

## TECH OFFER

### Cognitive Stimulation Solution to Assist Dementia Patients or Elderly



#### KEY INFORMATION

##### TECHNOLOGY CATEGORY:

**Healthcare** - Telehealth, Medical Software & Imaging

**Infocomm** - Healthcare ICT

**Infocomm** - Interactive Digital Media & Multimedia

TECHNOLOGY READINESS LEVEL (TRL): **TRL6**

COUNTRY: **SINGAPORE**

ID NUMBER: **TO175166**

#### OVERVIEW

With the global population rapidly aging, the prevalence of dementia is becoming an increasing concern. As more elderly individuals suffer from cognitive decline, including memory loss and impaired daily functioning, the need for effective interventions is urgent. Dementia, a condition affecting many worldwide, not only diminishes the quality of life for patients but also places a heavy burden on caregivers and healthcare systems.

In response to these challenges, this solution offers a novel method to help dementia patients maintain cognitive function through engaging therapeutic activities. The solution is a cognitive stimulation system that leverages motion tracking and multi-sensory feedback to help users recall familiar actions from their daily lives. By recreating activities such as ironing or spreading jam, the device taps into procedural memory, allowing users to re-enact tasks they once performed regularly. This process stimulates recollection, helping to evoke personal memories and improve cognitive agility.

The technology owner is interested to work with:

- (1) companies to co-develop/ out-license the technology to help serve more patients and elderly;
- (2) healthcare facilities such as hospitals or nursing homes for validations and trials.

## TECHNOLOGY FEATURES & SPECIFICATIONS

This solution integrates motor skill exercises with multi-sensory feedback to engage dementia patients through familiar activities, tapping into their procedural memory, and potentially slowing cognitive decline.

Key features include:

**Handheld Motion-Tracking Tool:** The device is equipped with a motion-tracking tool that detects and tracks gestures during therapy. Users interact with the tool by performing actions such as ironing or pounding peanuts.

**Accelerometer & Gesture Recognition:** The system uses an accelerometer paired with machine learning algorithms to recognize different hand movements. This ensures real-time tracking and accurate interpretation of the user's gestures, helping simulate everyday activities.

**Visual & Audio Feedback:** As users re-enact familiar activities, the system provides real-time visual and audio feedback on a paired device, such as a tablet. This feedback is designed to stimulate the senses, reinforcing memory recall and promoting greater cognitive engagement.

**Stimulating Procedural Memory:** By focusing on routine tasks, the tool taps into procedural memory, which is responsible for motor skills and habit formation. This stimulation aids in improving recollection and mental agility over time. By offering repeated gestures and personalized feedback, it exercises mental agility.

**Sensorial Interaction:** The combination of gesture-based exercises and multi-sensory stimulation (sight and sound) helps to improve alertness, tranquillity, and motivation during therapy, supporting overall mental and emotional well-being.

This solution provides a non-invasive, engaging therapy option for dementia patients, offering caregivers and healthcare providers a simple yet effective solution for cognitive rehabilitation.

## POTENTIAL APPLICATIONS

This solution has broad applications across various domains, particularly in elder care, dementia therapy, and healthcare:

**Dementia and Elderly Care:** The primary application of this technology is in elderly care facilities, nursing homes, and hospitals that specialize in treating dementia patients. By facilitating autonomous cognitive therapy, it reduces the dependency on one-on-one interactions with therapists, allowing for more frequent and consistent therapy sessions that can be managed by caregivers or nurses.

**Home-Based Care for Seniors:** As the aging population grows, home-based care becomes an important part of healthcare delivery. This tool enables families or home caregivers to provide engaging, therapeutic activities for dementia patients in their own homes, without the need for constant supervision by professional therapists.

This platform can also be customised by therapists or healthcare professionals for various conditions and improve the well-being

of other patients.

## UNIQUE VALUE PROPOSITION

This technology offers a unique value by **fostering collaborative wellness between generations**. It allows family members to actively participate in the therapy process through **family-initiated activities and personalized scenarios**, enhancing emotional connection and engagement with elderly relatives through **gamification**. This fun and interactive sessions are both therapeutic and enjoyable for the patient, bridging the gap between different generations.

Additionally, the platform's **customization potential** for therapists and allied health professionals enables it to be adapted for various conditions, making it a versatile solution for broader rehabilitation needs. By integrating motion-tracking and feedback technologies, the solution makes technology more accessible to the elderly, thereby increasing their comfort and interaction with modern tools.