AGEWEII

EPIC Conference 2020

8 sessions. 8 Challenge Areas.

**Tuesdays & Thursdays
June 2020**

#AWepic2020

CONFERENCE PROGRAM

Welcome Message from AGE-WELL NCE

Since 2015, AGE-WELL's Highly Qualified Personnel (HQP) have been making an impact in industry, government, academia, and also as entrepreneurs forging a new path. The research presentations you will hear and the Twitter presentations you will read, during the EPIC Conference constitute the work of some of the brightest and best emerging researchers in the country.

You will hear and read presentations that demonstrate the depth and breadth of our network's research program – and the research excellence of our HQP. Presenters will discuss everything from smart home technologies and robotics to ethical co-creation methods and the efficacy of serious games.

Presenters will be undergraduate students, graduate students, postdoctoral fellows, early career professionals, and research staff from institutions all over Canada. Though geographically scattered and from diverse disciplines, they are all united in their desire to help older Canadians maintain their independence, health, and quality of life.

Engaging with our older adult and caregiver stakeholders has been fundamental to our network and to HQP training from the very beginning. Along with our HQP, we are excited to hear from the members of our Older Adult and Caregiver Advisory Committee who have kindly agreed to share their experience and expertise with us as designated commentators for each oral presentation panel.

Our HQP are the future of Canada's AgeTech sector. We are immensely proud of all they have achieved to date and we look forward to hearing from them in the EPIC Conference 2020.

Andrew Sixsmith,
AGE-WELL Scientific
Director

Alex Mihailidis,
AGE-WELL Scientific
Director

Welcome Message from HQP-AC

On behalf of the AGE-WELL HQP-Advisory Committee (HQP-AC), we are honoured to welcome you to the EPIC Conference 2020. This virtual conference aims to bring the Network's HQP, investigators, and stakeholders together, and to provide a virtual forum for HQP to discuss their work and exchange ideas around AGE-WELL's 8 Challenge Areas. We look forward to engaging with you in this new and exciting forum over the next 4 weeks!

SHABNAM HAGHZARE

President, HQPAC

JESSE MASTRANGELO

Vice President, HQPAC

NOELANNAH NEUBAUER

Vice President, HQPAC

Thank you to the HQP-AC members serving as EPIC Conference Steering Committee:

Louise Castillo, West-Central Regional Representative

Erica Dove, Ontario Regional Representative

Joyla Furlano, Ontario Regional Representative

Shabnam Haghzare, President

Vicki Komisar, Past President

Jesse Mastrangelo, Vice President

Noelannah Neubauer, Vice President

Emma Nielsen, Pacific Regional Representative

Arezoo Talebzadeh, Ontario Regional Representative

Special thanks to Lawrence Ly, MDes, for his work in creating the banner images for EPIC 2020.

How to Participate

The EPIC Conference (2020) is an opportunity for AGE-WELL HQP to share their research, highlight their potential impact, and connect with colleagues.

It will comprise of 8 virtual sessions, each dedicated to one of the identified challenge areas. Each session will involve 2 streams of presentations – a traditional oral presentation and a Twitter conference presentation. Additional sessions will include interactive workshops to build skills in design, pivoting you research, and finding your career path.

All are welcome to attend.

Live Twitter Presentations:

In this conference stream, HQP will be challenged to encapsulate their presentations into 5 pre-scheduled tweets at 12:00, 12:20, 12:40 PM ET. Twitter presenters will be online for an interactive Q&A Twitter session.

Follow the Twitter presenter's handle and the hashtag #AWepic2020 to participate.

Live Crowdcast Presentations:

These sessions will be hosted on Crowdcast and comprise of an introduction to the challenge area presented by the session chair, 3 oral presentations, and a follow up comment by a stakeholder that places these presentations into the larger discourse and addresses potential research impact.

Register for all challenge area sessions on AGE-WELL's Crowdcast page here. Once you are registered you may use the chat and post questions prior to the session. Use the 'Ask a Question' section to get your questions up-voted.

Check out Crowdcast's reference guide here.

Live Workshops:

Every Tuesday in June, additional sessions will include interactive design workshops, a roundtable on pivoting your research during COVID, and a hybrid career presentation and workshop. Register for these sessions using the individual links on the workshop pages to follow.

REGISTER HERE

Chair: Frank Knoefel, Bruyère Research Institute

Commenter: Sherry Baker, Vice Chair, Older Adult and Caregiver Advisory Committee

Oral Presentations:

> **Live More SmarTech: Autonomy and independence through collaboration and technology**
> Naomi Zingman Daniels, University of Toronto

> **Smart home technology to support persons living with dementia who experience night-time wandering and their caregivers**
> Laura Ault, Bruyère Research Institute

> **Seniors' perceptions of the robot**
> Zahya Idrissi, University of Sherbrooke

Twitter Presentations **#AWepic2020**:

12:00 PM ET
Optimizing interRAI tool in care planning processes of long-term residents
Steve Iduye, University of Saskatchewan, @IduyeSteve

12:20 PM ET
Improving the usability of commercial smart home systems to support aging in place for seniors with dementias
Lorans Alabood, University of Calgary , @LoransAlabood

12:40 PM ET
Data analytics to predict the survivability of a lost person with dementia using R
Dalia Hanna, Ryerson University, @daliahanna

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Many of us are in the midst of collecting, or poised to collect, data for research plans that have been months, if not years, in the making. These plans have been thoroughly vetted and approved by our supervisors, ethics boards, and funding bodies. Then came COVID-19. And everything screeched to a halt.

Join us for an interactive discussion of the research challenges faced by those conducting non-pandemic research during the time of COVID-19. Can you pause or pivot? Or will your research plans perish on the rocks of the global pandemic? We will discuss our challenges and the brainstorm options to help you stay on course for that critical paper or thesis.

Speakers:

Cosmin Munteanu is an Assistant Professor at the Institute for Communication, Culture, Information, and Technology at University of Toronto Mississauga, and Co-Director of the Technologies for Ageing Gracefully lab at University of Toronto. His area of expertise is at the intersection of Human-Computer Interaction, Automatic Speech Recognition, Natural User Interfaces, Mobile Computing, Ethics, and Assistive Technologies, having dedicated the past two decades to investigating the human factors of interacting with information-rich media and intelligent technologies. His main research goals are to facilitate natural, meaningful, and safe interactions between people and digital media and devices.

Jennifer Campos is a Canada Research Chair (Tier 2) in Multisensory Integration and Aging. Jenny is the Associate Director – Academic, Senior Scientist, Chief Scientist of the Challenging Environments Assessment Laboratory and an Associate Professor in the Department of Psychology (University of Toronto). Jenny's research focuses on enhancing safe mobility during walking and driving under realistic and challenging conditions. This includes understanding how age-related sensory impairments (e.g., vision, hearing) and cognitive impairments can increase the risk of falls and vehicle collisions (e.g., in healthy older adults, those with hearing loss, dementia).

Josephine McMurray is an Associate Professor at the Lazaridis School of Business & Economics, Wilfrid Laurier University, in the Business Technology Management Program & is a member of the Health Studies Faculty. Her research is focussed on issues at the intersection of healthcare, technology & management. She is a member of the AGEWELL NCE, and co-leads the DRiVE project exploring what regions have to do to become "Silicon Valley"-like spaces, particularly as it related to encouraging innovation and technological solutions to support healthy aging. She is co-PI on the AW Cog@Work project exploring how to enable affordable, sustainable and inclusive workspaces for employees with mild cognitive impairment and dementia.

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Chair: Paul Stolee, University of Waterloo

Commenter: Chaitali Desai, Ontario Region Representative, Older Adult and Caregiver Advisory Committee

Oral Presentations:

> **Co-creating an Indigenous evaluation framework for I'M T'CARE and IDOH2 health studies: A two-eyed seeing approach**
> Diana Gresku, University of British Columbia

> **Evaluation of an app-based community platform in reducing pain in long-term care facilities**
> Vivian Tran, University of Regina

> **Role of technology for chronic pain management by older adults**
> Thusanthy Gunaseelan & Abhinayaa Jeyapragash, University of Toronto

Twitter Presentations **#AWepic2020**:

12:00 PM ET
Using process modelling to establish collaborative partnerships within LivMoreSMARTech
Harsukh Benipal, Dalhousie University, @LM_SMARTech

12:20 PM ET
Longitudinal validation of two computerized cognitive technologies for predicting the transition of mild cognitive impairment to dementia
Iman Sabra, Bruyère Research Institute, @ImanSabra2

12:40 PM ET
The most common validation techniques of User Centred Needs Elicitation Methods (UCNEMs)
Tanzina Mahbub, Ryerson University, @MahbubTanzina

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Chair: Julie Robillard, University of British Columbia

Commenter: Phil Davis, Co-Chair & Ontario Region Representative, Older Adult and Caregiver Advisory Committee

Oral Presentations:

What is self-sovereign identity, and is it of interest among persons with dementia and their care partners?
Noelannah Neubauer, University of Waterloo

Characterizing the injury pyramid from video capture of real-life falls by older adults in long-term care: Differences between body parts in the frequency of impact and injury
Vicki Komisar, Simon Fraser University

Socially mobile assistive robots for telecare and daily activities of older adults
Adina Panchea, University of Sherbrooke

Twitter Presentations **#AWepic2020**:

12:20 PM ET
Wandering behaviour from the perspectives of older adults living with mild to moderate dementia in long term care
Adebusola Adekoya, University of Waterloo, @aadekoya_busola

12:40 PM ET
Canadian Silver Alert initiatives – a scoping review
Lauren McLennan, University of Alberta, @LaurenKMcLennan

Join us for a guided workshop on using cooperative methods to incorporate stakeholder expertise into the design process. This is an introductory workshop and no prior design or prototyping experience is required. Attendees will be introduced to existing technologies and interventions and will explore the problem space it addresses. An interactive workshop, the attendees will then be prompted to find related technological interventions and delve deeper into its relationship with the problem space, stakeholders, and other interventions. Using this as a starting point, attendees will then breakout into smaller groups to design, and present, alternative interventions.

Learning Outcomes:
1. Attendees will be made aware of, and discuss, the key challenges associated with engaging with stakeholders
2. Attendees will learn various methods for incorporating stakeholder expertise into the design process
3. Attendees will be introduce to cooperative design as a method to increase the impact of stakeholder expertise when designing interventions

Participants are asked to come prepared with several sheets of paper and a pen/pencil.

Speakers:

Daniel Southwick is a Postdoctoral researcher at AGE-WELL / University Health Network. He received his PhD from the Faculty of Information at the University of Toronto. Daniel's work combines material engagement with cultural, historical, and ethnographic analysis in order to better understand the processes through which certain types of labour and expertise are delegated to digital systems.

Gabby Resch is a postdoctoral researcher at Ryerson University's Synaesthetic Media Lab. He conducted his doctoral research on novel approaches to information visualization at the University of Toronto. At present, he leads a project on the use of tangible and embodied interaction methods for augmenting spatial skills. His various research projects examine tangible, embodied, and multisensory infovis; digital fabrication (3D printing, in particular); and museum-based interaction design.

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Chair: Andrea Iaboni, Toronto Rehab Institute

Commenter: Roger Marple, Member at Large, Older Adult and Caregiver Advisory
Committee

Oral Presentations:

Detection of agitation in people living with dementia using multi-modal sensors
Sofija Spasojevic, Toronto Rehab Institute

**Personalized soundscape effects on persons with dementia; a pilot randomized
clinical trial**
Arezoo Talebzadeh, OCAD University

**Sensor-based assessment of night sleep patterns of people with dementia to
quantify motor agitations**
Reza Faieghi, Toronto Rehab Institute

Video Presentation: **Implementation and evaluation of a brief informational knowledge
mobilization video about pain in dementia** Louise Castillo & Thomas Hadjistavropoulos,
University of Regina

Twitter Presentations **#AWepic2020**:

12:00 PM ET
**The mental health priorities of LGBTQ+ older adults in North America: An exploration of
understandings generated by recent studies**
Indira Riadi, Simon Fraser University, @indirariadi

12:20 PM ET
Detecting cognitive and mental health indicators from voice
Mashrura Tasnim, University of Alberta, @MashruraTasnim

12:40 PM ET
Pain in dementia: An eye tracking investigation
Rhonda Stopyn, University of Regina, @RStopyn

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Chair: Jennifer Campos, Toronto Rehab Institute

Commenter: Doug Gayton, Pacific Region Representative, Older Adult and Caregiver
                    Advisory Committee

Oral Presentations:

Limits of predictability in outdoor mobility of older adults with dementia
Sayeh Bayat, Toronto Rehab Institute/University of Toronto

**Relationships between cognitive functioning and power wheelchair driving
among adults with mild-moderate cognitive impairments**
Alice Pellichero, Laval University

**Using kinect bowling to explore balance and cognitive function among people
with dementia or mild cognitive impairment**
Erica Dove, University of Toronto

Twitter Presentations **#AWepic2020**:

12:00 PM ET
**Perceptions of people living with dementia and their caregivers on automated vehicles:
An online video interview study**
Shabnam Haghzare, University of Toronto/Toronto Rehab Institute, @MIVELab

12:20 PM ET
A smart insole to detect slips in human walking
Ramtin Mojtahedi, University of Toronto, @MojtahediRamtin

[POSTER]

[REGISTER HERE]

More to Come!

EPIC Conference Workshop:

June 16, 2020 @ 3:00 PM to 4:00 PM ET

Communicating Your Research in the 21st Century

Speakers: TBA

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Chair: Thomas Hadjistavropoulos, University of Regina

Commenter: Olive Bryanton, Atlantic Region Representative, Older Adult and Caregiver
Advisory Committee

Oral Presentations:

Can dance reduce falls-risk in older adults?
Patricia Hewston, Hamilton Health Sciences

If we build it, will they use it
Mary Hynes, University of Toronto

Designing assistive interactive technologies to support aging and well-being
John Munoz, University of Waterloo

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Chair: Cosmin Munteanu, University of Toronto

Commenter: Ron Beleno, Co-Chair, Older Adult and Caregiver Advisory Committee

Oral Presentations:

Explore how the information and referral service which has largely been placed-based at community senior service centre can be operated remotely using technology
Karen Lok Yi Wong, University of British Columbia

Perceived value of smartphone apps during COVID-19 pandemic
Julie Faieta, Laval University

Let's connect: Analyzing changes in social connections and attitudes of dementia staff and volunteers
Maria Acenas, University of Toronto/Toronto Rehab Institute

Twitter Presentations **#AWepic2020**:

12:00 PM ET
Imagining possibilities in policy co-creation with older adults
Nicole Dalmer, McMaster University, @ndalmer

12:20 PM ET
Alberta Rating Index for Apps (ARIA): A reliability study
Peyman Azad-Khaneghah, University of Alberta, @HQPAzad

12:40 PM ET
Usability of information and communication technologies for dementia: A systematic literature review
Aidan Comeau, University of Alberta, @comeau_aidan

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How can you get a job you actually want to do? Participate in this interactive workshop to learn how to determine the kind of work that suits you so you can better target your career exploration and job search activities. Topics include identifying your values and strengths, understanding your experience and skills, and coming up with a strategy for moving forward that makes the most sense for you and your goals.

Speaker:

Jennifer Polk, PhD, is an entrepreneur, career coach, and expert on PhD careers. She launched From PhD to Life, a career coaching and speaking business, in 2013; and co-founded Beyond the Professoriate in 2014. Jen writes on issues related to graduate education and career outcomes for doctoral-degree holders. She is also a guest speaker on university campuses and at academic and professional conferences throughout North America and beyond. Her *University Affairs* blog is a three-time gold winner from the Canadian Online Publishing Awards. Jen earned her PhD in history from the University of Toronto. Follow her on Twitter at @FromPhDtoLife.

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Chair: Jennifer Boger, University of Waterloo

Commenter: G Burn Evans, West-Central Region Representative, Older Adult and
Caregiver Advisory Committee

Oral Presentations:

**Key barriers faced by older adults staying in the workforce or returning to the
workforce once they have exited**
Natasha Gallant, University of Regina

**An interpretive review of the Canadian policy environment governing
employers' responses and duty to accommodate workers with early onset
dementia/mild cognitive impairment**
Kristina Kokorelias, Toronto Rehab Institute/University of Toronto

**Technology solutions and employers' response to workers diagnosed with mild
cognitive impairment or early dementia: A systematic literature review**
Logan Reis, Wilfrid Laurier University

ABSTRACTS (alphabetical)

Let's connect: Analyzing changes in social connections and attitudes of dementia staff and volunteers
Maria Acenas, University of Toronto/Toronto Rehab Institute

Interest is growing in using touchscreen tablets for people with dementia but the benefits of people with dementia and formal caregivers using tablets together are unknown. This study aims to gain an understanding of how tablet games affect the interactions and attitudes of staff and volunteer towards people with dementia. Quantitative observational data were collected at four adult day programs and long-term care facilities for people with dementia and other age-related challenges (e.g. mobility impairments). Staff and volunteers (n=10) were video-recorded playing tablet games with the same client (n=10) at the initial and final session of an eight-session tablet program. Video recordings were coded with Observer XT behavioural analysis software. The coding scheme included five different behaviour types: eye contact, instructions provided during gameplay, body language, socialization between clients and staff/volunteers, and facial expressions. The count and percentage data between each behaviour type was analyzed to look for differences in staff and volunteer behaviour between the initial and final sessions. The findings highlight three main changes: (a) reduced prompts during gameplay, (b) increased dialogue during gameplay and (c) reduced supports provided. Collectively, these changes show that tablet games can be used as tools to increase social interactions. Furthermore, the change in attitudes was measured by the decrease in prompts and supports, indicating that over time staff and volunteers recognized the capability of the clients to play independently. Tablet games also provided a new form of social activity between clients and staff/volunteers through shared experiences and enjoyment of the games.

Wandering behaviour from the perspectives of older adults living with mild to moderate dementia in long term care *Adebusola Adekoya, University of Waterloo*

Wandering is often described as "aimless walking" and "disruptive". Kitwood's Enriched Model of Dementia challenges us to focus on the person, rather than the behaviours. Much of what we know about wandering behaviour comes from research conducted with long-term term care (LTC) home staff. Little is known about the perspectives of older adults who wander. The aim of this study was to explore the perspectives of older adults living with mild to moderate dementia in LTC homes and their family members on wandering behaviour. This study used interpretive descriptive methodology to describe the perspectives of older adults living with mild to moderate dementia in long-term care homes and their family members. Walking interviews using simple questions were conducted as the author walked with eight residents living with mild to moderate dementia in LTC homes. Supplemental information on past and current history of participants' walking was obtained from their family members. Interviews were audio recorded and transcribed verbatim. Key themes were: walking as enjoyable and good, walking for health benefits, walking as purposeful, walking as a lifelong habit, walking as a form of socialization, walking as a coping strategy, and walking to find and be with animals. These results suggest a reconceptualization of wandering from aimless walking and a disruption to a purposeful and beneficial activity. The findings will form the groundwork for future studies on promoting safe walking for older adults living with dementia.

Improving the usability of commercial smart home systems to support aging in place for seniors with dementias *Lorans Alabood, University of Calgary*

With the growing number of senior citizens, using smart homes to support aging in place for seniors with dementia appears to be an ideal solution. The social distancing due to Covid-19 sheds light on the importance of having smart home solutions that are open-ended and managed remotely. However, using commercial smart home systems is not common among the aging populations due to some limitations. These include the inability to complete complex tasks, the absence of communication between products from different manufacturers, and user interaction methods. In this study, we present a novel model of an open-ended smart home system that utilizes commercially available devices. We use Hasslo, an operating system that is capable of connecting different smart home devices, to create customized smart home systems for seniors' homecare. The user-system interaction method is essential in this context, therefore we developed different user interfaces for multiple users, formal and informal caregivers, and seniors. Formal caregivers have an online dashboard where they can monitor activities of daily living if needed. Informal caregivers can use the web and mobile applications respectively to create customized notifications and complex home automation functions. Meanwhile, senior users benefit from receiving notifications and memory prompts via their Apple watch application and Alexa device. In addition, we are currently developing a HoloLens AR application for senior users. Eventually, we plan to test the usability of our AR application to find out how different methods of interaction can affect the overall usability of the suggested smart home system.

Smart home technology to support persons living with dementia who experience night-time wandering and their caregivers *Laura Ault, Bruyère Research Institute*

The majority of persons living with dementia (PLWD) remain in the community, placing a significant care burden on their family. In more advanced stages, PLWD often experience night-time wandering leading to unintentional home exits. The worry of this happening can lead to decreased caregiver sleep, increased fatigue, burnout and early institutionalization. Available home monitoring technology can be repurposed to help "cue" the PLWD to the bathroom and back to bed, all the while improving caregiver sleep. This 12 week study included 8 homes in Ottawa with 6 male and 2 female PLWD and their caregivers. The off-the-shelf technology used in this system included Samsung Smartthings hub, motion and door sensors and smart outlets, a pressure sensitive mat and a Sonos speaker. The system was custom programmed with a cloud-based interface to create a personalized system for each participant household. During the 1st week, there were 119 bed exits, 80 of these exits were directly to the bathroom. However, during the 6th week, nightly rises decreased to 102, with first destination bathroom occurring in 98 of these trips. Caregivers reported that they slept better with the system, and most would have wanted to keep the system after the end of the trial. We will also talk about adaptations for a retirement home setting and how this technology could also be adapted for use in a pandemic setting.

Alberta Rating Index for Apps (ARIA): A reliability study *Peyman Azad-Khaneghah, University of Alberta*

Introduction: There are more than 300,000 mobile health apps available to the public. Many of these apps have low quality, may not be useful or may be unsafe for end-users. It is a challenge for patients, family caregivers, and healthcare providers to identify apps with acceptable quality. Existing app quality rating scales are either too complex or do not include all relevant criteria. We have created a rating index that can

be used by patients, family caregivers, and health care professionals to identify apps that demonstrate acceptable or high quality based on a set of validated criteria. **Objectives:** To determine the inter-rater reliability of the new Alberta Rating Index for Apps (ARIA), with a focus on mental health apps. **Methods:** Four occupational therapists, four older adults, and four adults living with mental health conditions rated the quality of 11 mental health apps using ARIA. A one facet generalizability study (i.e., Apps x Raters) was completed for each group. A generalizability coefficient (G) was calculated as a measure of inter-rater reliability. **Results:** The G-coefficients calculated based on the total index scores were 0.948 for occupational therapists, 0.829 for older adults, and 0.876 for adults living with mental health conditions. The results indicated the ARIA has high inter-rater reliability. Ratings provided by the occupational therapist group were more reliable. **Conclusion:** The Alberta Rating Index for Apps has high inter-rater reliability when used by a small group of occupational therapists, older adults, and adults living with mental health conditions.

Limits of predictability in outdoor mobility of older adults with dementia *Sayeh Bayat, Toronto Rehab Institute/University of Toronto*

Background People with dementia (PwD) often become disoriented, which increases their risk of getting lost. As a result, they may avoid outdoor mobility, which in turn leads to social isolation. Declines in outdoor mobility result in a worsening of the quality of life for PwD. Therefore, enabling safe outdoor mobility is important for dementia research. Information and communication technology solutions including wearable devices with global positioning systems (GPS) show great potential for supporting outdoor mobility of PwD. **Objective** The objective is to determine the feasibility of using artificial intelligence in the context of GPS technology to develop algorithms that predict future destinations of PwD by learning from their mobility habits. **Methods** Seven older adults with dementia and eight healthy older adults completed four weeks of GPS data collection. Each participant's GPS trajectories were segmented into stops and moves. We assigned an entropy measure to each participant's mobility patterns capturing the frequency of visitations, the order in which the destinations were visited, and the time spent at each destination. Finally, using this entropy measure, we computed the probability that an appropriate algorithm can predict correctly the participant's future destinations. **Results** We determined a potential 91% average predictability in participants' mobility patterns. The distribution of predictability was highly bounded, indicating that a 4-week record of the participants' locations includes a high level of potential predictability. Furthermore, the two groups displayed similar levels of predictability. **Conclusion** With appropriate algorithms, the predictability hidden in mobility patterns of PwD can turn into actual predictions.

Using process modelling to establish collaborative partnerships within LivMoreSMARTech *Harsukh Benipal, Dalhousie University*

Introduction Interdisciplinary research is critical to address the needs of clients, families, and healthcare teams in the continuing care setting. The involvement of community, academic and commercial partners can advance solutions to providing personcentred care which leverages technology to foster autonomy and independence for those who are aging with disability and/or aging into disability. **Objective** To clarify interdisciplinary collaborations, data processes and boundaries of the LivMoreSMARTech project taking place in a real-world, dynamic continuing care environment using data flow diagrams. **Method** Data flow diagrams are widely used in structured software analysis and design to map out the flow of information of any process or system. We used a prototype approach to create data flow diagrams at the context (macro)

level and subsequently decomposed each process. A series of online discussions was used to collect information about each partner's services, data requirements, data flows, and contributions to the project. **Results** Partner collaborations were mapped at the context level with multiple breakdowns of each data process. All relevant parties agreed to each level of data flow diagram prior to decomposition of additional processes. Each partner organizations' data flow inputs and outputs will be validated through focus group interviews. **Conclusion** The use of data flow diagrams successfully demonstrates the interdisciplinary collaborations within our project including systems, processes, and interactions at both macro and micro levels. This technique enables greater understanding of each partner's expertise to create sustainable and scalable technology solutions to increase client autonomy and independence within the continuing care setting.

Implementation and evaluation of a brief informational knowledge mobilization video about pain in dementia *Louise Castillo & Thomas Hadjistavropoulos, University of Regina*

Pain is highly prevalent in older adults with dementia. However, pain is routinely underassessed and undertreated in this population. Although a wealth of research has been produced in this area, transforming evidence into impactful action in practice often presents numerous barriers. Recent knowledge translation (KT) efforts have explored diversifying the dissemination of evidence-based information through educational videos and engaging content to expand the access to health information and mobilize available solutions; however, there is a lack of research examining KT initiatives for older adults. As part of the #SeePainMoreClearly KT initiative, we produced a short 2-minute YouTube video outlining the problem of pain in dementia as well as potential solutions. We evaluated the video using web metrics and various questionnaires. Over a 5-month period, the video was viewed 50,880 times, and garnered over 150,578 impressions on YouTube. In addition, the video has been viewed by 48,861 users (64% male, 36% female) and 34% were over 55 years old. Evaluation questionnaire ratings demonstrated evidence of improved understanding about the problem of pain in dementia and the current solutions among health professionals, caregivers, and members of the public. Textual data also showed strong acceptance and willingness to implement the solutions from the informational video. Findings from this investigation have implications for closing the knowledge to practice gap in dementia care through faster mobilization of scientific findings.

Usability of information and communication technologies for dementia: A systematic literature review *Aidan Comeau, University of Alberta*

Objectives: To identify instruments, approaches, and assessment tools used to examine the usability, adoption, and acceptance of mobile information and communication technologies (ICT) for dementia. **Methods:** In this study we followed the PRISMA methodology for systematic literature reviews. We searched for studies in Medline, EMBASE, CINAHL, Web of Science, and Scopus. We included studies that: measured usability of ICT for dementia; were published in English, French, German, Italian, or Spanish; reported measures or questionnaires; targeted adults 50 years or older, with cognitive impairment, and their caregivers; and addressed ICTs with technology readiness levels 5 or higher. Two pairs of reviewers independently extracted information from studies including: theoretical framework, population, type of ICT used, questionnaire name, question items and constructs, number of questions, scoring method, and psychometrics. Data from the studies were analyzed descriptively. **Results:** The

literature search identified 4430 studies of which 74 were included for analysis. Assessment instruments utilized had an average of 16 items with a 5 point scale. A Likert style scale was most common (n=35). Novel assessment tools were used in 36 studies, however, specific items and methods used to measure usability for people living with dementia and their care partners were seldom reported. The most common established tool reported was the System Usability Scale. **Conclusion:** There currently is a lack of best practices for evaluating the usability of technology for people with dementia. The creation of purposeful assessment tools would guide the development and implementation of ICT for this target population.

Imagining possibilities in policy co-creation with older adults *Nicole Dalmer, McMaster University*

Co-design or participatory design, is about the meaningful involvement of end users in the design process. By taking account of a wider range of perspectives and experiences, more inclusive and more innovative solutions, products, and services can be designed that are better suited to users' needs. This session contemplates whether established co-design principles or activities with older adults could be translated and used in policy co-creation with older technology users as a means to create policies that meaningfully reflect how older adults use and experience technologies in their everyday lives. I will provide an overview to a state-of-the-art review (a type of literature review that provides a current state of knowledge) that identified already-existing co-design principles and activities that have been utilized with older adults. Findings from this review will be mapped to a series of promising activities or methods that can be considered in policy co-creation with older adults.

Using kinect bowling to explore balance and cognitive function among people with dementia or mild cognitive impairment *Erica Dove, University of Toronto*

Exercise can impact balance and cognitive function among people with cognitive impairment (PwCI; e.g. dementia), but adherence to exercise programs for PwCI is low given their inaccessible and unengaging nature. While motion-based technology (MBT; e.g. Xbox Kinect) is increasingly being explored to encourage exercise participation among PwCI, the impacts of MBTs for PwCI on balance and cognitive function are underexplored. This study examined the impacts of a group MBT intervention on balance and cognitive function among PwCI. Twenty-eight PwCI were recruited from four adult day programs and invited to play Xbox Kinect bowling twice weekly for ten weeks. Participants completed the Mini Balance Evaluation Systems Test (Mini-BEST) and the Montreal Cognitive Assessment (MoCA) at pre- and postintervention. Descriptive statistics were run to understand the sample characteristics. Pre- and post-data collected from the Mini-BEST and MoCA were compared using a Wilcoxon signed rank test. Due to unforeseen circumstances (e.g. COVID-19), only nine of 28 (32.1%) participants completed the study. Demographic analysis of all participants (n=28) at baseline revealed considerable balance and mobility impairments in addition to cognitive impairment. Analysis of preand post-test MoCA and Mini-BEST data for participants who completed the study (n=9) showed no significant differences, but a potential maintenance effect of the intervention. This study highlights the feasibility and potential impacts of using MBT to deliver exercise to PwCI. Findings also highlight the prevalence of balance and mobility impairments among PwCI, suggesting a need for more physical interventions that target this population.

Sensor-based assessment of night sleep patterns of people with dementia to quantify motor agitations
Reza Faieghi, Toronto Rehab Institute

Introduction Sleep disturbance and motor agitation at night have a negative impact on the quality of life of PWD and their caregivers. The use of sensors to monitor sleep patterns may have some value in tracking the quality of sleep and the presence of behavioural symptoms at night to help direct treatment and intervention. **Objective** To explore whether night sleep patterns and sleep physiological measures from bed pressure mats can classify the severity of motor agitation. **Methods** 10 PWD admitted to a specialized dementia unit participated in the study. The intensity of participants' motor agitation during night was rated by nurses from 0 to 4. Time in bed, heart rate and respiratory rate of participants were measured each night using pressure mats. From the mats' raw data, 45 features were extracted, which are then used in the linear discriminant analysis (LDA) for classification. **Results** In total, data for 185 nights were collected. In only one case, the level of motor agitation was rated 4; thus, this class was merged with score 3. In 74% of cases, no agitation was observed, implying a high imbalance in the data. The leave-one-out cross-validation analysis of the developed LDA model resulted in precision=71.4% and recall=62.5% performance for the PAS score=3/4 class, and precision=95.7% and recall=76.6% for the PAS score=0 class. These metrics for the two PAS score=1/2 classes were <50%.**Conclusion** Pressure mat data can be used to classify the severity of motor agitation, especially to discriminate between severe and no agitation ratings

Perceived value of Smartphone apps during COVID-19 pandemic *Julie Faieta, Laval University*

The COVID-19 pandemic has facilitated an novel environment of isolation in both communities and hospitals across the globe. Isolation procedures, such as those preventing hospital and extended care facility visitation, while necessary to mitigate the spread of COVID-19, have undoubtedly implemented separation between those with AD and their family members and/or informal caregivers. We have initiated a survey based study to investigate the impact of social isolation, among individuals with AD and their caregivers, on perceived need for Smartphone app use. In addition, we are investigating whether or not COVID-19 related isolation and the availability or use smart phone technology 1) impacts informed care decisions on behalf of the individual with AD, and 2) impacts caregiver anxiety beyond what would be expected with hospitalization of the individual with AD. Preliminary investigations have confirmed that the available literature on social isolation in AD populations is highly limited and inconclusive. Therefore, this study addresses a pressing gap. We anticipate that caregivers will report perceived need for smart phone app use during periods of social isolation. Furthermore, we hypothesize that social isolation related to the COVID-19 pandemic will be reported to have negatively impacted informed care decisions on behalf of the individual with AD, and increased caregiver anxiety beyond what would be expected with hospitalization of the individual with AD. This presentation will provide an overview of the ongoing study, the specific objectives, and future development.

Key barriers faced by older adults staying in the workforce or returning to the workforce once they have exited *Natasha Gallant, University of Regina*

Canada's population is aging at an unprecedented rate due to longer life expectancy in combination with lower fertility rates. Canada's changing population structure is expected to result in labour force shortages as well as shortages in skilled labour. Therefore, we need to increase the labour force participation of older

Canadians to offset these shortages, but older workers face significant barriers in doing so. This study explores the barriers that older adults face when staying in or returning to the workforce by examining the experience of ageism. To better understand the experience of ageism in relation to the workforce, a scoping review of the research literature; jurisdictional scan on existing legislation, policies, and programs; and an evaluation of current government mandate letters, annual budgets, and party platforms was conducted. An in-depth case analysis of Nova Scotia and Quebec was carried out as integration of older workers into the labour force was a recently identified priority for both these provinces. Policy recommendations were three-fold: (1) establish provincial and territorial wage subsidies for older adults to incentivize employers in employing older workers; (2) establish services that specifically support older workers; and (3) ensure that opportunities for positive intergenerational relations are present in the workplace. The hope is that these policy recommendations will facilitate the hiring or retaining of older workers within Canada's labour force so that the economy can benefit from the experience that older workers bring to the table. The role of technology in implementing these recommendations will be explored.

Co-creating an Indigenous evaluation framework for I'M T'CARE and IDOH2 health studies: A two-eyed seeing approach *Diana Gresku, University of British Columbia*

This presentation will highlight experiences, insights and lessons learned from Indigenous community partners, researchers and evaluators in the co-creation of an Indigenous-led and relevant evaluation framework. The framework outlines an evaluation strategy for two interconnected, research studies focusing on honouring Indigenous and Western ways of knowing, Two-Eyed Seeing, health equity and cultural safety to improve diabetes and obesity outcomes for Indigenous people and communities. Working with six urban rural Indigenous Friendship Centres and a Métis Centre (off-reserve) in the British Columbia Interior, the first study, funded by CIHR, Building Indigenous Pathways for Diabetes and Obesity Prevention and Management with Urban and Rural Communities in British Columbia (IDOH2), involves identification, codevelopment/implementation and evaluation of site-specific wellness programs, activities, policies and/or practices in the community. The second AGEWELL-funded study, Indigenous methodologies: building capacity for tele-diabetes care in Urban Indigenous communities (I'M T'CARE) focuses on the co-creation, co-implementation and co-evaluation of a culturally safe tele-diabetes/obesity program for older adults, as identified by the communities. To the research team's knowledge, there are no widely published studies related to the co-evaluation of a community-driven multidisciplinary telediabetes or obesity program for older Indigenous adults. Thus, the presenters will share reflections on the guiding principles, approach and collective consensus processes between the community and researchers, in co-developing the Indigenous evaluation framework, including the potential impacts to the broader community, older adults and caregivers.

Role of technology for chronic pain management by older adults *Thusanthy Gunaseelan & Abhinayaa Jeyapragash, University of Toronto*

Chronic pain is a pervasive condition that is most prevalent in older adults. Advances in technology have opened new avenues for occupational therapists (OTs) to support older adults (OAs) in managing their chronic pain. However, there is a need to understand the experiences of OAs with using chronic pain management technology. Research investigation is required to understand the barriers and facilitators that

OAs and OTs face while using technology for OAs' chronic pain management. The purpose of this study is to understand the experiences of OAs and OTs in using technology to manage chronic pain. A total of 20 participants comprising OAs and OTs will be invited to participate in a 1-on-1 remote interview based on Tools for User Needs Gathering to Support Technology Engagement (TUNGSTEN), a set of handson participatory human-centred methods. This interview will include a TUNGSTEN activity, Show and Tell, where participants will discuss about one 'loved' and one 'abandoned' technology. The data collected from video and audio recordings will be analysed using NVivo software, to identify themes regarding the needs and barriers with the use of technology in chronic pain management of OAs. Anticipated results will inform implications for OAs and OTs. Findings from this study will inform OAs about available chronic pain management technologies and help OTs effectively use and recommend technologies in their practice to help OAs manage their chronic pain. Findings will also inform technology developers about factors to consider when developing or improving chronic pain management technologies.

Perceptions of people living with dementia and their caregivers on automated vehicles: An online video interview study *Shabnam Haghzare, Ghazaleh Delfi, Hodan Mohamud, Erica Dove, Elaine Stasiulis, Jennifer Campos, University of Toronto/Toronto Rehab Institute*

Driving cessation is a major challenge for people living with dementia (PWD) and their caregivers. Recently, Automated Vehicles (AV) have generated excitement about their potential to extend the safe driving time of PWD. As PWD's ability to drive safely deteriorates gradually, AVs may be able to compensate for potential driving deficits and thereby enable PWD to continue driving safely. However, no study has focused on PWD's and their caregivers' perceptions on the usefulness and safety of using AVs to extend PWD's safe driving. To address this gap, in this on-going study, we are conducting semi-structured interviews with PWD and caregivers to examine their knowledge of currently available commercial AVs and to understand their perceived safety and usefulness of AVs with different levels of automation (partial and full). In Section 1, the interview aims to clarify whether participants' perceptions about the driver's responsibilities in currently available commercial AVs are calibrated with the true responsibilities of the driver. In Section 2, after a brief educational session on Partially Automated Vehicles (PAVs), the interview aims to clarify whether participants find PAVs useful in addressing everyday driving challenges faced by PWD, and whether they find PAVs safe for PWD use. Section 3 is identical to Section 2 with the exception that the educational session and the interview is focused on Fully Automated Vehicles (FAVs). Thus far, nine caregivers and one PWD have completed the interview, and the observations suggest that the caregiver relationship to PWD, their degree of involvement in PWD's driving decisions, and PWD's other medical conditions may contribute to caregiver's perception of PWD's use of AVs.

Data analytics to predict the survivability of a lost person with dementia using R *Dalia Hanna, Ryerson University*

This presentation presents the results of analyzing cases of lost persons with dementia recorded in the International Search and Rescue Incident Database (ISRID). Linear regression, logistic regression and classification models were applied to determine the best method for predicting the survivability of such a lost person. The goal of this study is to understand the behaviour of the lost person and determine what significant variables enhance their survivability. An informed cleaning process involving both manual and 'R'-automated approach to scrub and augment the data—adding any missing values in the dataset. Linear

regression is proposed to acquire the correlation among the numeric values in the database. There was no significant correlation among the independent variables. However, the data indicated that the wanderer tends to be found closer to the where they left or were last seen. Logistic regression was used to investigate the survivability using three classification models. As the number of persons found alive greatly exceeds those deceased, the classifiers tend to be biased towards the majority class. Therefore, our focus was on finding the best model to provide the most accurate prediction. The outcome of this work will help inform the design of an algorithm and/or framework to be used for searches intended to be conducted by Unmanned Ariel Vehicles (UAVs). The outcome will also inform the design of use cases that will be used in various test environments.

Can dance reduce falls-risk in older adults? *Patricia Hewston, Hamilton Health Sciences*

Falls are highly prevalent (20-30%) in older adults. Older adults at increased falls-risk walk slower with less rhythm and reduced whole-body coordination. Dance is a fun mind-body activity that involves precise integration of rhythm and wholebody coordination. This twitter presentation will examine the relationship between dance, gait and falls-risk in older adults. Specific objectives include: (1) to explain how dance, gait and fall-risk are interrelated, (2) to outline how gait can be assessed with the ProtoKinetics Zeno Walkway technology, and (3) to present our key findings of how dancing affects gait speed, rhythm and whole-body coordination in older adults. Given the importance of preventing falls, our goal is to demonstrate that simple yet highly predictive technology is beneficial to both research and clinical practice to evaluate the effectiveness of dance as a falls-prevention program.

If we build it, will they use it *Mary Hynes, University of Toronto*

We are living longer and there are more of us. There is widespread fear that if we do nothing hospitals and long-term care homes will be overwhelmed. Some look to having much more home care; but what if we can prevent or slow down diseases and illnesses? I am researching how older adults can "can flatten the aging curve" by creating and following up with health goals to reduce risks and improve health behaviors. Researchers have shown that combining good health habits as exercise, activities with others and a better diet can help older adult thinking skills. Others are finding that learning to create well-defined goals (called SMART* goal setting) can help individuals succeed in making and keeping their health goals and in feeling better about their health. I, an older adult, am developing a project that is being created by older adults from the start. I am doing a scoping review of research on what might help persuade older adults to start making healthy changes and continue with the healthy changes for a long time. This will be followed by a survey asking older adults about how they learn and how they would best like to use coaching to help them create and follow-up with health goals. Older adults will then be invited to come together in groups (or internet-based virtual groups) and work together with an older adult coach to create and follow-up on the SMART goals they create. *Specific, Measurable, Actionable, Relevant, Time specific

Seniors' perceptions of the robot *Zahya Idrissi, University of Sherbrooke*

Keeping seniors at home is strongly desired by many players in the health field and is often highly valued by seniors themselves. However, the introduction of innovative technologies such as the telepresence and health assistance robot raises many questions as to the conditions facilitating and/or hindering its adoption by seniors and health professionals. Our presentation will discuss the perception and reaction of end-users

during the robot's experimentation days that took place in two private residences with two different clienteles.

Optimizing interRAI tool in care planning processes of long-term residents *Steve Iduye, University of Saskatchewan*

The International Resident Assessment Instrument (interRAI) clinical applications have not only ended the era of fragmented paper documentation but have also created the opportunity for interdisciplinary use of standardized care plans to improve residents' health status I long-term care facilities. However, current evidence suggests that the InterRAI tool does not always drive the care planning processes and associated improvements in health outcomes for long-term care residents. The purpose of this presentation is to share the current state of evidence on interRAI care planning processes in long-term care settings. It is anticipated that this proposed research will provide insights into ways of improving the coordination and implementation of interRAI care plans in delivering more consistent health outcomes to the residents of long-term care facilities.

An interpretive review of the Canadian policy environment governing employers' responses and duty to accommodate workers with early onset dementia/mild cognitive impairment *Kristina Kokorelias, Toronto Rehab Institute/University of Toronto & AnneMarie Levy, Josephine McMurray, Jen Boger, Arlene Astelle*

The workforce is aging, increasing the potential for workers to develop mild cognitive impairment or early onset dementia (MCI|EOD) while on the job. We focus on Canadian federal, provincial and territorial legislation and related jurisprudence, and public policy discourse that could guide employers' responses and influence their duty to accommodate employees diagnosed with MCI|EOD. In particular, we identified 3 themes: 1) Canadian Legislation Defines MCI|EOD as a Disability and Employers may Support Accommodation without Undue Hardship; 2) Canadian Case Law on Disability Accommodation is Settled on MCI|EOD is Scant; and 3) Employment Practice may Lag Public Policy Discourse Supporting MCI|EOD Inclusive Workspaces. We also note that while federal and provincial/territorial dementia strategies are raising awareness of MCI|EOD in the workforce, they are generally focussed on employees who are carers of those with MCI|EOD rather than those with the diagnosis. Understanding the policy environment is an important first step in ensuring Canadian workspaces are accessible and inclusive for workers with MCI|EOD and that employers have the tools they need to optimize their workforce productivity.

Characterizing the injury pyramid from video capture of real-life falls by older adults in long-term care: Differences between body parts in the frequency of impact and injury *Vicki Komisar Simon Fraser University*

Falls are the leading cause of injury-related hospitalizations in older adults (CIHI, 2019). However, most falls do not involve serious injury. Resistance to trauma may differ across body parts, and older adults may fall in a manner that minimizes impacts to vulnerable sites. We examined the prevalence of impact and injury to different body parts, by analyzing videos of 2302 falls by 632 long-term care residents (83.7 ± 8.0 years; 57% women; all from common areas). Videos were analyzed for impact sites using a validated questionnaire (Yang, 2013) and compared to injury outcomes (e.g., hematoma; laceration; fracture) from incident reports. We tested for differences in the probability of impact and injuries between body parts using linear mixed models. Injuries were reported in 814 falls (35.4%) by 385 residents. The most common impact site was the pelvis/hips (impact in 94.3% of falls; $p<.001$ relative to other body parts), followed by

the torso/shoulders (78.0%), elbows/forearms (77.2%), hands/wrists (69.4%), knees/shins (43.3%), and head (35.2%). The most common site for injury when impact occurred was the head (injured in 37.4% of impacts; p<.001 relative to other body parts), followed by the knees/shins (10.5%), torso/shoulders (8.4%), elbows/forearms (7.2%), pelvis/hips (5.3%), and hands/wrists (5.1%). We observed an inverse relationship between impact frequency and injury risk to body parts, with the pelvis/hips being the safest and most common landing site, and the head being the most vulnerable but least common impact site. Our results suggest that long-term care residents often fall in a manner that minimizes injury risk.

The most common validation techniques of User Centred Needs Elicitation Methods (UCNEMs) *Tanzina Mahbub, Ryerson University*

Purpose The overall project goal is to investigate opportunities to crowd-source the validation process for new User Centred Needs Elicitation Methods (UCNEMs) that are often created when working with older adults because existing methods can be insufficient. It may be possible to expand the NICKEL UCNEM decision support tool developed in AgeWell to integrate a new method option where users can contribute new methods and/or participate in the validation process for that method. Towards this goal, a framework on different validation techniques used in UCNEMs has been devised. **Background** Researchers are continuously developing new or modified methodologies as they attempt to work with users with diverse needs and capabilities. But it may be necessary to provide a validation process for these new methods if one has not been developed by the researcher(s). **Method** To develop a framework on validation techniques, it was important to review how existing accepted UCNEM methods were validated and used in research and design processes with older adults. Different electronic databases such as Google Scholar, SAGE research methods, Scopus, and Springer, were considered for a relevant literature review from 1966 to 2017. The review focused on statistical and non-statistical techniques outlined in the literature. A content analysis was then used to develop the framework. **Findings** Techniques such as triangulation (two and/or more than two methods), repetition, and case studies are commonly used to validate different UCNEMs. **Conclusion** Triangulation techniques are the most used technique for validating UCNEMs.

Canadian Silver Alert initiatives – a scoping review *Lauren McLennan, University of Alberta*

Introduction: Like "Amber Alert", "Silver Alert" is the use of media channels by police services to communicate with the public about missing older adults. With over 50% of US States using Silver Alert programs, research on its efficacy is available. In Canada, however, individual police services decide how to issue public notifications. Little is known about Silver Alert initiatives in Canada. **Objectives:** This study reviewed the grey and academic literature available on Silver Alert programs and operating organizations. The purpose of this review was to inform research, program, and policy development on Silver Alerts in Canada. **Methods:** Two reviewers conducted a scoping review using three academic databases, government websites and the Internet. **Results:** The academic literature identified was based in the United States. The organization "BC Silver Alert," a volunteer-based alert program in British Columbia, was identified in the grey literature search as well as other Canadian-based organizations that used social media to disseminate information on missing older adults. Policy initiatives included both Alberta and Manitoba amending their Missing Persons Acts to use "Silver Alert" in cases where vulnerable older adults are missing. Additionally, an e-petition to the Government of Canada highlighted public perception of the need for a national Silver Alert program in Canada. **Conclusions:** With increasing numbers of vulnerable

older Canadians at risk of going missing, there is rising public pressure for provincial and federal alert systems. The US-based literature can provide Canada with "lessons-learned" as we begin to address this public health issue in Canada.

A smart insole to detect slips in human walking *Ramtin Mojtahedi, University of Toronto*

Background: Slip-induced falls are the leading cause of non-fatal and unintentional injury-related hospitalization in all ages and a widespread healthcare challenge among older adults in Canada. Thus, reducing risks of slip-induced falls is critical and highlights the need for slipperiness measurement of footwears and floor surfaces. Although human-centered approaches are conventional in the evaluation of such analyses, they suffer from human errors and subjective evaluations. Therefore, an automatic slip detection device is needed to enhance such human-centered slipperiness measurements. For this purpose, a machine learning-based device using inertial data could be a reliable tool in detecting slip events happening during walking. **Project Aim & Objectives:** The proposed study aims to design and implement a slip detection smart shoe insole as a device to enhance human-centered slipperiness measurement in footwear and floor surfaces. The objectives of this project are: (1) To build and develop a machine learning model that can detect slip events during walking based on inertial sensors data (2) To design a customized insole that will house an integrated circuit incorporates the machine learning model developed in the first objective (3) To evaluate human factors design components of the developed slip detection system. **Significance:** The proposed smart insole will enhance human-centered slipperiness measurements through the elimination of human errors. It will be used in the slipperiness assessments of footwears and floors in the WinterLab, pavements, and occupational workplaces. It is envisioned that the proposed device will significantly lessen the risk of slip-induced falls through enhancement of slipperiness measurement.

Designing assistive interactive technologies to support aging and well-being *John Munoz, University of Waterloo*

The increase in older adults around the world presents societal challenges related to the maintenance of healthcare services, inclusiveness, and de-stigmatization. Interactive technologies that use games and digitally connected devices (e.g., mobile phones, tablets) have been promoted as a tool for the assessment, rehabilitation, and cognitive training in older adults. In particular, two technological approaches have shown promising results in fostering the physical and mental wellbeing of PLwD through game-mediated activities: virtual reality and social robotics. This research focuses on the collaborative design and scientific evaluation of novel assistive interactive technologies for healthy older adults and people living with dementia. This presentation will describe two projects aiming to foster wellbeing and a healthy lifestyle through: i) investigating how social robots and games can be used to foster relationships between older adults and their grandchildren and ii) collaboration between therapists, researchers, people living with dementia and industry partners to co-design immersive game experiences to promote exercise and explore novel digital biomarkers We will present the challenges and lessons learned found while designing interactive experiences using both virtual reality and social robots to engage older audiences and provide meaningful gameplay to foster a healthy lifestyle and social wellbeing. Through this research, we are trying to discover new mechanisms to use games as an organic way to engage older adults in activities to stimulate the mind and body.

What is self-sovereign identity, and is it of interest among persons with dementia and their care partners? *Noelannah Neubauer, University of Waterloo*

Introduction: Self-sovereign identity (SSI) refers to a way to manage digital identities where an individual has sole ownership and control of the personal data. For persons living with dementia, they or their care partners could control their own data and choose to instantly share relevant data with first responders when a person goes missing. To date, SSI has yet to be applied in health. The purpose of this project was to translate the concept of SSI in a way that is understandable to persons living with dementia and their care partners. **Method:** A working definition of SSI was developed following a hybrid model for concept development. This involved identifying the current definition of SSI from the literature, conducting a series of interviews with persons with dementia and their caregivers to elicit informant thoughts and perceptions of the current definition of SSI, and subsequent focus groups were conducted with the same participants to develop and finalize a user-friendly definition of SSI. **Results & Discussion:** Elements of how SSI was defined in the literature included ownership and control, security, privacy, digital identities, and central repository removal. From the interviews, persons with dementia and their caregivers demonstrated overall positive views of the potential use of SSI. A user-friendly definition of SSI was developed following the completion of the interviews and focus groups. The findings from this study are being used in case studies that examine the application of SSI for collecting and sharing of data of missing persons with dementia.

Socially mobile assistive robots for telecare and daily activities of older adults *Adina Panchea, University of Sherbrooke*

Socially assistive robots (SARs) are becoming more ubiquitous in the context of long-term care for seniors, both in place and in care facilities. Indeed, there are a lot of studies involving interactions between seniors and SARs, which report that SARs can indeed provide good solutions to some seniors needs. Still, the interactions are usually predefined by researchers and for relative short periods of time. In contrast to previous studies, the multidisciplinary research project in which I take part intends to go further and involves the seniors in the design of adaptable and understandable SARs. This will be done by working along with care facilities personnel, caregivers, seniors and their families while deploying different SARs, for periods of time, in care facilities so that ideas and conditions of uses can emerge from such cohabitation setting. During the deployments, constant feedback with stakeholders will be gathered and used to improve and adapt the design of SARs. Moreover, as the project seeks to deploy SARs for long periods of time to long-term care for seniors, other aspects such as ethical, public policy, financially or law related ones, will be taken into consideration. Our multidisciplinary team covers needs/uses, tackles ethical and acceptability issues in using SARs in care facilities, law to identify the legislative and applicable legal framework obstacles to successfully integrating SARs into the care network, and applied politics to establish a relationship between researchers and public officials to integrate this kind of technologies in the real world.

Relationships between cognitive functioning and power wheelchair driving among adults with mild-moderate cognitive impairments *Alice Pellichero, Laval University*

Introduction: Powered wheelchairs (PWC) are critical for independent mobility for individuals who have trouble walking. However, provision of PWC is complex, requiring consideration of diagnosis, motor/cognitive/perceptual capacities, and the environment. In clinical practice, cognitive functioning is reported

as the top concern for clinicians, yet cognitive functions required for PWC use remains unclear. Our objective is to explore the relationships between cognitive functioning and PWC performance. **Method:** A cross-sectional exploration was used to recruit 18 PWC users. Two, two-hour data collections sessions were conducted and participants completed cognitive functioning tests (Montreal Cognitive Assessment (MOCA) and Motorfree Visual Perception Test (MVPT)) and PWC driving tests (Wheelchair Skills Test-Questionnaires (WST-Q), Life-Space Assessment (LSA) and Power-Mobility Indoor Driving Assessment (PIDA)). Analyses included bi-variate Pearson correlation coefficients and principal component analysis with varimax rotations. **Results:** PWC users were on average 59±16 years old and scored 21.5±5.6 on the MOCA. Pearson correlations between cognitive and PWC tests were all statistically significant. Factor analysis with principal component extraction and varimax rotations revealed 3 factors that accounted for 87.5% of the total variance. Factor 1 regrouped MOCA and PIDA, factor 2 regrouped MOCA, MPVT (percentile scores) and WST-Q performance and factor 3 regrouped LSA and WST-Q performance. **Results:** PIDA and WST-Q performance assess two different aspects of PWC performance. MOCA is related to these two aspects of PWC performance and MVPT is related only to WST-Q performance. This study supports our hypothesis that cognitive functioning is related to PWC performance and may guide decision-making concerning PWC provision.

Technology solutions and employers' response to workers diagnosed with mild cognitive impairment or early dementia: A systematic literature review *Logan Reis, Wilfrid Laurier University*

People are increasingly choosing to work past the age of 65, and consequently the workforce is aging. Age is a primary risk factor for cognitive decline and older employees are more likely to receive a diagnosis of mild cognitive impairment or early onset dementia (MCI|EOD) while employed. To date, literature on MCI|EOD in the workplace has an almost exclusive focus on the employees' role and perspective. We conducted a scoping literature review exploring the barriers and facilitators to development, uptake, and sustained use of technologies (defined as interventions such as skills, methods, processes & machines intended to improve outcomes or achieve goals) that support employers with workers with MCI|EOD. We identified and analyzed seven articles that met our inclusion criteria after screening 3,860 titles/abstracts and conducting 66 full-text reviews. Our analyses found that: 1) The domain literature is primarily focused on affected workers - there is little scientific literature on the employers' perspective, 2) Employers are largely unaware of this growing workforce issue and the risk it presents to the organization, 3) There are direct and indirect costs to reactive rather than proactive approaches to workers with MCI|EOD. We conclude that for employers to embrace creating sustainable workspaces for employees who develop MCI|EOD on the job, research into employers' related needs, such as the early identification of affected employees to avoid mis-classification due to performance decline, the economic and cultural impact on organizations, and developing accessible solutions is required.

The mental health priorities of LGBTQ+ older adults in North America: An exploration of understandings generated by recent studies *Indira Riadi, Simon Fraser University*

1 in 5 older adults suffer from one or more mental disorders and the numbers will continue to climb as the world's population gets older. Among the older adult population in North America, there exist vulnerable sub-populations or disadvantaged sub-segment of the community such as gender and sexual minorities. Because of they have fallen outside the region of social norms in North America, these individuals have

differing mental health priorities to the rest of the population. Utilizing data from multiple cross-sectional studies of LGBTQ+ individuals aged 50 and older from the year 2005 and onwards, we assessed direct and indirect effects of gender and sexual identity on their mental health. A clear majority of studies reported elevated risks for depression, anxiety, suicide attempts or suicides, and substancerelated problems. It has been suggested that the size of close social circle plays a significant part in mental health resilience among members of disadvantaged populations, though more data is required in order to understand these effects fully. Some studies have touched upon the mental burden generated by gender dysmorphia, while others have found that the explanation of poor mental health was the result of lack of social acceptance, family history, or simply, their genetic makeup. As of current, the pattern of mental health among the LGBTQ+ older population is still unclear, and it is important for us to develop a consistent and reliable method for future cross-sectional studies to understand vulnerable elderly populations and their mental health.

Longitudinal validation of two computerized cognitive technologies for predicting the transition of mild cognitive impairment to dementia *Iman Sabra, Bruyère Research Institute*

Background It has been difficult to predict which patients are at highest risk of transitioning from mild cognitive impairment (MCI) to dementia. As such, early detection of changes in cognitive function during aging is critical. Cognigram®, a computerized card game, and the investigational non-invasive EEG medical device NeuroCatchTM Platform are two technologies that provide quick and portable measurement, which are easy to use in older adults. Our study aims to assess the capacity of Cognigram and NeuroCatch to predict future cognitive decline in MCI and cognitively normal (CN) older adults in a longitudinal manner. **Methodology** Cognigram testing sessions are performed every three months during the first year and then once a year for two more years. NeuroCatch testing sessions are performed every six months during the first year and then once a year for two more years. Clinical change is assessed using blinded neuropsychological evaluations every at twelve months. **Preliminary Results** To date, 34 participants (20 MCIs and 14 CNs) are taking part in the Cognigram sub-project and 31 participants (19 MCIs and 12 CNs) are part of the NeuroCatch sub-project. Preliminary baseline findings have demonstrated a difference between healthy participants and MCI participants. We will be presenting preliminary 1 year longitudinal data as it comes in. **Conclusion** At the conclusion of our longitudinal study, we hope to determine if Cognigram and/or Neurocatch can identify early cognitive changes which predict which patients eventually convert to dementia.

Detection of agitation in people living with dementia using multi-modal sensors *Sofija Spasojevic, Toronto Rehab Institute*

With the aging of the population, the number of people living with dementia (PLwD) is increasing. The current number of PLwD worldwide (reported by the World Health Organization) is around 50 million, with nearly 10 million new cases every year. About 90% of PLwD experience behavioral and psychological symptoms, such as episodes of agitation and aggression. When agitated, PLwD can harm themselves, other patients, and staff/caregivers. Therefore, predicting agitation would ensure the well-being of PLwD and it would reduce the burden for the caregivers and staff. This goal can be achieved with the synergy of technical and clinical knowledge and practice. We conducted a study at the Specialized Dementia Unit – Toronto Rehabilitation Institute that used a multi-modal wearable device to acquire motion and

physiological indicators to detect agitation in PLwD. Sensor and clinical data were collected for 17 participants. Results on the pilot data show the advantage of using multi-modal sensor information in comparison to single sensors and highlight the most significant sensor measurements for agitation detection.

Pain in dementia: An eye tracking investigation *Rhonda Stopyn, University of Regina*

Facial expressions have been successfully used in assessing pain in people with dementia who have severe limitations in communication. However, the extent to which untrained observers rely on specific facial cues when judging pain remains unclear. Observer characteristics such as attitudes and beliefs may also influence accurate pain judgments. This study aimed to determine which facial pain cues observers rely on when assessing pain in others and evaluate how observer characteristics influence pain judgments. Participants viewed videos of individuals expressing pain (older patients with dementia, older patients without dementia, younger patients) while wearing an eye tracker device that recorded their viewing behaviours. Participants provided pain ratings for each patient and completed questionnaires evaluating empathy and beliefs on personhood in dementia. Observers assigned higher pain ratings to older adults and the highest pain ratings to patients with dementia. Using a gold standard of objectively coded facial reactions, younger adults were assigned more valid pain ratings than older adults. Pain rating validity was not affected by patient dementia status. Observers looked mostly at the patients' eyes and nose; however, attention to specific pain-related facial areas did not predict pain rating validity. Moreover, observers looked less at facial pain cues for patients with dementia compared to the other remaining patients. While empathy scores did not influence pain rating validity, observers with the highest personhood scores assigned more valid pain ratings. These findings could aid in promoting more accurate pain assessments and lead to more effective pain management for older adults with dementia.

Personalized soundscape effects on persons with dementia; a pilot randomized clinical trial *Arezoo Talebzadeh, OCAD University*

Behavioural and psychological symptoms of dementia (BPSD) often occur in persons with dementia (PwD). BPSD considers as a characteristic of dementia, but indirect factors also contribute to the etiopathogenesis of BPSD, such as environmental factors. One of the environmental factors is the acoustic environment. The soundscape is defined as the acoustic environment as perceived, experienced and understood by a person or people in context. PwD, however, perceive and understand the sonic environment differently. The most obvious difference is the meanings they may give to the sounds they notice due to changing mental associations. This study is a sound system that uses a personalized algorithm to play sounds at a pre-scheduled time during a day. As PwD may have difficulty interpreting time and space, the soundscape developed to provide sonic elements that help understand the day or the place. This study's objective is to determine the effect size of a carefully tuned personalized sonic environment on agitation, distress, night sleep, stress, and quality of life (QoL). This project will be the first pilot Randomized Control Trial of a soundscape approach in people with dementia in the hospital setting. Aims of this study are 1) to determine the effect size of a designed soundscape on BPSD, as measured by the Neuropsychiatric Inventory Questionnaire, the Pittsburgh Agitation Scale, Distress-related affects and behaviours observed by staff. 2) to examine the effects of a designed soundscape on physiological measures of sleep and stress. 3) to determine the impact of a designed soundscape on QoL.

Detecting cognitive and mental health indicators from voice *Mashrura Tasnim, University of Alberta*

Depression and dementia are among the most common disorders faced by older adults. People with depression experience a lack of interest and pleasure in daily activities, significant weight loss or gain, insomnia or excessive sleeping, lack of energy, inability to concentrate, feelings of worthlessness or guilt and recurrent thoughts of death or suicide. 10 to 15% of seniors suffer from depression in Canada, increasing their risk of death by 2 to 3 times. On the other hand people with dementia exhibit combinations of symptoms and signs associated with a progressive deterioration of cognitive functions affecting daily activities. At present more than 0.56 million Canadian seniors are diagnosed with dementia and the number is increasing by 25,000 every year. In my research, I am interested in developing a practical system to monitor cognitive and mental-health indicators analyzing the sound of users' voices. A prerequisite of such a system is machine learning models capable of detecting evidence of depression and dementia from conversational audio. So far we have conducted studies to explore the effectiveness of different acoustic features and machine learning algorithms for predicting prevalence and severity of depression and dementia, using currently available benchmark data sets. We are continuing experimentation on improving the models' performance. We hope our anticipated system will be useful for continuous monitoring of individuals suffering from these disorders to ensure timely and effective support.

Evaluation of an app-based community platform in reducing pain in long-term care facilities *Vivian Tran, University of Regina*

Evaluation of an app-based community platform in reducing pain in long-term care facilities - Research Proposal Abstract: Pain is under-assessed and under-addressed amongst seniors living in long-term care (LTC) facilities. This is especially true for seniors who are suffering from severe dementia, as they may be unable to verbally communicate their pain to health professionals. The Pain Assessment Checklist for Seniors with Limited Ability to Communicate-II (PACSLAC-II) is a validated pain scale for health professionals to assess pain in residents with dementia. Unlike many mHealth apps dedicated specifically for pain, the PACSLAC-II app is based on a validated method and specifically designed for LTC environments. This study will involve the development and evaluation of a new community platform on the PACSLAC-II app. The community platform will allow healthcare professionals to share their facility-wide quality indicator scores with other facilities, compare individual resident scores with a norm, and provide a platform for user interaction and continuing education. It is hypothesized that having access to these features in the app will result in increases in staff satisfaction, pain assessment knowledge, and pain quality indicator scores. This study will utilize a mixed methods multiple-baseline-between-subjects design across multiple LTC facilities. Pain quality indicators will be graphed and evaluated using applied behaviour analysis methodologies while the interviews with health professionals will be subjected to thematic content analysis. Findings from this study will contribute to the future development and use of the PACSLAC-II app and potentially increase the sense of community amongst health professionals, which will in turn, have positive effects on the quality of life of residents living in LTC.

Explore how the information and referral service which has largely been placed-based at community senior service centre can be operated remotely using technology *Karen Lok Yi Wong, University of British Columbia*

Information and referral is an essential service for seniors in the community. It provides seniors information and makes referrals to and helps seniors navigate services according to the needs of the seniors. It also fills the gaps of our current health and social care systems. Currently, it has largely been place-based, that is, provided at community senior centres at a face-to-face mode. It follows a peer-led model, that is, operating by volunteers who are also seniors. However, some seniors may not be able to access to the service due to different barriers such as mobility limitations. Also, the current global pandemic helps us to reflect on considering an alternative mode to provide the service on a mode other than face-to-face so that we can be prepared for other future risks. This project explores how this essential service may be operated remotely using technology. It will use a community senior service centre as a case study. It acknowledges seniors is a group of people from diverse and intersecting identities and backgrounds and thus each has unique needs and strengths. The project is author's practicum as a master of social work student. The author will describe the project, share her experience, and facilitate discussions and invite for feedback.

Live More SmarTech: Autonomy and independence through collaboration and technology *Naomi Zingman Daniels, University of Toronto*

Background Older adults aging with/into disability are often reliant on professional and/or informal caregivers for activities of daily living. SMART technology has enormous potential to foster the autonomy and independence of this population; combining elements of gerontology and rehabilitation with technology, it is possible to create solutions that overcome the identified barriers that technology is often lacking personalization, long-term support, and affordability. **Objectives** LivMoreSMARTech's objectives are to determine: 1) the lived experience, needs & desires for well-being among older adults with complex conditions in institutional and community-based continuing care settings; 2) feasibility and effectiveness of implementing a customized, supported and sustainable SMART technology solution; 3) how to incorporate person-centred technology solutions resulting in scalable outcomes including policies, procedures, and care planning. **Approach** This project uses off-the-shelf technology alongside Novalte's proprietary smart-technology system, emitto, to enable individuals to interact with smart devices in their home, such as lights, doors, and retrofitted hospital beds, allowing users to remain in spaces and with items that they are familiar with, while still allowing for increased independence. **Implications** This research brings collaborators from the academic, health care, and technology fields to work together in a complex, delicate, and dynamic space. This initiative, the first of its kind in North America, has the potential to shift how care is delivered for a major, care-intensive segment of the continuing care client population. We can create a community that inspires a self-directed experience, restoring the "power of choice" to people, so that they can live more independently.