POSTER ABSTRACT

An Online Dementia Screening and Lifestyle Education System

23rd International Conference on Integrated Care, Antwerp, Flanders, 22-24 May 2023

Béla Pataki[1], Gábor Csukly[2], Péter Hanák[3], Judit Kocsis[6], Tamás Mészáros[1], Pál Salacz[4], György Strausz[1], Ákos Szőke[5]

1: Dept. Measurement and Information Systems, Budapest Univ. of Technology and Economics, Budapest, Hungary
2: Dept. of Psychiatry and Psychotherapy, Semmelweis University, Budapest, Hungary
3: Faculty of Electrical Engineering and Informatics, Budapest University of Technology and Economics, Budapest, Hungary
4: Péterfy Sándor Utcai Hospital-ClinicBudapest, Hungary
5: Multilogic Consulting and Computing Ltd, Budapest, Hungary
6: Budapest Capital 12. District, Hegyvidék Municipality, Welfare Office, Budapest, Hungary

Mental well-being is a major factor contributing to the quality of life. Because of the ageing population, the old-age cognitive deficit is an epidemic-like phenomenon. Cognitive mental impairment is chronic, progressive, long-lasting and incurable, but the deterioration could be slowed, and the quality of life could be maintained for a longer time. Therefore, the assessment of mental well-being and the early detection of deterioration are very important. Current clinically validated tests have limited screening capabilities as they have been developed for professional use in controlled environments, they are expensive and require the presence of medical staff. We aimed to develop a monitoring measurement methodology that is suitable for regular screening at the patient's home and can detect significant deterioration in some important cognitive areas. Our idea was to monitor and analyse the patient's performance through the analysis of computer game performance.

We developed a system and investigated the estimation of mental well-being based on voluntary game playing in the last decade. The focus is on the elderly group showing the early sign of having a higher risk for a pathological decrease in cognition (called Mild Cognitive Impairment). Since 2014 more than 3000 people were registered in the system and nearly 1.5 million game logs were collected. Experience has been collected since the first end-users registered, especially feed-backs were analysed. Several important ideas were gained, and during the past years, we improved this system in the framework of the iCare4NextG project. The three most important ones are: a) strengthening the feedback to the participants by giving some explanation of the suggestions, b) simplifying the user interface and c) reducing the difficulty level of some games. Therefore, a lifestyle education advisory system is to be added, to help interpret the results and to give advice about the improvement of mental, physical, and social lifestyles.

Based on the analysis of the experience and the collected feedback information an online screening application was developed. The screening application consists of 3 games and 2 questionnaires. The participant is asked to perform at least 3 sessions in each game, and fill out the questionnaires at least once. The screening is aimed at the inhabitants of a local municipality. The localized nature and the involvement of the municipality are very important: based on the

performance of the participant, he/she can be referred to the proper local healthcare institute (e.g. local social centre, general practitioner etc.). The system is easily portable to different local environments. This way we turned a primarily reactive healthcare experience into a proactive one in cooperation with local municipal and healthcare institutions.

Currently, a 6-month screening is running in a district of Budapest focusing on 65+ years inhabitants. More than 120 participants registered during October and November 2022, and 534 game logs and 379 questionnaires were collected.