

# ORAL PAPER PRESENTATION 3: PHYSICAL AND MENTAL HEALTH

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## Co-creating a conceptual AI model to promote personalized communication and engagement for people with dementia

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**Purpose** Digital applications to promote communication and engagement for people with dementia (PWD) are gaining increasing attention for their potential to improve interpersonal relationships and quality of life (Hoel et al, 2021). The ubiquitous availability of everyday digital technologies could enable widespread use by usual carers and families and support implementation of person-centered care practices in daily care. However, a major barrier for the adoption and effectiveness of these applications is the significant time and effort required to personalize them, which may not be practically achievable for many carers. In order to address this issue, a conceptual AI framework to automate personalization of a cognitive stimulation application has been co-created with a PWD and her daughter and its feasibility investigated. **Method** A digital application called Aikomi Care that provides personalized stimulation programs to promote communication called was used by the mother and daughter in weekly on-line sessions for approximately 2 years. Each session used a different program manually prepared in collaboration with the daughter by selecting stimulation topics based on her mother's life story and interests and topics which she had enjoyed in previous sessions which were arranged in a sequence form a story that could be easily understood by the mother. In addition, each session was video recorded and the behavioral response were manually annotated and correlated with the stimulation topic giving rise to the response. In this way, a long-term Aikomi care usage data set was generated for AI model development. **Results and Discussion** 2 AI models were created to learn: (i) the characteristics of the stimulation topics that generate good responses by the mother in order to recommend known and new topics that could induce good responses and ii) learn the sequence order patterns of the stimulation topics in a program that result in sessions that give good overall responses. The goal was for these models to work together to provide the *right* content in the *right* sequence to optimize generation of the desired responses by the PWD. The stimulation topic recommendation algorithm uses a Word2vec (Mikolov et al, 2013) approach and the sequence prediction algorithm is based on a Long-Short-Term-Memory model (LSTM, Brownlee, 2017). Both algorithms achieved promising accuracies sufficient for further development and demonstrate how a co-creation approach can be used to develop AI models to learn and adapt stimulation programs according to the preferences and responses of a PWD. The results of the preliminary testing of the model will be presented and its potential to be used as an automated personalized storytelling function to enable intelligent augmentation of communication and engagement will be discussed.

### References

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