

AIDEM 2020

First International Symposium on Artificial Intelligence for Prevention & Intervention in Dementia Care

2nd Krems Dementia Conference
17 November, 2020, Krems, Austria

Topic

Recently, advanced techniques have been explored in neuroimaging as well as in neuropsychological and other data sources to effectively monitor brain health to detect early onset of dementia (Mortamais et al., 2017). Advances in Big Data and AI technologies coupled with increasing speed in data generation has seen exponential growth in research and development of these technologies within the context of dementia prevention. Taking advantage of Big Data technologies, data driven approaches are developed in dementia prevention initiatives and are able to process and manage these data with high throughput (Doubal et al., 2017). Projects aim to generate not only large and high quality, but also phenotypically deep, data sets and are employing state-of-the-art Big Data technologies to process and make these data available through secured analytics environment for hypothesis testing. Current examples of such initiative include the ongoing European Prevention of Alzheimer Disease, EPAD (Solomon et al., 2018) and PREVENT research programme (Ritchie et al., 2012).

The increasing number of older adults with dementia poses a major challenge for public health worldwide. At the same time, the limited number of informal and professional caregivers available to support this rapidly growing population is of mounting concern. Not only does population aging limit the number of potential caregivers, but extant caregivers often lack skills and knowledge to provide a high quality of care. The integration of intelligent assistive technologies (IAT), including devices, robotics and sensors in many forms,

into care of people with dementia, may offer opportunities to support caregivers and enhance healthcare services while improving the quality of life among older adults with mild to severe cognitive deficits. However, many caregivers and their care recipients lack access to these technologies. The reasons for this reduced access are multifactorial, including the digital divide, sociocultural factors, and technological literacy. The AIDEM symposium investigates the emerging use of AI-enabled IAT available to caregivers and older adults with cognitive deficits and explores the challenges in socioeconomic status and technological literacy as well as ethical and legal implications that should be considered in the design and development of IAT for older adults with cognitive deficits. Drawing from existing state-of-the-art, AIDEM will suggest novel technologies and services for the design and adoption aimed at increased and equitable access for this vulnerable population.

AIDEM welcomes contributions on Artificial Intelligence in various segments of dementia research and services, topics of interest include but are not limited to, AI-based monitoring to explore early changes in dementia progression, Biomarker identification for prevention and early detection, Assistive technologies and intervention, Multimodal analytics of interaction, AI and modifiable risk factors, AI and recommender systems in dementia, big data analysis in the context of dementia prevention, monitoring & intervention.

Organisation

Chair

Lucas Paletta

JOANNEUM RESEARCH, Austria

Sandra Schüssler

Medical University of Graz, Austria

Björn Schuller

University of Augsburg, Germany

Bettina Husebø

University of Bergen, Norway

Local Chair

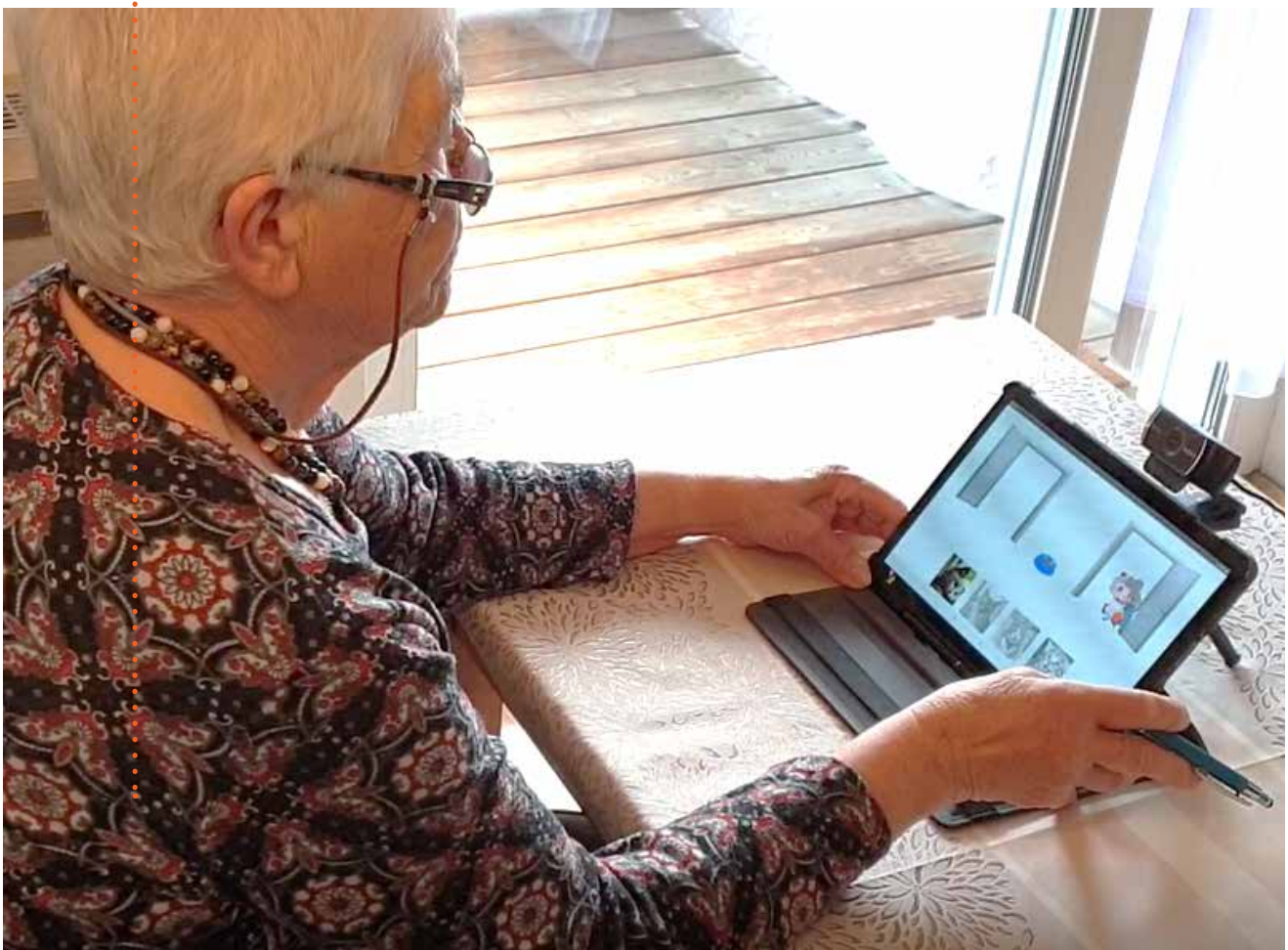
Stefanie Auer

Danube University Krems, Austria

Demo Chair

Maria Fellner

digitAAL Life GmbH, Austria



- 09:30 **Welcome Note**
Lucas Paletta, Sandra Schüssler
- 09:40 **Keynote 1: mHealth for Neuro Degenerative Diseases: Something to Remember**
Björn Schuller
*Imperial College London & University of Augsburg,
Chair of Embedded Intelligence for Health Care and Wellbeing,
CEO of audEERING GmbH*
Chair:
Lucas Paletta
- 10:25 **AI for Dementia Diagnosis: Imaging, Generalizability and Open Science**
Esther Bron
Erasmus MC, Rotterdam, The Netherlands
- 10:50 **Brain Changes Induced by a VR-based Mindfulness Training**
Guilherme Wood
University of Graz, Graz, Austria
- 11:15 **Keynote 2: Assistive technology for home-dwelling people with dementia in times of COVID-19**
Bettina Husebo
*University of Bergen, Department of Global Public Health and Primary Care (IGS),
Centre for Elderly and Nursing Home Medicine (SEFAS)*
Chair:
Sandra Schüssler
- 12:00 **Break**
- 13:00 **Body and Brain Training with Big Data & AI for Seniors with Dementia**
Henrik Hautop Lund
Technical University of Denmark, Lyngby, Denmark
- 13:25 **Integrating Artificial Intelligence in a Web-based Interactive Educational Tool to Support People with Dementia and their Caregivers: An Explorative Feasibility Study**
Connor Buffel, Geert Vander Stichele
Mindbytes, Edmonton, Canada
- 13:50 **Multimodal Activation for Cognitive Performance in Dementia Care: Towards AI-enabled Decision Support**
Lucas Paletta, Silvia Russegger, Maria Fellner
*JOANNEUM RESEARCH, Austria;
digitAAL Life GmbH, Graz, Austria*
- 14:15 **Keynote 3: Dementia, Diversity, and Disparities: A Perspective from the United States**
Jennifer Schlesinger
Associate Vice President, Healthcare Services and Community Education, Alzheimer's Los Angeles
Chair:
Lucas Paletta
- 15:00 **Demo Session, Introduction**
Lucas Paletta, Maria Fellner
- 15:05 **Demo #1: Playful Multimodal Activation with the digitAAL Life App.**
Maria Fellner
digitAAL Life GmbH, Austria
- Demo #2: SERES - Web-based Interactive Educational Tool for Family Caregivers of People with Dementia.**
Connor Buffel
Mindbytes, Canada
- Demo #3: MIRA – A Gaze-based Serious Game for the Estimation of Alzheimer's Mental State.**
Lucas Paletta
JOANNEUM RESEARCH, Austria
- Demo #4: The Social Robot AMIGO: Coach and Companion for Persons with Dementia.**
Lucas Paletta
JOANNEUM RESEARCH, Austria
- Demo #5: Augmented reality assistance technologies in the context of care services for people with dementia in the home environment.**
Lucas Paletta
JOANNEUM RESEARCH, Austria
- 16:00 **Goodbye note & end of Symposium**
Lucas Paletta
JOANNEUM RESEARCH, Austria

mHealth for Neuro Degenerative Diseases: Something to Remember



Björn Schuller

*Imperial College London &
University of Augsburg*

Contact

web: https://en.wikipedia.org/wiki/Bj%C3%B6rn_Schuller

Bio: Björn W. Schuller received his diploma, doctoral degree, habilitation, and Adjunct Teaching Professor in Machine Intelligence and Signal Processing all in EE/IT from TUM in Munich/Germany. He is Full Professor of Artificial Intelligence and the Head of GLAM at Imperial College London/UK, Full Professor and Chair of Embedded Intelligence for Health Care and Well-being at the University of Augsburg/Germany, co-founding CEO and current CSO of audEERING – an Audio Intelligence company based near Munich and in Berlin/Germany, and permanent Visiting Professor at HIT/China amongst other Professorships and Affiliations. Previous stays include Full Professor at the University of Passau/Germany, and Researcher at Joanneum Research in Graz/Austria, and the CNRS-LIMSI in Orsay/

France. He is a Fellow of the IEEE and Golden Core Awardee of the IEEE Computer Society, Fellow of the ISCA, President-Emeritus of the AAAC, and Senior Member of the ACM. He (co-) authored 900+ publications (30k+ citations, h-index=83), is Field Chief Editor of Frontiers in Digital Health and was Editor in Chief of the IEEE Transactions on Affective Computing amongst manifold further commitments and service to the community. His 30+ awards include having been honoured as one of 40 extraordinary scientists under the age of 40 by the WEF in 2015. He served as Coordinator/PI in 15+ European Projects, is an ERC Starting Grantee, and consultant of companies such as Barclays, GN, Huawei, or Samsung.

Assistive technology for home-dwelling people with dementia in times of COVID-19

Abstract: The COVID-19 restrictions affect daily living in Norway, including home-dwelling people with dementia, and researchers conducting clinical trials in dementia. My talk will 1) describe the development of a pandemic cohort (PAN.DEM) incorporated in the LIVE@Home.Path, an ongoing clinical intervention trial on resource utilization including home-dwelling people with dementia and their caregivers (N=438 dyads) and 2) describe pre-pandemic use of assistive technology and explore to which extent COVID-19 restrictions increase caregivers interest in innovation in the PAN.DEM cohort (N=126). Our main finding is that assistive technology is in regular use among 75% pre-pandemic, the vast majority utilized traditio-

nal stove guards and safety alarms, only few operate sensor technology, including GPS, fall detectors or communication aids. In response to COVID-19, 17% show increased interest in technology; the ability to operate a telephone and higher cognitive functioning are associated with increased interest. We conclude that wearable and sensing technology is not yet established among people with dementia in Norway, and few caregivers consider increased interest under the restrictions. Complying with the process evaluation of complex interventions has provided valuable information on how the unexpected intervention in terms of pandemic restrictions affects everyday life of home-dwelling people with dementia and their caregivers.



Bettina Husebø

*University of Bergen (UiB)
Department of Global Public Health and
Primary Care (IGS), Centre for Elderly
and Nursing Home Medicine (SEFAS)*

Bio: Bettina S. Husebø is professor at the University of Bergen (UoB), Department of Public health and Primary Care (IGS), leader for innovation at IGS, and head of the Centre for Elderly and Nursing Home Medicine (SEFAS). Additionally, she has an employment at the Municipality of Bergen. Husebø is also related to the centre of excellence Neuro-SysMed by the innovation part of the LIVE@Home.Path trial for home-dwelling people with dementia, and member of the group for Artificial Intelligence (AI) at UoB. These positions are of key importance, since the area of elderly and dementia care experiences a paradigm change against innovation, technology and AI. Her clinical research is at the level between technology and innovation, epidemiologic, psychometric properties, and complex intervention studies (RCTs). She is part of three COST-Actions: a) TD1005 Pain in People with Dementia (PWD); b) CA19132 Advance Best practices & technoLogY on medication adherence" (ENABLE); c) CA19136 Health and Wellbeing in an Age-friendly

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Digital World (NET4AGE-FRIENDLY). Husebø developed, tested, and used the MOBID-2 Pain Scale, an international recognized pain assessment tool for PWD. Ground-breaking results by the Pain-BPSD Trial demonstrated that individual treatment of pain significantly improved dementia related neuropsychiatric symptoms like agitation and depression published in BMJ and Nature Neurol. >80 relevant publications registered in Google Scholar. Google Scholar registration: H-index 28, 3293 citations; i-10index: 58; Media release/podcast; TV/radio about 70 contributions in 2019 e.g., The Guardian; 513 times mentions on Twitter, 12 Blog mentions. Several articles were referred to the Policy documents, such as "Prospective multicenter cross-sectional audit among older Australians accessing health and residential care services: Protocol for a national advance care directive prevalence study"; <https://apo.org.au/node/267811>, and are cited by Association of the Scientific Medical Societies in Germany.

Dementia, Diversity, and Disparities: A Perspective from the United States

Abstract: Ethnically, culturally, and linguistically diverse communities have different views of dementia as well as different barriers to care and information. This can impact disease identification, diagnosis, and post-diagnostic care and support. Low literacy and low health literacy leaves many individuals unable to comprehend and act on health-related information. When

individuals are affected by dementia and family caregivers are under stress, plain language materials can help them absorb information more easily, improving their ability to manage challenging caregiver situations and dementia-related behavioral symptoms.



Jennifer Schlesinger

*Associate Vice President,
Healthcare Services and Community
Education Alzheimer's Los Angeles*

Contact

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Bio: Jennifer Schlesinger, MPH, CHES, is the Associate Vice President of Healthcare Services and Community Education at Alzheimer's Los Angeles. She oversees technical assistance to healthcare systems to improve their dementia capability, professional training, outreach to healthcare professionals, and community education programs. Ms. Schlesinger oversees multiple nationally-recognized and award-winning projects including the Dementia Cal MediConnect Project, a project

transforming healthcare in the State of California for low-income older adults with dementia, and ALZ Direct Connect®, a program which connects families dealing with dementia to Alzheimer's Los Angeles. Ms. Schlesinger has spoken locally, nationally, and internationally on diversity and dementia; plain language tools for dementia care; and improving care management to meet the needs of families affected by dementia.