

# 24 INNOVATIONS TO TRANSFORM THE LIVES OF PEOPLE WITH DEMENTIA



[dementia.longitudeprize.org](https://dementia.longitudeprize.org)

**LONGITUDE PRIZE**  
ON DEMENTIA

In partnership with



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**CHALLENGE  
WORKS**

# AN INTERNATIONAL CHALLENGE PRIZE PUTTING CO-DESIGN AT THE HEART OF NEW TECHNOLOGICAL SOLUTIONS FOR PEOPLE LIVING WITH DEMENTIA

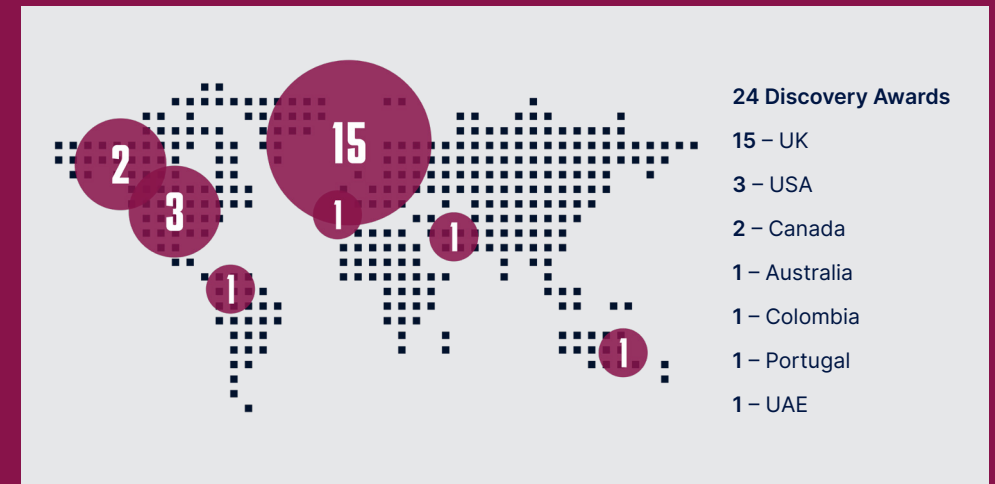
Technology can be transformative for people living with dementia. In the absence of a cure, assistive technologies play a vital role in helping people communicate, manage daily tasks, enjoy life, and live independently at home for longer.

But, while recent years have seen a proliferation in personalised, adaptable technologies driven by advances in artificial intelligence (AI) and big data, hardly any are user-friendly or accessible to people with dementia. And assistive technologies that *are* designed for dementia have not yet integrated advanced technologies capable of adapting to users' changing needs.

It is time for a breakthrough. The **Longitude Prize on Dementia** puts the spotlight on promising innovators working on dementia care solutions globally. The **£4 million international challenge prize** offers staged funding and expert support to teams working on personalised, adaptable, user-friendly technologies co-created with people living with dementia.

In June 2023, we announced 24 semi-finalists, from 8 different countries including Colombia, Canada, and the United Arab Emirates.

These innovators have demonstrated prodigious flair and commitment to using the latest advances in technology, AI, and machine learning in combination with user data and testing to create innovations for people living with dementia. From apps that alleviate sundowning symptoms, to a digital “yellow brick road” for navigation, the technologies fuse innovation, evidence, ethical practice, and a good dose of empathy to solve complex problems.



To date each semi-finalist has received the first grant round of £80,000 and expert support for 12 months (June 2023-May 2024), to help bring their ideas to life. At the heart of the prize is a commitment to co-creation – putting those with lived experience of dementia at the centre of the design process.

In the following pages, we introduce the international teams and their trailblazing solutions.

For more information on the solutions and their teams, please contact [longitudeprize.dementia@challengeworks.org](mailto:longitudeprize.dementia@challengeworks.org)

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 @LPDementia

 @Longitude Prize on Dementia

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# AMICUS BRAIN INNOVATIONS, INC. NEW YORK, USA



## AI Interactions Advisor

An interactive voice and text-assistive device that can help with 'broken speech' and online communication, promoting digital inclusion for people living with dementia.

## About AI Interactions Advisor

AI Interactions Advisor augments communication in real time for people living with dementia, boosting their confidence and independence, and reducing social isolation. It does so via a personalised, adaptive service that compensates for declining language capabilities as dementia progresses. These might be difficulties finding words, incorrect substitutions, incomplete expressions, or atypical grammar. The solution will use state-of-the-art natural language understanding (NLU) and AI technology to listen to people's "broken speech", understand intent and context, generate contextually appropriate language forms personalised to the individual, and speak aloud the AI's "repaired" rendition of what the user intended to say.

## About the team

Amicus Brain Innovations, Inc. is a global team of AI scientists, software engineers, and business and clinical advisors who use technology to transform care for ageing populations. We take a humane AI-first approach to solving problems. Co-creation is key: a purposely sampled set of diverse people living with dementia and their care partners have co-designed AI Interactions Advisor.



# ANIMORPH LONDON, ENGLAND



## CrossSense

CrossSense is a wearable augmented reality cognitive aid that combines sensory inputs (such as sound and sight) to help slow memory decline and improve recall.

## About CrossSense

CrossSense can help people living with dementia carry out their daily tasks at home with assistive contextual prompts. It can facilitate improved recall through the creation of multisensory memory anchors on objects. Users can assign additional layers of meaning to objects in their homes by tagging them with text and audio notes, which can be retrieved via hand gestures or voice commands, and this information stays with the object if it moves in their home. Users of CrossSense will be guided within the app by the friendly AI-powered virtual assistant, Wispy, who will tactfully engage users in the different features.

## About the team

Animorph is an immersive technology development company dedicated to enhancing human potential, and as such, we have worked on developing meaningful technology solutions across healthcare and training. Professor Simner, our research collaborator, brings first-hand experience of caring for her father, who has dementia. The personal examples of their daily creativity which help him to stay focused during his activities are invaluable.



animorph

# ASSOCIAÇÃO FRAUNHOFER PORTUGAL RESEARCH PORTO, PORTUGAL



## AUTONOMOUS

AUTONOMOUS is an AI system that can be integrated into existing technologies such as smart watches to offer communication assistance for people living with dementia and prolong independent living at home.

## About AUTONOMOUS

AUTONOMOUS helps people living with dementia complete daily activities in an autonomous, safe, and non-stigmatising manner, and adapts to their changing needs. AUTONOMOUS integrates AI into existing technologies and uses tailored and ad hoc cues to help people perform daily tasks. It can help assess people's cognitive functioning and activity performance, potentially offering valuable insights for early diagnosis and monitoring of dementia progression and contributing to personalised healthcare interventions that target each person's most pressing needs.

## About the team

Associação Fraunhofer Portugal Research is a non-profit private research organisation. It brings together experts from social sciences, computer sciences, and design research to develop interdisciplinary approaches and explore new frontiers to address complex and nuanced challenges. Witnessing the daily struggles of family members with dementia has been a driving force behind our pursuit of an adaptive, user-friendly solution to help meet people's daily needs.



autonomous  
co-designing independence

# CARDIFF METROPOLITAN UNIVERSITY

## CARDIFF, WALES



### DementiaConnect

DementiaConnect is a mobile app-based solution that creates personalised digital interventions to help alleviate sundowning symptoms (restlessness, agitation, irritability, or confusion that can worsen as daylight fades).

### About DementiaConnect

DementiaConnect helps those suffering from sundowning, a syndrome that causes increased distress, agitation, and hallucinations in late afternoon or early evening. The app offers personalised visual instructions via icons or images to help people living with dementia perform daily activities such as brushing teeth. It also offers activities like playing board games, reminiscing with pictures, and relaxation exercises. It can be integrated into smartwatches to capture lived experiences like sleep patterns and heart rate. A dashboard-like platform will support the interactive visualisation of behaviours and experiences, helping us better understand dementia progression and develop personalised approaches to care.

### About the team

Cardiff Met brings together researchers from computer science, digital health, software engineering, robotics, and engineering to deliver cutting-edge innovations. Its partnership with Age Connects Torfaen (ACT), a charity with 30 years' experience supporting people living with dementia, integrates Cardiff Met's digital health experience and ACT's dementia care experience to deliver a multidisciplinary approach to complex challenges.



# CARE CITY CIC

## LONDON, ENGLAND



### The Dorothy Community

Dorothy is a digital "yellow brick road" app that offers directions via colourful arrows and pathways on the screen, helping people living with dementia navigate their area independently.

### About The Dorothy Community

The Dorothy Community aims to transform wayfinding technology for people living with dementia. It begins with the recognition that people can draw huge benefits from involvement with their local communities but are often excluded by fear of getting lost or of being unable to access various facilities. Existing wayfinding technology can be complex and lack the detail required by people living with dementia. The Dorothy app uses a combination of AI and AR to support and assist people with dementia to help them navigate rooms within buildings. It provides appropriate detail and uses simple iconography: a yellow path shows directions, and colourful icons explain the surroundings, enabling people to navigate their community without support, helping them maintain independence for longer.

### About the team

Ilya Rybin began researching the app in 2018, motivated by his grandfather's experiences of dementia and distress when he got lost in new environments. Rybin teamed up with psychiatrist and dementia specialist Dr. Samir Shah to refine the solution. Care City is an innovation centre for healthy ageing and regeneration.



# CIRCADIAN LIGHTING LTD

## STANLEY, ENGLAND



### DAWN – The Dementia Assistance Wellness Node

DAWN is a replacement lightbulb that uses AI learning patterns to detect deteriorations in behaviour. The bulb also provides optional reminders to help with daily activities, lessening caregivers' workloads and helping people living with dementia maintain independence.

#### About DAWN

DAWN helps people with dementia live more independently for longer, by improving quality of life and supporting light-touch monitoring to help carers stay informed and understand how someone's condition is progressing. The system uses a combination of circadian lighting, AI monitoring technology, and interoperability with other technologies. The circadian lighting reduces people's chance of a fall and can improve sleep patterns and mood. The bulb provides optional reminders to help with daily activities, helping people maintain independence and lessening caregivers' workloads.

#### About the team

Our founder, James Theobald, oversaw our original circadian lighting system – used in care homes and dementia units – and has long worked with LED technology. He realised there was a need for solutions built specifically for those living with dementia. Further inspiration came from product director Tallie Bush, who worked as a neuroscientist on dementia for many years.



Circadacare

# CLAIRVOYANT NETWORKS, INC.

## AUSTIN, USA



### Theora 360

Theora 360 is a remote monitoring system that uses sensors to provide insight into behaviour around falls to help when caregivers are not present, ensuring safety and independence.

#### About Theora 360

Theora 360 is a remote monitoring solution that lets caregivers “be there” and receive information on a person's risk of falling virtually, even when they can't physically be there. Older adults with cognitive impairment have an increased risk of falling, but detecting falls or assessing fall risk among them can be challenging. Our highly precise fall detection and prediction solution uses a technology called Ultra Wideband to monitor people in three dimensions, assess risk, and send alerts to caregivers. We have also built an AI/ neural network to look at the circumstances surrounding falls.

#### About the team

Clairvoyant Networks is a solutions company that uses the transformative power of technology to solve challenges, and has partnered with Texas A&M University to create Theora 360. Our team are inspired by first-hand experience of caring for family members with dementia and seeing the woeful technology available, and decided to apply our expertise and experience to dramatically improve people's lives.



# EARGYM

## LONDON, ENGLAND



### eargym

eargym is a hearing monitor for people living with dementia to help them retain their physical health and independence for longer.

#### About eargym

For people living with dementia, hearing loss can make everyday activities more challenging and increase social isolation. Despite this, there are very few hearing screening solutions suitable for people living with dementia. eargym's screening tool is based around a tablet/smartphone app tailored to make identifying and addressing hearing difficulties easier and more effective for people with dementia, to positively impact the correlation between age-related hearing loss, social isolation, depression, and dementia. eargym will also be a convivial, personalised, and gamified activity that people can enjoy with carers, family, and friends.

#### About the team

eargym brings together people from diverse fields, including the NHS, population health, care, business development, and digital technology. Our co-founders both live with hearing loss and have been affected by dementia. Co-design is essential to eargym: we recognised very early the importance of including people living with dementia in user research and all stages of product design and development, making eargym more accessible, user-friendly, and engaging for users with different stages of dementia.



# KHALIFA UNIVERSITY

## ABU DHABI, UAE



### iMAGIC

iMAGIC smart glasses offer various assistive features that include facial recognition, reminders and alerts, zooming in and out to facilitate navigation, phone calls to loved ones and vital sign monitoring to assist people living with dementia in their everyday life.

#### About iMAGIC

iMAGIC is developing a user-friendly, hands-free assistive technology to help people affected by dementia live independently in their homes for longer. iMAGIC glasses will include multiple functions, such as helping users remember the names of people and objects they interact with, and a zoom function. iMAGIC can also monitor vital functions to ensure users are safe and in good health – monitoring the detection of falls, abnormal heart rates, atypical body temperatures, or aberrant sleep cycles, for example. The glasses are reliable, user-friendly, light in weight, can interact with smart devices, and will be personalised by design.

#### About the team

The iMAGIC team at Khalifa University brings together expertise in neuroscience, neuroimaging, biomedical engineering, biotechnology, and other disciplines. Many of our team members have connections with dementia, including family members or friends who have been affected, and are engaged in the development of wide-ranging solutions for dementia care.



# KITE - TORONTO REHABILITATION INSTITUTE TORONTO, CANADA



## MAISON (Multimodal AI-based Sensor platform for Older Individuals)

MAISON is a preventative AI-based digital health system that can detect and respond to risky behaviour, limiting the chance of injuries for those living with dementia.

### About MAISON

MAISON aims to protect people living with dementia from the onset of responsive behaviours that can affect their health and safety, such as injuries, and enable caregivers to intervene swiftly. Our state-of-the-art, AI-driven digital health platform, tailored for people in community settings, will collect data such as heart rate information, and send it to MAISON's private cloud. Here, AI models detect the onset of responsive behaviours and send notifications to caregivers, as well as crucial health data to clinicians.

### About the team

KITE, the research arm of the Toronto Rehabilitation Institute, is a global leader in complex rehabilitation science and innovation for people living with the effects of disability, illness, and ageing. The team has long worked on the use of AI in monitoring symptoms of agitation in people living with dementia, and is now translating that expertise to community settings, to improve people's wellbeing while living at home.



# LA GUAPA MEDIA BOGOTA, COLOMBIA



## PORTA D

PORTA D is an immersive virtual reality experience that simulates therapeutic and familiar environments with breathing techniques, easing anxiety and agitation experienced by people living with dementia.

### About PORTA D

PORTA D is a complementary treatment to manage anxiety among people living with dementia. Our easy-to-use tool uses virtual reality (VR) to immerse people in therapeutic simulations of natural environments. Personalisation aspects enable the generation of familiar environments made from photos and videos, transporting users to places that bring them peace and positive reminiscences. Using generative AI, PORTA D simulates familiar voices from relatives for the breathing guide element. The system also provides data for caregivers and family members to monitor people's anxiety levels.

### About the team

The inspiration for PORTA D is the story of Nohemy Rojas – the mother of our CEO and co-founder, Camilo Fonseca – who was diagnosed with Alzheimer's six years' ago. With a background in film, Camilo and the team began developing PORTA D to improve his mother's wellbeing, and are passionate about developing the solution to improve the lives of the 55 million people living with dementia worldwide and their caregivers.



*La Guapa media*



# LUCID INC.

## TORONTO, CANADA



### LUC101

LUC101 is a system that offers personalised music sessions designed to ease anxiety and agitation for people living with dementia.

#### About LUC101

LUC101 is a music therapy and cognitive behavioural therapy innovation that uses real-time sensing and more than 60 million music tracks to improve psychiatric health and spark joy among people living with dementia. Our cutting-edge machine learning and affective computing techniques – including micro-expression sensing, movement detection, and biometrics analysis – deliver clinical-grade, hyper-personalised music therapy. LUC101 also monitors changes in behavioural and cognitive symptoms, and sends health data to carers and clinicians, to help manage behavioural and psychological symptoms of dementia before more costly or risky alternatives are deployed.

#### About the team

LUCID innovations span mental health, machine learning, and music. We aim to create safe and accessible ways to help people with neuropsychiatric or mental health challenges. Drawing on personal experience of supporting family with dementia, we decided to bring music therapy into the modern era through AI and biometric measurement, focusing strongly on co-design.



LUCID

# MEMORY LANE GAMES

## ISLE OF MAN, ENGLAND



### Memory Lane Games

Memory Lanes Games is an AI game-like software which promotes positive social experiences that can help delay decline in brain function.

#### About Memory Lane Games

Memory Lane Games is an app that gives people living with dementia access to games based around memory and reminiscing. The app uses AI technology to adjust the game play level and type for users over time, as their dementia journey progresses. For example, if a person tends to struggle when playing games in the morning, the app will make them easier at that point of the day; and if, over time, the app recognises someone is “liking” the easier games, then it will feature more of these. The app benefits cognitive health and reduces social isolation by encouraging social engagement and talking points.

#### About the team

The project was inspired by our founders’ elderly mothers and their love of reminiscing over old family photographs together. Our chief clinical officer, Helen McAskill, is a dementia clinician and nurse who has seen first-hand the difference that our app and games can make in engaging and distracting care home residents to help calm their behaviour.



# MIICARE LONDON, ENGLAND



## AIDE (AI for Dementia Empowerment and Engagement)

AIDE is a virtual voice companion that offers digital interventions such as a medicine sensor to support general health.

### About AIDE

AIDE aims to mitigate the risk of falls for people with dementia, improve quality of life, and help people live independently at home. It is a holistic care ecosystem uniting different elements – non-intrusive clinical monitoring, empathetic generative AI virtual companionship, virtual community-led participation, dementia care, memory boxes, and cognitive stimulation therapy – within one seamless platform. AIDE uses MiiCare's 'virtual companion', Monica, to build a relationship with people over time and support their self-care plans, helping them develop healthy habits around hydration, food choices, and physical activity. Evidence shows this can cut risk of hospitalisations and increase people's confidence to live independently, while equipping clinical decision-makers with information for refining care plans. Biomarker analysis helps predict risk of falls.

### About the team

MiiCare develops age tech for improving home-based care. Our team has worked on multiple dementia tech projects, including dementia villages. Our founder, Kelvin Summoogum, cared for his father who had Alzheimer's, witnessing first-hand the struggle of caring for a person with cognitive decline.



# NORTHUMBRIA UNIVERSITY CUMBRIA, ENGLAND



## CUE-D

CUE-D is a machine learning and artificial intelligence device that flags when someone has lost track of a task through behavioural and physiological indicators, then provides the relevant cues to get them back on track.

### About CUE-D

CUE-D responds to the difficulties that people living with dementia can face in completing daily activities – a major factor in people losing their independence and moving into care settings. CUE-D detects when someone goes off track with activities, and then delivers timely, appropriate cues to get them back on track. It addresses the cognitive disabilities in dementia that cause a breakdown in task sequencing, by joining up the physical steps for people to maintain independence in doing daily activities. Through learning and modelling a person's habitual patterns, CUE-D can deliver versatile cues in response to their specific and changing cognitive abilities.

### About the team

The team from Northumbria University and the University of Toronto, led by Arlene Astell, brings together expertise in machine learning, data science, neuroscience, and medical imaging. We are developing CUE-D collaboratively with people living with dementia and their families.



# OLIVE AI LIMITED

## LONDON, ENGLAND



### MarrAssist

MarrAssist is a personalised AI-powered avatar (an icon representing a particular person, based on a loved one) that provides reminders and prompts to help promote independence.

### About MarrAssist

MarrAssist is an app designed to improve the lives of those with early stage dementia, and combines prior research with technological innovation. MarrAssist leverages advanced AI technologies to offer a comprehensive support system for people with early stage dementia and their caregivers. It features an AI chatbot that provides reminders and vision AI for navigational support, enhancing user independence and safety. The app also monitors linguistic deterioration, providing clinicians and caregivers with essential data for customised care plans. This holistic approach aims to boost the independence and connectedness of individuals with dementia, making MarrAssist a vital tool in dementia management.

### About the team

Olive AI brings together Sojin Lee's experience of working as a volunteer caregiver for people with advanced dementia, with the expertise of Dr. Matthias Treder, a neuroscientist and AI engineer. Sojin's experiences have substantially driven the development of MarrAssist and the search for innovative solutions to the challenges of dementia.

# SHEFFIELD HALLAM UNIVERSITY

## SHEFFIELD, ENGLAND



### A.D.A. (Automated Dementia Assistant)

A.D.A. is a wearable personalised aid that tracks daily movements, providing digital feedback to help prevent falls.

### About A.D.A.

A.D.A. is an intelligent wearable system designed to prevent falls, improve quality of life, enhance mood, ameliorate anxiety, and support independence. The AI-driven system learns a user's typical behavioural patterns and routine and can identify any changes. The interactive, voice responsive "buddy" provides continuous and consistent support, feedback, coaching, prompts, and suggestions for activities – creating an entirely bespoke, adaptable system that assists a person throughout the day and throughout the stages of dementia.

### About the team

The A.D.A. team brings together experts in behavioural science, applied psychology, ageing, immersive technology, and multi-sensory design. Project lead, Dr. Lynne Barker, was inspired by her experience of wearable technology for type 1 diabetes, and by personal experience of supporting family members with dementia. All the team have conducted research with older people and people with dementia and degenerative brain conditions, in multiple contexts. Co-design is integral to A.D.A.: people with dementia have worked with us from the start, and their input is central to our product design. Partnered with Ombeond, immersive experiences for body and mind experts.



# SIMON CARE MANAGEMENT CORPORATION NEW YORK, USA



## Simon Care Management

A web/mobile hybrid application which hosts frequent contacts, an interactive map, and a calendar that deploys AI to learn users' habits and provide them with nudge supports to guide them towards solutions.

## About Simon Care Management

Simon is a digital platform for people living with dementia and their caregivers. It aims to provide people with more autonomy, dignity, and ultimately happiness, by analysing users' habits and guiding them towards solutions for daily tasks. Knowing that our phones already track our movements, Simon pulls these tools together in a place for those with cognitive impairment, supplementing intelligence that has been lost to pathology. We hope to establish a new dataset on real-world behaviours of people living with dementia for use by researchers, drug developers, clinicians, and policymakers.

## About the team

Our co-founder, Dan Brown, launched Simon Care Management after witnessing the struggles of his mother-in-law to remember key information like ATM pin numbers; every member of our team has had a family member affected by dementia. Co-design is central to our work: we have tested every screen, button, and avatar with people living with dementia.



# SKYJOY LTD. BELFAST, NORTHERN IRELAND



## Skyjoy

Skyjoy is biodynamic lighting that simulates the sun's daily cycle, easing sundowning symptoms (restlessness, agitation, irritability or confusion that can worsen as daylight fades) and improving general wellbeing.

## About Skyjoy

Skyjoy is a personalised indoor lighting system that realigns the circadian rhythm of people living with dementia. The goal is to alleviate symptoms of depression and poor sleep/restlessness – common among people with dementia – and improve wellbeing. Our biodynamic lighting (a luminaire with tuneable white LEDs) simulates the sun to realign disrupted body clocks, using low intensity, red/orange colours at dawn and dusk, and high intensity, white/blue colours in the afternoon. An integrated radar sensor detects movement, and bespoke algorithms/AI identify behaviour patterns and improve lighting for optimum wellbeing and to monitor potential falls. The system integrates seamlessly into smart living environments, and caregivers can access its health metrics remotely.

## About the team

Our team brings expertise in health, dementia design, and lighting design for the built environment. Co-founder, Dr Pamela Topping, has dual expertise as design consultant and healthcare professional, while co-founder Lloyd Crawford's company Chroma Lighting has created systems used in hospitals and psychiatric units across Northern Ireland.



# SOCIAL CARE INSTITUTE FOR EXCELLENCE LONDON, ENGLAND



## SCIE

SCIE is a home-based technology that monitors a person's daily routine, to spot early signs of sundowning and provide insights to support interventions.

### About SCIE

SCIE's vision is to enable people living with dementia to live fulfilling, safe, and healthy lives. It focuses on sundowning, which affects up to 30% of people with dementia but remains under-researched, with limited treatments available. Our home-based technology uses unobtrusive sensors and motion/movement detectors in items already installed in homes (e.g., speakers) – preserving the feeling of home – to learn and understand a person's daily routines and behaviour patterns. It identifies early signs and triggers, so insights can inform person-centred, timely interventions, and provide evidence for families/carers to have rigorous conversations about care.

### About the team

Right across the team, we have experience of supporting loved ones with dementia: this is not just a business/care problem we are trying to solve – our mission is grounded in personal experiences and a genuine desire to improve lives. The team is led by Rebekah Luff and Claire Cosgrove.



# SUPERSENSE TECHNOLOGIES LTD. CAMBRIDGE, ENGLAND



## Supersense Technologies

A 4G-enabled digital hub placed in the home of a person living with dementia, enabling them to connect with caregivers and family, and maintain their independence for longer.

### About Supersense Technologies

Supersense Technologies recognises that technologies intended to reassure caregivers about family members living with dementia are often too complicated. We are therefore developing a remote monitoring service comprising a home-based plug and play device, and a connected app. The system is simple to install and use, is not dependent on wearables, and does not use intrusive cameras or microphones. It delivers insights in plain language, allowing carers to understand subtle shifts in daily needs and to plan appropriate, timely interventions.

### About the team

Our journey was sparked by our co-founders' exposure to the pressures dementia places on families. We are determined to help take the guesswork out of care, applying our technical expertise to a solution that empowers families and carers. We are also guided by the idea that 'if you have met one person with dementia, you have met one person with dementia': our design practice draws on as many personal experiences as possible.



# ULSTER UNIVERSITY

## ULSTER, NORTHERN IRELAND



### CLEAR-AI

CLEAR-AI is digital platform that monitors daily routines, collecting data to identify triggers of agitation and then respond with interventions to mitigate these.

### About CLEAR-AI

When people with dementia live at home, obtaining accurate information about distress episodes and their circumstances can be challenging. CLEAR-AI is an AI-powered platform that interprets data from connected smart sensors, apps, and devices to model someone's daily routines. Through data analysis and training the AI model, the platform can identify triggers preceding distress episodes and recognise when episodes occur. This enables caregivers to plan appropriate daily routines that strike the right balance between assistance and autonomy, designing interventions in daily schedules to reduce or mitigate distress where it is likely to arise.

### About the team

Dr. Frances Duffy, consultant clinical psychologist specialising in dementia care, spearheaded the development of CLEAR Dementia Care®, an innovative approach to helping caregivers interpret people's behaviours and identify unmet needs and appropriate responses. Building on this, Frances developed the CLEAR-AI project with Professor Joan Condell, who has over 20 years' experience in wearable technology and AI for remote monitoring. They have assembled a multidisciplinary consortium to develop CLEAR-AI.



# UNIVERSITY OF EDINBURGH

## EDINBURGH, SCOTLAND



### LiveFree

LiveFree is a sensor system that monitors everyday routines, providing interventions and suggestions to help guide people living with dementia in their daily activity.

### About LiveFree

LiveFree monitors everyday activities among people living with dementia and provides guidance for completing activities and navigating daily life, with the goal of enhancing people's self-confidence and independence. The core of the solution is the use of unobtrusive mobile sensors integrated into people's daily environments, including via devices such as smartphones and smartwatches. These mobile sensors capture daily behaviours, cognitive patterns, and physiological parameters discreetly and efficiently. Through analysing its data, our system can identify nuanced shifts in routines or cognitive functions, and, rather than merely monitoring activity, it then provides interventions and care suggestions tailored to each user's unique situation.

### About the team

The team at the University of Edinburgh specialise in electronics, engineering, intelligent sensing technologies, and integrated micro and nano systems. We are committed to user-centred design and involving individuals with dementia and their caregivers in the development process, to ensure the technology we develop is deeply aligned with the real needs and aspirations of our users.



# WESTERN SYDNEY UNIVERSITY

## SYDNEY, AUSTRALIA



### MemoryAid

MemoryAid is a tailored, multi-component home assistant that helps with daily activities through reminders and prompts for people living with dementia.

### About MemoryAid

MemoryAid is a technology that supports people living with dementia to engage in valued activities. It provides step-by-step prompts and reminders to help people start activities and keep on track to complete them. This might be activities related to daily living like remembering to eat lunch, or more meaning-based activities like listening to music. The system is designed to feel intuitive and familiar – including by offering flexible delivery across familiar devices – and to adapt to people's changing needs.

### About the team

The MemoryAid project team is based at Western Sydney University's MARCS Institute for Brain, Behaviour and Development. Drawing on three years of collaborative research, MemoryAid is inspired by our team's experience supporting family members living with dementia, as well as our academic expertise in autobiographical memory. The technology builds on years of experience in working with people with dementia as research participants, on projects that aim to understand how cognition changes as we age, and the ways that people draw meaning from memories. This team is partnered with researchers at Deakin University's Applied Artificial Intelligence.



# NEXT STEPS FOR THE LONGITUDE PRIZE ON DEMENTIA

This is an exciting time for the Longitude Prize on Dementia.

In May 2024, the semi-finalists will present detailed submissions to become one of the five Finalists for evaluation by our Judges and Lived Experience Advisory Panel (LEAP) against our criteria – such as high standards of technical excellence, adaptability, and having a credible path to sustainability and scale. We will then announce our five Finalists in September 2024. Each will be awarded £300,000 to develop their solutions further, before the final £1 million prize is awarded in February 2026.



With 55 million people worldwide living with dementia – a number set to surge in coming years – the search for assistive technologies to improve wellbeing for people living with dementia has never been more crucial.

It is also important to remember that dementia affects people from all walks of life: innovators need to plan how solutions can be scaled and made financially accessible to people from a spectrum of backgrounds, and consider different structural barriers to access, such as those posed by gender, culture, or language.

This is where co-creation is crucial: by broadening the spectrum of people involved in co-design, you broaden the number of people likely to benefit, and are more likely to develop innovations that tackle existing health inequalities rather than perpetuate them.

Widening access will be challenging, but we believe that the robust, staged phases of the Longitude Prize on Dementia, and our commitment to co-design and sustainability, are giving innovations the best possible chance of transforming lives in dementia communities around the world.

If you would like to be involved please connect with us through [longitudeprize.dementia@challengeworks.org](mailto:longitudeprize.dementia@challengeworks.org)

Sign-up to our newsletter at [dementia.longitudeprize.org](https://dementia.longitudeprize.org)





## Alzheimer's Society

Leading UK dementia charity Alzheimer's Society is a vital source of support and a powerful force for change for everyone living with dementia. Alzheimer's Society is working tirelessly for people with dementia and their carers to live more fulfilled and less fearful lives, free from stigma and inequality. With an estimated 900,000 people in the UK living with a form of dementia, the charity supports people living with dementia through some of the hardest and most frightening times.



## Innovate UK

Innovate UK drives productivity and economic growth by supporting businesses to develop and realise the potential of new ideas, including those from the UK's world-class research base. Innovate UK connects businesses to the partners, customers and investors that can help them turn these ideas into commercially successful products and services, and business growth.



## Challenge Works

Challenge Works designs and delivers open innovation competitions that uncover solutions to the world's biggest problems, helping to increase social impact, improve outcomes for local and global communities, and catalyse policy change. A social enterprise founded by innovation agency Nesta, we've distributed more than £100 million in seed funding to winning innovators in the last 10 years.



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