What is missing from current music activities?

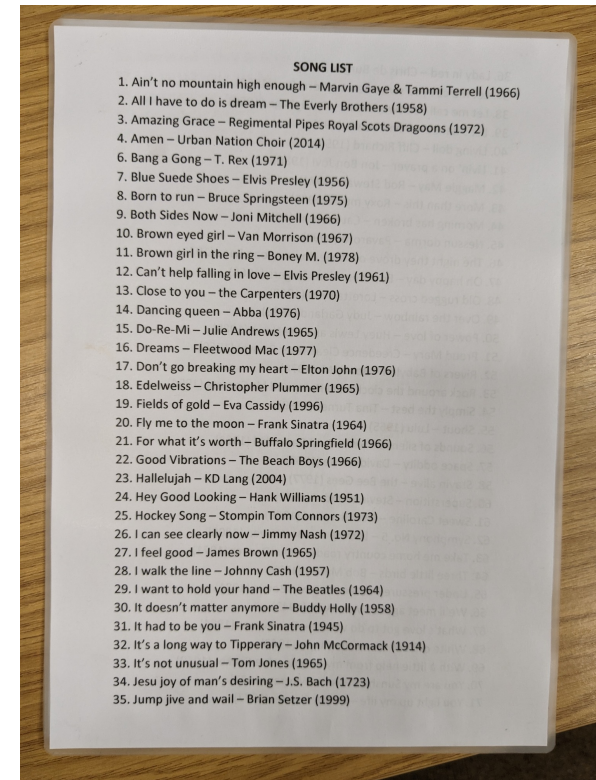
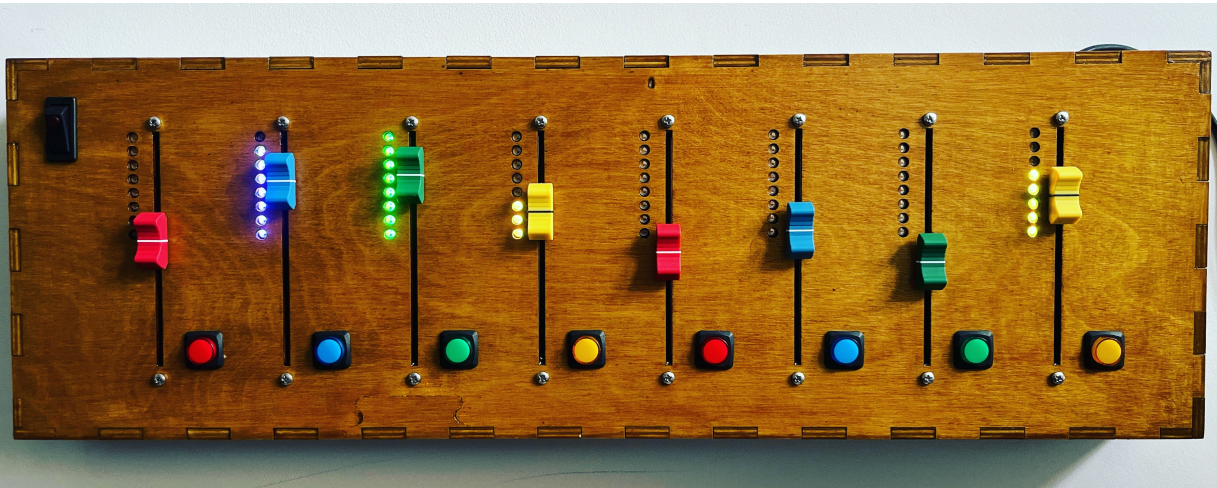
- You said ->
 - A chance for us to do something as a group of people
 - Organisers/volunteers want to be more involved musically
 - Want to have a creative activity beyond reminiscing



- We made ->
 - Group devices and music activities that can be done in groups

Lyrics & Labels

- You said ->
 - Some people have excellent memory for choruses
 - Sometimes lyrics would be useful
- We did ->
 - Song names printed out but no lyrics
 - Short choruses of songs where appropriate



You said ->

- You like to explore sliders/buttons

We did ->

- No labels on sliders/buttons, but parts are always arranged the same way: voice, drums, guitars, keys.

PROJECT DETAILS

Project Details

- Work funded by UKRI Future Leaders Fellowship 2021-2025 to Dr Jennifer MacRitchie under title 'Designing new musical technologies for older adults' wellbeing'
- Project includes a number of ways to facilitate contributions from people living with dementia and those who provide care.
 - Online surveys
 - Visits to dementia or memory cafés
 - Visits to residential care facilities
 - Public events held at the university
 - Focus groups arranged with local communities
- We explore what music means to people living with dementia, and how new technologies could be designed through
 - Discussion
 - Music listening sessions
 - Imagination exercises
 - User-testing of prototypes and off-the-shelf devices.
- We also collect data on musical engagements via audio & 360 video recordings

For more information, please

- see our publications
- visit our website [here](#)
- or contact j.macritchie@sheffield.ac.uk

PUBLICATIONS & OUTPUTS

Academic Publications

Peer-reviewed journal and conference papers

- MacRitchie et al., (2022) The use of technology for arts-based activities in mild cognitive impairment and dementia. *Dementia*, 22 (1), <https://doi.org/10.1177/14713012221127359>
- Pigrem, MacRitchie & McPherson (2023). [Instructions not Included: Dementia-friendly approaches to DMI design.](#) In Proceedings of the *New Interfaces for Musical Expression (NIME) conference, New Mexico, Mexico, 2023*
- Christensen J, Kauenhofen S, Loehr J, Lang J, Peacock S, & Nicol J (2023). MMM Duet System: [New accessible musical technology for people living with dementia.](#) In: Proceedings of the 18th International Audio Mostly Conference (AM '23), Edinburgh, UK

Magazine articles

Futurum Careers article: Education and career resources for secondary school students.


<https://futurumcareers.com/how-can-music-technology-improve-the-well-being-of-people-living-with-dementia>

MUSIC TECHNOLOGY

How can music technology improve the well-being of people living with dementia?

What does music mean to you? Whether you play an instrument or enjoy listening to your favourite band, there are many ways to engage with music. But what happens if you begin to lose your memories of music or ability to play an instrument? **Dr Jennifer MacRitchie** is a musician and electronic engineer at the **University of Sheffield**, UK. She is collaborating with researchers **Dr Justin Christensen** and **Jon Pigrem**, to develop new digital music technologies to improve music accessibility for people living with dementia.




 **Dr Jennifer MacRitchie**

Senior Research Fellow, Department of Music, University of Sheffield, UK


Adjunct Research Fellow, The MARCS Institute for Brain, Behaviour and Development, Western Sydney University, Australia

Fields of research
Music Technology, Electronic Engineering, Cognitive Science

 **Dr Justin Christensen**

Research Associate, Department of Music, University of Sheffield, UK

Fields of research
Music, Psychology

 **Jon Pigrem**

Research Technician Officer, Department of Music, University of Sheffield, UK

PhD student, School of Electronic Engineering and Computer Science, Queen Mary University of London, UK

Fields of research
Music, Digital Lutherie

 TALK LIKE A ...

MUSIC TECHNOLOGIST

Acoustic musical instrument — a musical instrument that produces sound through vibrations of the instrument, usually generated by touch or breath

Cognitive — relating to mental ability

Dementia — an umbrella term referring to a range of progressive conditions with symptoms including memory loss, confusion and impaired cognitive ability

Digital lutherie — the creation of digital musical instruments

Digital musical instrument (DMI) — a musical instrument that relies on computing, rather than acoustics, to generate sound

Luthier — a person who makes musical instruments

Motor skills — skills required to perform movements

Music can remind us of significant moments in our lives, connect us with our idea of who we are or used to be, and generate social interactions as we bond with others over shared musical experiences and preferences. "Music is an activity that is multi-faceted in nature," says Dr Jennifer MacRitchie, a musician and electronic engineer. "It engages with our emotions, makes us want to move, helps us relate to others and contributes to our personal identity." As such, music can be good for everyone. It can also bring specific benefits for people living with dementia, which is why Jenni and her team are developing new technologies to facilitate dementia-accessible musical interactions.

Research project
Designing new musical technologies for older adults' well-being
Current and past team members: Dr Jennifer MacRitchie, Dr Justin Christensen, Jon Pigrem, Michael Neokleous, Katherine Jackson, Dr Georgia Floridou, Prof Renee Timmers (University of Sheffield), Prof Luc de Witte (The Hague University of Applied Sciences), Prof Andrew McPherson (Imperial College, London) and project partner Bela (Augmented Instruments Ltd). We would like to acknowledge our community partners in this research who have consulted with us on our research aims and developed devices including Dementia Research Advisory Group South Yorkshire (DRAISY), Sheffield Dementia Involvement Group (SHINDIG), and facilitators and attendees of dementia cafés run through Age UK Sheffield, Hailey City Farm, and Darnall Wallbeing.

Funder
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Videos



Assistive Technologies for Engaging with Music in Dementia | Pop-Up University 2021



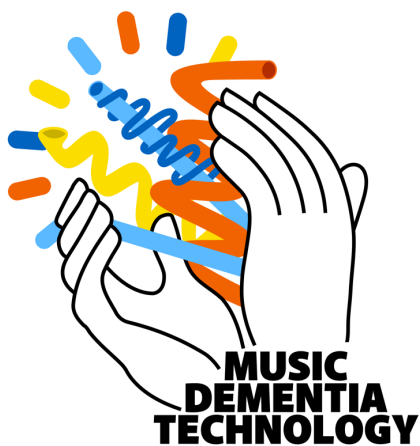
- Pop Up University video 2021

<https://www.youtube.com/watch?v=seMc4JlyHOA>

Thanks to community partners in research

- Dementia Research in South Yorkshire (DRAiSY)
- Sheffield Dementia Involvement Group (SHINDIG)
- Darnall Wellbeing
- Heely City Farm
- SACMHA
- Age UK Sheffield Hillsborough
- Age UK Sheffield Bents Green/Dore
- Age UK Sheffield Ecclesall Woods
- SOAR Sheffield
- SCCC
- SheffCare (Valleywood & Midhurst)
- Northern General Hospital





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London



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