

Five-Year Self-Study Report on the Smart Condo™

Prepared By Simulated Learning Environment Leaders

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January 9, 2017

Progress Report

In this report, we review our activities and achievements during the first 5-year term of the Smart Condo™ Simulated Learning Environment, and we discuss how these activities address the expectations of the **Health Sciences Council**.

1) Leads and Team Members

Since its inception, our core team has included faculty members from the Department of Occupational Therapy (Liu, Esmail), the Computing Science Department (Stroulia, Nikolaidis, Yang), Industrial Design (Lederer, Rasmussen), Pharmacy (Sadowski, Guirguis), and Educational Psychology (Gierl, Carbonaro). Since the beginning, a key partner in our activities has been the Glenrose Rehabilitation Hospital, where we have deployed, and validated with dementia clients, the Smart Condo™ hardware-software platform.

This team has been the core of an interdisciplinary collaborative community, which, in the last five years, has expanded with productive partnerships across disciplines, throughout Canada and internationally, including academic and industrial researchers and community-care practitioners. The evolution of our team through our leadership activities is described in detail in Section 6 below.

2) Objectives

On June 1, 2011, we provided to the Health Sciences Council, a presentation on the mission and objectives of the Smart Condo™ simulated learning environment. We stated that, as Academic Co-Leads, our objectives of the Smart Condo™ space were: (1) to expand our state-of-the-art interdisciplinary research in integrated technologies for delivering high-quality health-care services to Albertans, and (2) to train a new generation of health care professionals through broad, creative, “hands-on” inter-professional education and professional-development activities. We continue to pursue these objectives, but our reach has extended beyond Alberta.

3) Collaborative Curriculum and Training

The core the Smart Condo™ team has been teaching a project-based course, cross-listed in OT, ID, CS and Pharmacy. In 2011, our team was recognized with the **University of Alberta Provost’s Teaching Unit Award**. This was in recognition of teaching excellence that occurs as a result of the collaboration of instructors. The Smart Condo™ Teaching Team consists of instructors from Industrial Design (Robert Lederer & Greig Rasmussen), Occupational Therapy (Lili Liu), Computing Science (Ioanis Nikolaidis & Eleni Stroulia), and Pharmacy (Cheryl Sadowski). We continued to offer annual inter-professional courses in which students collaborate across disciplines to use design solutions to address chronic conditions among older adult populations. A number of publications (1, 28, 32, 79, 81, 82) have resulted from projects that started in the context of this inter-professional course. As well, the work for a mobile device for swallowing therapy originated in this course. The device was designed by G. Constantinescu, a PhD student in Rehabilitation Science with her team members in Industrial Design and Computing Science.

This technology recently received \$1M (to Constantinescu's supervisor Dr. J. Rieger) in funding for further development.

Furthermore, in the context of the senior software-engineering course (CMPUT 401) we have been training computing-science undergraduates to work with clients from the health disciplines, towards implementing a variety of health-care applications, including:

- 1) a gamified application for discerning oral cancerous lesions (as specified by Dr. Minn-Nyoung Yoon, FoMD),
- 2) a Tai-Chi exercise system (as specified by Ms. Yukie Goto, OT, Sapporo Medical University),
- 3) a Moodle plugin for meta-data management for professional health curricula (as specified by Drs. Ken Corr and Cheryl Sadowski, FoMD), and
- 4) a cognitive-assessment application based on the clock-drawing test (as specified by Dr. Lili Liu).

An important accomplishment with respect to interdisciplinary teaching is the number of the graduate trainees that our team has supervised in the past five years: **5 PDFs, 5 PhD plus 1 PhD visiting student**, and **14 MSc (thesis-based)** students in Biomedical Engineering, Computing Science and Rehabilitation Science have completed (or are completing) their research training under our supervision, **plus 1** at Simon Fraser University (see Appendix A). In addition, **22 course-based MSc (21 OT and 1 CS)** students completed their capstone projects on topics related to the Smart Condo™, many of them co-supervised by the two co-leads. Finally, we supervised or are supervising **12 BSc students** who chose to complete research internships on projects related to the Smart Condo™.

4) Research Program (problems, activities, methodology, projects, outputs)

Our research agenda, in the past five years, has focused on the following two research questions:

RQ1: How could home environments be designed (or retrofitted) with low-cost sensing technologies (RFIDs, QR tags, sensors, cameras) to support patients with (a) different types (cognitive, physical, sensory and emotional) and (b) different levels of disability?

RQ2: How might observations (by self, family-member and home care), recorded through smart and mobile devices, inform the patient's electronic health record and help health providers better care for them?

Towards RQ1, we have developed the Smart-Condo™ hardware-software platform, which effectively recognizes the movements and activities of a home's occupants. We have validated the ease-of-deployment of our platform in traditional homes with two deployments (in ECHA and in the GRH) and our participation in the EVAAL 2013 competition [23].

Towards RQ2, we have developed a number of mobile applications for individuals and their caregivers to record health observations, including a medication-adherence application [84, 85], a diabetes-management application [1, 29, 82], a physical-exercise monitoring application [29], and an application for home-care aides to record information about the services they provide to clients [10, 31].

In developing our technologies, we have been following agile processes with frequent prototype releases in order to receive regular feedback from our activity stakeholders. We have been evaluating our technologies with systematic simulations, as well as mixed-method studies and focus groups with our envisioned users (patients and care providers).

5) Professional Development (members, partnerships)

We have held regular (on average, every 2 months), HQP meetings where graduate students and research trainees (PDFs) in Computing Science and Rehabilitation Science address a relevant topic followed by updates of their research programs. Our research coordinator oversees HQPs across the disciplines. All HQPs undergo training in the EPIC (Early Professionals, Inspired Careers) program through the AGE-

WELL NCE. They achieve core competencies in an interdisciplinary research environment, including participation at the interdisciplinary AGE-WELL annual conference.

6) Leadership Activities (team development, outreach, partnerships)

We have collaborated with several faculty members across the health sciences faculties, as well as the Faculties of Science and Arts, as is apparent in the composition of our research funding teams, publications and presentations, as listed in Appendices B, C & D. We have worked closely with Dr. Sharla King, Director of the Health Sciences and Education Research Commons. We have also collaborated with Dr. Sarah Forgie, FoMD, in the development of LiveBook, a simulation platform for training health-care professionals with realistic scenarios of virtual patients. In the context of the Health Care Aides and Technology (H-CAT) project, we worked with Dr. Suzette Brémault-Phillips, OT, an expert in community-care delivery. Finally, we have been collaborating with Dr. Jon Duff in the development of Kinect-based simulations for CPR training.

In the past two years, enabled by the substantial funding we have obtained through our participation in the AGE-WELL NCE, we have amplified our efforts to collaborate with researchers across Canada and the broader community of senior-care practitioners.

- 1) In collaboration with the Hacking Health organization, we organized two successful Hacking Health Hackathons (November 2013 and February 2016) – see <https://www.ualberta.ca/news-and-events/newsarticles/2013/november/ualberta-brings-health-focused-hackathon-to-edmonton> and <https://www.ualberta.ca/rehabilitation/news/2016/february/edmonton-hackathon-aims-to-create-solutions-to-help-aging-albertans>. In 2013, the University of Alberta hosted the **first** Hacking Health Hackathon in Alberta where **Dr. Denis Vincent's ezReferral** was created and is now a spin-off company.
- 2) Through AGE-WELL NCE, we have established a collaborative program with Dr. Frank Knoefel (University of Ottawa and Bruyere Hospital) and Dr. Rafik Goubran (Carleton University) developing and evaluating UniCog, a cognitive-assessment platform we have been developing as part of the Smart Condo™ platform. In the AGE-WELL context, we are also collaborating with Drs. Alex Mihailides and Mark Chignell (University of Toronto) on engaging game platforms and locator technologies for supporting wandering dementia patients correspondingly, Dr. Thomas Hadjistavropoulos (University of Regina), and Dr. Norm O'Rourke (Simon Fraser University) on the potential use of the Smart Condo™ platform for monitoring patients with bipolar disorder.
- 3) Through CCNA NCE, we have established a collaborative program with Dr. David Kaufman (Simon Fraser University) and Arlene Astell (University of Toronto) on digital storytelling. Data will be collected in three provinces.

Our team members also now include international researchers at **Sapporo Medical University** in Japan, **Universidad del Rosario** in Colombia, and **University of Bari** in Italy. Our University has MOUs with the first two institutions. We are working with SMU on applications of prescription glasses with sensors to monitor eye and head movement. We have worked with UDR on the user acceptance of technologies and are now embarking on a national grant to examine personalized prevention of chronic conditions. Dr. Teresa Baldassare (U of Bari) visited Dr. Stroulia's lab and we are now exploring opportunities for formalizing our collaboration. We have also recently started working with Dr. Gangmin Ning from **Zhejiang University** in China; we have just obtained research funding through World University Network (WUN) and are applying WUN travel funds to visit Zhejiang and refine our research proposal on **mobility assessment** in the Smart Condo™.

We have established partnerships with Revera (www.reveraliving.com/), Ashbourne (www.theashbourne.ca/) and the York Care Centre (www.yorkcarecentre.ca/) in New Brunswick for deploying (elements of) our Smart Condo™ platform.

IBM has been a long-standing partner of our work, with substantial monetary contributions to Stroulia's IRC and in-kind contributions of software and hardware.

Finally, we have just drafted a MOU with ReliqHealth (<http://reliqhealth.com/>) and Phillips, outlining a joint program of parallel activities on their iUGO and our Smart Condo™ platform. We are working with **TEC Edmonton** to formalize this MOU for a three-year agreement, which will enable us to work together on sensors with industry to address research topics related to **therapeutic use of lighting** in the Smart Condo™.

7) Sustainability/Financial report

As Academic Co-Leads, we have approached sustainability by focusing on obtaining research funding. Through the following grants, we have been able to fund our trainees and activities.

- Liu, L. (PI). May 2016 to April 2017. Consumer guideline for locator technologies. Strategic Investment Program, AGE-WELL. \$20,000 (plus \$25,000 matching from Alzheimer Society of Ontario).
- Mihailidis, A., Sixsmith, A. (Scientific Directors). April 2015 to March 2019. Aging gracefully across environments using technology to support wellness, engagement, and long life (AGE-WELL). Network of Centres of Excellence (NCE). \$36,605,194.
L. Liu (PI Work Package 6.1) - Year 1: \$131,000 (2015); Year 2: \$83,875 (2016).
E. Stroulia (PI Work Package 6.2 – Year 1: \$65,500 (2015); Year 2: \$65,500 (2016).
I. Nikolaidis (PI Work Package 6.2 – Year 1: \$21,475 (2015); Year 2: \$21,475 (2016).
H. Yang (PI Work Package 6.2 – Year 1: \$21,475 (2015); Year 2: \$21,475 (2016).
- Liu, L. (PI, subgrant). Digital storytelling in persons with dementia. April 2014 to March 2018. CIHR Dementia Research Strategy – Canadian Consortium on Neurodegeneration in Aging (CCNA), Scientific Directors: A. Mihailidis & A. Sixsmith. Subgrant: \$100,000.
- Ferguson-Pell, M. (PI), Liu, L. (Co-I), Stroulia, E. (Co-I), June 2013-June 2014. Technologies for Living Independently: A Technology Case Study on Remote Patient Monitoring. Mitacs-Accelerate Internship Program, \$403,334. The award consists of a \$178,000.00 contribution from the industrial partner, Telus Health, and \$225,334.00 from Mitacs.
- Liu, L. (PI), 2013-2014. Locator Device Project. AIAE & AHS \$72,607.54
- Liu, L. (PI), Esmail, S., Taylor, L., Stroulia, E., King, S., 2013-2015. The use of mobile technology to enhance learning through online communities of practice among occupational therapy students in Edmonton and Calgary. Teaching and Learning Enhancement Fund (TLEF), University of Alberta, \$111,010.
- Liu, L. (PI), Stroulia, E., King, S., Nikolaidis, I., 2011-2012. How can technology reduce the workload and increase the productivity of HCAs in home care settings and increase the efficiency of the home care team overall? Alberta Health and Wellness, \$800,000.
- Liu, L. (PI), Stroulia, E., Sadowski, C., Lechelt, K., 2010-2011. Linking medication monitoring to hospital-based support. Healthcare Support through Information Technology Enhancements (hSITE) partnered research project sponsored by Alberta Health Services, NSERC multi-site project led by McGill University (\$35,000).
- Booth K. (PI) + 53 Network Investigators including Stroulia), 2010-2014, NSERC NCE, GRAND-MEOW/HEALTHSIM (\$350,000)
- TLEF VICToRS: Virtual Inter-professional Case-learning Tools for improving Real Service, (Sarah Forgie (PI) + 2 co-applicants including Stroulia), 2012-2013, \$35,000 (total).
- Stroulia E. NSERC/iCORE/IBM Industrial Research Chair, 2010-2014, \$1,500,000 (total).
- Stroulia E. (PI) NSERC Engage, Activity recognition through a GPS-enabled product line, May 2016- February 2017, \$22,000.

With approval of the Faculty of Rehabilitation Medicine, the Department of Occupational Therapy has budgeted **\$100K** of its flex funds toward the **renovation of the Smart Condo™ simulated learning environment**. Renovations started in the first week of January 2017.

We have leveraged the Smart Condo™ research and teaching to apply for **CFI funding**. The proposed “Movement Continuum Laboratory”, if funded, would expand the interdisciplinary research and teaching team members to include **30 faculty members** across **8 faculties** on campus. The infrastructure would allow us to conduct exciting research and teaching endeavours on hearable, wearable, and ambient sensor technologies. Each faculty member would bring to this infrastructure, his or her own research program/funding to expand our interdisciplinary collaboration.

8) Challenges: We have not faced any challenges significant enough to report here.

9) Future Plans

Research: Our research agenda for the next five years will be driven by the agendas we have outlined: (a) in our AGE-WELL workpackage on “developing and validating technologies for assessing and supporting the cognitive and mental health of seniors” and (b) in our Movement Continuum Laboratory CFI application (see next) on “multi-perspective analysis of motion and movement”.

Teaching: Based on our experience with collaborative project-based courses, we intend to expand the community of our students with collaborations with the ECE capstone course, the ECE practicum, and the CS independent-studies course. In addition, as our LiveBook simulation software matures, we will develop a systematic process for students in the health-sciences programs to develop virtual-patient cases, potentially as part of their rounds-based coursework and their placements. The Smart Condo™ also continues to be well used by other programs on campus.

Reflection on Health Sciences Council Expectations

We believe that, through our activities and outputs, we have met and surpassed Health Sciences Council’s Expectations for the Simulated Learning Environment Leaders.

- 1) We have established an international, interdisciplinary community that includes academics from numerous disciplines, industrial partners, and community care organizations. Our team has been productive in the development and validation of technologies for meeting a variety of healthcare challenges.
- 2) We have developed capacity for teaching and training at all levels of study (from BSc to MSc to PhD and to PDF). Our trainees engage in interdisciplinary scholarly work and their credentials qualify them for leadership roles in the interdisciplinary and technology-savvy health-care teams of tomorrow.
- 3) We have disseminated our research outcomes through publications in top-tier venues and we have mobilized our knowledge through a variety of outreach activities.
- 4) We have been successful in securing funding to support our activities and we are confident that we will continue to be so in the future.

In closing, we are grateful to the Health Sciences Council for granting us access to the Smart-Condo™ Simulated Learning Environment. We have leveraged this space to successfully obtain external funding to support research trainees and meet the expectations of the Health Sciences Council. We look forward to continuing and expanding our team and activities in the next five years.

Appendix A: Students and HQPs

(5) Post-doctoral fellows

1. V. Fernández Cervantes (CS): Kinect-based Exercise and Rehabilitation
2. A. Akl (CS): Sensor-data Fusion
3. A. Miguel Cruz (Biomedical Engineer): Health-care Technology Assessment
4. A. Rios Rincon (OT): Human-Studies Design
5. E. Park (OT): Digital Storytelling

(6) PhD students

1. N. M. Boers (CS 2011): Wireless Sensor Network Development for Urban Environments
2. D. Chodos (CS 2012): Using virtual worlds for scenario-based training
3. V. Guana (CS 2017): Model-driven Engineering for Health Apps
4. P. Azad Khaneghan (Rehab Science 2018): A Rating Scale for Mental Health Mobile Applications for Older Adults
5. N. Neubauer (Rehab Science 2019): Risk Assessment of Dementia Behaviors
6. Yukie Goto (PhD student from Sapporo Medical University, research internship in Fall 2016)

(15) MSc (Thesis-based) students

1. Angela Sekulic (Rehab Science 2012). A day in the life of a Health Care Aide: Frontline perspectives on when, where, and how information and communication technologies could be helpful.
2. K. Woo, (Rehab Science 2012): Usability of Medication Adherence Technologies among Older Adults.
3. L. Gutierrez (CS 2012): The fAARS Platform, For Augmented Alternate Reality Services and Games.
4. A. Alipour (CS 2013): A Contextual Approach towards More Accurate Duplicate Bug Report Detection
5. M. Vosoughpour Yazdchi (CS 2013): Indoor Localization with Passive Sensors
6. I. Vlasenko (CS 2013): Deployment planning for location recognition in the Smart-Condo™: Simulation, empirical studies and sensor placement optimization
7. S. Fairbairn (Phys Ed 2014): The Development and Implementation of a Gamified Stair Climbing Intervention at an Individual Level.
8. B. Bazelli (CS 2014): The WL++ Environment for Model-Driven Engineering of Cross-Platform Mobile Applications.
9. V. Ganev (CS 2016): Addressing Pre- and Post-Deployment Support of Wireless Sensor Networks.
10. S. Rafatnia (CS 2016): An Interactive Visualization Toolkit for Exploring Ambient-Assistive Living Traces.
11. M. Vatanpour Azghandi (CS 2016): Multiple Occupant Indoor Localization Open Access.
12. Reza Sobhannejad (CS 2017): MoodAlert
13. Parisa Mohebbi (CS 2017): The Sticky Condo
14. Sina Jalali (CS 2017): LiveBook
15. Hollis Owens (MA, 2017, Simon Fraser University): Digital Storytelling

(22) MSc (Course-based) students – selected projects related to the Smart Condo™

1. Alexandr Petcovici (CS 2016): A Smart-Condo Simulation
2. Golda Catalon (OT 2016): Effects of home modifications on the quality of life of older adults Aging in Place: A scoping review
3. Maryann Heacock (OT 2016): Development of a usability survey addressing medication adherence technology for caregivers of older adults using the Unified Theory of Acceptance and Use of Technology model

4. Kathy Huynh (OT 2016): An overview of the use of interior design to manage wandering behaviour in older adults diagnosed with dementia
5. Kayla Ladouceur (OT 2016): The aging population, accessible housing and future occupational therapy practice: A discussion paper
6. Andrew Martyn (OT 2016): Development of a pilot survey for the usability and acceptance of medication adherence technologies by older adults
7. Katie Staden (OT 2016): The effects of exergaming on cognition in individuals with cognitive impairments: A critical literature review
8. Miki Kobayakawa (OT 2016): Digital storytelling for people with dementia: A literature review
9. Mandy Chan (OT 2015). The visitability movement and its implication on occupational therapy in Canada: A scoping literature review
10. Jacquelyn Larden (OT 2015). Culture and history of stairs, implications for the visitability movement: A scoping literature review
11. Joshua Delos Santos (OT 2014). Validation of the Home for Life™ Guideline for use by homeowners
12. Sheila Wang: Using activity analysis to develop design criteria for an automated tooth brushing prompting system. (OT 2014)
13. Abid Valji (OT 2014). Age-friendly accessible homes – Validation of the Home for Life™ Guideline for use by occupational therapists
14. Tiffany Cheung (OT 2013). Usability and User Acceptance of a Computerized Tablet-based Assessment for Hemispatial Neglect (with A. Lok)
15. Hailey Dublenko (OT 2013). Age-friendly Accessible Homes: Construct Validity of the Home for Life™ Guideline
16. Melissa Smyth (OT 2013). Age-friendly Accessible Homes: Face and Content Validity of the Home for Life™ Guideline
17. Heather Jim (OT 2013). Ethical Issues of Smart Home Sensor Technologies for Remote Monitoring of Older Adults: A Scoping Literature Review
18. Megan Labas (OT 2013). Computerized Tablet-Based Cancellation Assessment for Hemispatial Neglect: Comparison With Original Paper-and-Pencil Assessment
19. Angeline Lok (OT 2013). Usability and User Acceptance of a Computerized Tablet-based Assessment for Hemispatial Neglect (with T. Cheung)
20. Paula Shyba (OT 2013). Designing a New Usability Assessment for Assistive Technologies Using a Combination of Pertinent Theories and Principles
21. Nicole Wellman (OT 2013). Designing a Smart Pillbox for Older Adults
22. Leanne Wist (OT 2013). Factors That Influence a Health Care Provider's Acceptance of Telehealth: A Scoping Literature Review that Identifies Potential Barriers to Future Telehealth

(12) BSc students

1. L. Gilmour (CS 2012): A Medication-Adherence Device and App
2. B. Abbey (ID 2012): A Medication-Adherence Device and App
3. C. Camp (ID 2012): A Medication-Adherence Device and App
4. C. Hofer (ID 2012): A Medication-Adherence Device and App
5. D. Gibbs (CS 2013): A Diabetes-Monitoring App
6. M. Paula Mendez (BSc OT, Universidad del Rosario) (2015): Gaming for cognitive assessment
7. A. Venkitachalam (CS 2015): SmartCondo simulation
8. T. Lazar (CS 2015): Cognitive-Assessment Apps
9. S. Murdock (CS 2016): Cognitive-Assessment Apps
10. B. Hunter (CS 2016): Kinect-based Exercise
11. D. Jossue Diaz Romero (Biomedical Engineering, Universidad del Rosario): 2017
12. Nicholas Yee, BSc Mechanical Engineering, Biomedical Option, Co-Op Program, UofA: 2017

Appendix B: Publications

Selected refereed publications related to the Smart Condo™ since 2011
(* denotes student or trainee; # denotes interdisciplinary author team)

1. (#) P. Senior, S. Babwik, H. Li, *B. Bazelli, J. Holland, E. Stroulia, R. Greiner, E. Ryan: Improved A1C with smart phone app use in Type 1 diabetes, *Canadian Journal of Diabetes*, July 2016.
2. Liu, L., Antonio Miguel Cruz, Tracy Ruptash, Shannon Barnard, Don Juzwishin (in press). Acceptance of global positioning system technology among dementia clients and family caregivers. *Journal of Technology in Human Services*. Manuscript ID WTHS-2016-0029.
3. (#) Amit Persad, Eleni Stroulia, Sarah Forgie. A novel approach to virtual patient simulation using natural language processing. *Medical Education* 50(11):1162-1163 · November 2016
4. (#) *Azad Khaneghah, P., Ferguson-Pell, M., Miguel Cruz, A., Bently, P., Stroulia, E., L. Liu (2016). Users' attitude towards personal health records: An exploratory pilot study. *Applied Clinical Bioinformatics Journal*, 7(2), 573-586. DOI: --. <http://dx.doi.org/10.4338/ACI-2015-12-ra-0180>. ISSN 1869-0327.
5. (#) Liu, L., Stroulia, E., Nikolaidis, I., Miguel-Cruz, A., Rios Rincon, A. (2016). Smart homes and home health monitoring technologies for older adults: A systematic review. *International Journal of Medical Informatics*. 91: 44-59.
6. *Arora, P., Liu, L., Roberts, M.R., & King, S. (2016). Reliability and validity of the Hindi version of Falls Efficacy Scale – International (FES-I) among older adults residing in Alberta, Canada. *The Indian Journal of Occupational Therapy*, 48(1), 3-7.
7. *B. Bazelli, E. Stroulia: WL++: a framework to build cross-platform mobile applications and RESTful back-ends. *International Journal of Business Process Integration and Management*, 15p
8. Liu, L., *Miguel Cruz, A., *Rios Rincon, A., Buttar, V., Ranson, Q., & Goertzen, D. (2014). What factors determine therapists' acceptance of new technologies for rehabilitation – a study using the Unified Theory of Acceptance and Use of Technology (UTAUT). *Disability and Rehabilitation*. <http://informahealthcare.com/dre> ISSN 0963-8288 print/ISSN 1464-5165 online.
9. *I. Vlasenko, I. Nikolaidis, E. Stroulia: The Smart-Condo: Optimizing Sensor Placement for Indoor Localization. *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 18p Oct 2014, 45(3):436-453.
10. (#) S. King, L. Liu, E. Stroulia, I. Nikolaidis: Using Simulations to Integrate Technology into Health Care Aides' Workflow. *International Journal Advanced Corporate Learning*, July 2013, 6:28-31.
11. (#) *D. Chodos, E. Stroulia, S. King, M. Carbonaro: Developing Interprofessional Health Competencies in a Virtual World. *Medical Education Online*, Nov 2012, 17:1-11. DOI: 10.3402/meo.v17i0.11213.
12. (#) *D. Chodos, E. Stroulia, S. King, M. Carbonaro: A framework for monitoring instructional environments in a virtual world. *British Journal of Educational Technology*, Jan 2014, 45(1):24-35.
13. (#) *D. Chodos, E. Stroulia, S. King: MeRITS: simulation-based training for healthcare professionals. *Studies in Health Technology and Informatics*, Jan 2011, 163:125-31 (PMID 21335774)
14. (#) R. Eagleson, S. de Ribaupierre, S. King, E. Stroulia: Medical education through virtual worlds: the HLTHSIM project. *Studies in Health Technology and Informatics*, Jan 2011, 163:180-4. (PMID 21335785)

15. (#) P. Boechler, M. Carbonaro, E. Stroulia, S. King, E. deJong, *D. Chodos: Technical Challenges And Solutions For Creating Virtual Environments For A Health Science Interprofessional Course. *The Internet Journal of Allied Health Sciences and Practice*. Oct 2011, 9(4).
16. (#) L. Liu, E. Stroulia, I. Nikolaidis, S. King: How can technology reduce the workload and increase the productivity of HCAs in home care settings and increase the efficiency of the home care team overall. Report to “Alberta Health and Wellness, Workforce Division” 2012.
17. (#) S. de Ribaupierre, B. Kapralos, F. Haji, E. Stroulia, A. Dubrowski, R. Eagleson. Healthcare training enhancement through virtual reality and serious games. In M. Ma, L. Jain, and P. Anderson (Eds.), “Virtual, Augmented Reality and Serious Games for Healthcare 1”, *Intelligent Systems Reference Library*, Vol. 68, Springer-Verlag, Chapter 1, 2014.
18. *I. Vlasenko, *M. Vosoughpour Yazdchi, *V. Ganev, I. Nikolaidis, E. Stroulia: The Smart-Condo: Infrastructure and Experience, *Communications in Computer and Information Science*, In S. Chessa, S. Knauth (Eds.) “Evaluating AAL Systems Through Competitive Benchmarking” *Communications in Computer and Information Science*, Volume 362, Springer, 63-82, 2013.
19. (#) *N. M. Boers, *D. Chodos, P. Gburzynski, L. Guirguis, J. Huang, R. Lederer, L. Liu, I. Nikolaidis, C. Sadowski, E. Stroulia: The Smart Condo Project: Services for Independent Living. In C. Roecker (Ed.) “E-Health, Assistive Technologies and Applications for Assisted Living: Challenges and Solutions” IGI Global, 289-314, 2011.
20. *T. Tong, *V. Guana, *A. Jovanovic, *F. Tran, *G. Mozafari, M. Chignell, E. Stroulia: Rapid Deployment and Evaluation of Mobile Serious Games: A Cognitive Assessment Case Study. 7th International Conference on Advances in Information Technology (IAIT2015) Nov 22-25, 2015, Bangkok, Thailand.
21. *V. Fernández Cervantes, E. Stroulia, C. C. Castillo Rojas, L. E. Oliva Amezquita, F. J. Gonzalez Siordia: Serious Rehabilitation Games with Kinect. *IEEE-GEM 2015*, October 14-16, 2015
22. *M. Vatanpour Azghandi, I. Nikolaidis, E. Stroulia: Sensor Placement for Indoor Multi-Occupant Tracking, 2015 International Conference on Information, Intelligence, Systems and Applications (IISA 2015) July -5-8 2015, Corfu, Greece.
23. *M. Vatanpour Azghandi, I. Nikolaidis, E. Stroulia: Multiple Occupant Movement Recognition in Smart Homes, 13th International Conference On Smart homes and health Telematics, 10-12 June 2015, Geneva, Switzerland.
24. *M. Vatanpour Azghandi, I. Nikolaidis, E. Stroulia: Indoor Sensor Placement for Diverse Sensor Coverage Footprints. 4th International Conference on Sensor Networks, 12p, February 11-13 2015, Angers, France.
25. *V. Guana, E. Stroulia: PhyDSL: A Code-generation Environment for 2D Physics-based Games. 6th IEEE Conference on Games, Entertainment, and Media Conference (IEEE GEM'14). Oct 22-24, 2014, 6p, Toronto. ON. Canada.
26. *V. Guana, *K. Gaboriau, E. Stroulia: ChainTracker: Towards a Comprehensive Tool for Building Code-generation Environments. 30th IEEE International Conference on Software Maintenance and Evolution (Tool Demo ICSM14). Victoria, BC. September 28-October 3.
27. *V. Guana, *T. Xiang, *H. Zhang, *E. Schepens, E. Stroulia: UnderControl an Educational Serious-Game for Reproductive Health. ACM SIGCHI Annual Symposium on Computer-Human Interaction in Play (CHIPLAY'14). October 19-22. Toronto. ON. Canada.

28. (#) *G. Constantinescu, E. Stroulia, J. Rieger: Mobili-T: A Mobile Swallowing-Therapy Device An interdisciplinary solution for patients with chronic dysphagia. The 27th IEEE International Symposium on Computer-Based Medical Systems, 431-434, May 27-29 2014.
29. (#) E. Stroulia, *S. Fairbairn, *B. Bazelli, *D. Gibbs, R. Lederer, R. Faulkner, J. Ferguson-Roberts, B. Mullen: Smart-phone Application Design for Lasting Behavioral Changes, The 26th IEEE International Symposium on Computer-Based Medical Systems, 291-296, Jun 2013.
30. (#) S. King, L. Liu, E. Stroulia, I. Nikolaidis: Using Simulations to Integrate Technology into Health Care Aides' Workflow. The International Conference on E-Learning in the Workplace, 4p, Jun 2013.
31. (#) E. Stroulia, I. Nikolaidis, L. Liu, S. King, L. Lessard. Home Care and Technology: A Case Study. The 2nd International Conference on Global Telehealth. 142-152, Nov 2012.
32. *L. Gutierrez, E. Stroulia, I. Nikolaidis: fAARS: A Platform for Location-Aware Trans-reality Games. The 11th International Conference on Entertainment Computing, 185-192, Sep 2012.
33. (#) *Alipour, *L. Gilmour, B. Abbey, C. Camp, C. Hofer, R. Lederer, L. Liu, I. Nikolaidis, G. Rasmussen, C. Sadowski, E. Stroulia: A Remotely Programmable Smart Pillbox for Enhancing Medication Adherence. The 25th IEEE International Symposium on Computer-Based Medical Systems, 1-4, Jun 2012.
34. (#) *K. Woo, *V. Ganey, E. Stroulia, I. Nikolaidis, L. Liu, R. Lederer: Sensors as an Evaluative Tool for Independent Living. The 4th International Conference on Applied Human Factors and Ergonomics, Advances in Human Aspects of Healthcare, Vincent G. Duffy (Ed.), CRC Press, 8190-8199, July 2012.
35. (#) P. Boechler, M. Carbonaro, E. deJong, E. Stroulia, and L. Guti rrez: Video Games for Teaching and Learning: Game-building as a Teaching Tool. Society for Information Technology & Teacher Education International Conference 2011, 2054-2061, AACE.
36. (#) R. Eagleson, S. de Ribaupierre, S. King, E. Stroulia: Medical Education and Evaluation through Virtual Worlds: The HLTHSIM Project. The 18th Medicine Meets Virtual Reality, 180-184, Studies in Health Technology and Informatics. J.D. Westwood, et. al. Eds. IOS Press, Amsterdam. Vol. 163, Feb 2011.
37. (#) *D. Chodos, E. Stroulia, S. King: MeRiTS: Simulation-Based Procedural Training for Healthcare Professionals. The 18th Medicine Meets Virtual Reality, 125-131, Studies in Health Technology and Informatics. J.D. Westwood, et. al. Eds. IOS Press, Amsterdam. Vol. 163, Feb 2011.

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38. Liu, L. (2015). Usability of locator technology among home care clients at risk for wandering. Final evaluation report, September 20, 2015, <http://www.albertahealthservices.ca/assets/info/res/if-res-htai-ldp-evaluation%20report.pdf>
39. Liu, L., Stroulia, E., & King, S. (2012). Health Care Aides and Technology. Summary Report & Final Report, May 30, 2012. Alberta Health and Wellness.

Appendix C: Refereed Presentations

Selected refereed presentations related to the Smart Condo™ since 2011 (* denotes student or trainee)

40. Liu, L., Juzwishin, D., Ruptash, T., Miguel Cruz, A. (2016). Can global positioning system (GPS) devices help people with dementia stay in the community and give their caregivers peace of mind? Paper to be presented at BIT's 4th Annual World Congress of Geriatrics and Gerontology (WCGG 2016), November 18-20, 2016, Kaohsiung, Taiwan.
41. *Sobhannelad, R., *Mohebbi, P., *Azad Khaneghah, P., *Neubauer, N. (presenter), Liu, L., Stroulia, E. (Oct. 22, 2016). Blue Alert – observing changes in social activities as a proxy for mood changes. Poster presented at the Canadian Association of Gerontology Conference, October 20-22, Montreal, Quebec.
42. *Lappierre, N., *Neubauer, N., Miguel Cruz A., Liu, L., Rousseau, J. (Oct. 21, 2016). What is known about technologies to detect falls? A scoping review. Poster presented at the Canadian Association of Gerontology Conference, October 20-22, Montreal, Quebec.
43. *Neubauer, N., *Lapierre, N., Rios Rincon, A., Rousseau, J., Liu, L. (Oct. 21, 2016). What do we know about technologies for wandering? A scoping review. Poster presented at the Canadian Association of Gerontology Conference, October 20-22, Montreal, Quebec.
44. Rios Rincon, A., Miguel Cruz, A., Liu, L. (Oct. 21, 2016). How is digital storytelling used among older adults? A systematic review. Paper presented at the Canadian Association of Gerontology Conference, October 20-22, Montreal, Quebec.
45. Stroulia, E., Liu, L., *Fernández Cervantes, V. (presenter), *Park, E., *Hunter, B., *Arychuk, S., *Kwan, W., *Rasmussen, K., *Rozsa, C., *Tupala, M., *Goto, Y. (Oct. 21, 2016). Feasibility of the Kinect Tai Chi for use with older adults as an alternative to group Tai Chi. Poster presented at the Canadian Association of Gerontology Conference, October 20-22, Montreal, Quebec.
46. Liu, L., Juzwishin, D., Miguel Cruz, A., Ruptash, T. (2016). GPS devices for dementia clients: Ethical considerations. Paper presented at the 10th World Conference of Gerontechnology (ISG 2016), September 28-30, 2016, Nice, France.
47. Tanner, M., Liu, L., Rammage, L. (2016). Perceptual disconnect in PD affects vocal QoL and intelligibility results. Poster presented at the World Parkinson Congress, September 20-23, 2016, Portland, Oregon.
48. Werther, K., Roduta Roberts, M., Esmail, S., Rios Rincon, A., Stroulia, E., Liu, L. (2016). Preparing for client interview using an online platform versus paper-based data - student preferences. Poster presented at CANHEIT HPCS, June 19-22, 2016, Edmonton, AB.
49. *Park, E., Daum, C., Liu, L. (2016). Relational ethics and technology: Considerations for qualitative health research. e-Poster presentation, e-Health Annual Conference & Tradeshow, June 5-8, 2016, Vancouver.
50. Ohyanagi, T., Miyazaki, M., *Goto, Y., Sengoku, Y., Liu, L. (2016). Wireless physiological monitor system adapted for Apple watch and iOS. e-Poster presentation, e-Health Annual Conference & Tradeshow, June 5-8, 2016, Vancouver.
51. *Azad Khaneghah, P., *Neubaur, N., Liu, L. (2016). Design guideline for mobile applications for mental-health conditions in seniors. Podium presentation, e-Health Annual

Conference & Tradeshow, June 5-8, 2016, Vancouver.

52. Liu, L., Rios Rincon, A., Esmail, S., Taylor, L., Miguel Cruz, A. (2016). Usability of mobile technologies in an occupational therapy program. Paper presented at the Canadian Association of Occupational Therapists Annual Conference, April 19-22. Banff, AB, Canada.
53. Liu, L., Miguel Cruz, A., Barnard, S., Juzwishin, D., Ruptash, T. (2016). Wearable GPS devices for dementia clients: A usability study. Paper presented at the Canadian Association of Occupational Therapists Annual Conference, April 19-22. Banff, AB, Canada.
54. *Azad Khaneghah, P., Liu, L. (2016). Mobile applications for depression: Are they suitable for older adults? Poster presented at the Canadian Association of Occupational Therapists Annual Conference, April 19-22. Banff, AB, Canada.
55. Liu, L., Taylor, L., Esmail, S., Stroulia, E., King, S., Rios Rincon, A. (2016). Mobile technologies enhance learning in a health professional program across two sites. 15th Annual Hawaii International Conference on Education (HICE), Honolulu, United States.
56. Taylor, E., Liu, L. (2016). Expert consulting – Does it need to be in person for effective learning? 14th Annual Hawaii International Conference on Education (HICE), Honolulu, United States.
57. Ohyanagi, T., Kanaya, K., Sengoku, Y., Leung, A., Liu, L., Miyazaki, M. (2015). Development of a new Bluetooth low energy device for measuring accurate reaction time. Society for Computers in Psychology Annual Convention Proceedings, page 9, Chicago Hilton, Chicago, USA. Presented by Ohyanagi November 20, 2015.
58. Liu, L., Miguel Cruz, A., Ruptash, T., Barnard, S., Juzwishin, D. (2015). GPS devices for monitoring dementia clients in the community give caregivers peace of mind (poster). Gerontological Society of America 2015: Aging as a Lifelong Process, November 21, Orlando, FL.
59. Liu, L., Miguel-Cruz, A., Ruptash, T., Barnard, S., Juzwishin, D. (2015). Caregivers as proxy for responses of dementia clients in a technology acceptance study. 44th Annual Scientific and Educational Meeting of the Canadian Association on Gerontology, October 25, 2015, Calgary, Canada.
60. *Azad Khaneghah, P., Liu, L., (2015). Review of mobile applications for older adults with depression (poster). 44th Annual Scientific and educational Meeting of the Canadian Association on Gerontology, Edmonton, Canada. October 22-25, 2015.
61. *Arora, P., Liu, L., Roberts, M., King, S., Freund-Heritage, R. (2015). Psychometrics properties of the Hindi version of the Falls Efficacy Scale – International (FES-I) among older adults in Alberta. Paper presented at the 44th Annual Scientific and Educational Meeting of the Canadian Association on Gerontology, October 24, 2015, Calgary, AB.
62. *Daum, C., Mayan, M., Liu, L. (2015). “I live in the city”: Exploring the role of daily activities among older women living in the inner city. Poster presented at the 44th Annual Scientific and Educational Meeting of the Canadian Association on Gerontology, Oct. 25, 2015, Calgary, Canada.
63. *Kobayakawa, M., Liu, L. (2015). Digital technologies for storytelling among people with dementia. Poster presented at the 44th Annual Scientific and Educational Meeting of the Canadian Association on Gerontology, October 24, 2015, Calgary, AB.
64. Liu, L., Ruptash, T., Barnard, S., Miguel-Cruz, A., Juzwishin, D., Aloisio, R. (2015). GPS

Technology-Guiding us Home: enhancing the lives of clients with dementia and their family caregivers with GPS technology. Simultaneous Roundtable Workshop presented at the 44th Annual Scientific and Educational Meeting of the Canadian Association on Gerontology, October 24, 2015, Calgary, AB.

65. Miguel Cruz, A., Liu, L., Ruptash, T., Barnard, S., Juzwishin, D. (2015). What factors affect acceptance of global positioning system (GPS) technology among dementia clients and their caregivers? 44th Annual Scientific and Educational Meeting of the Canadian Association on Gerontology, October 24, 2015, Calgary, Canada.
66. Liu, L., Stroulia, E., Nikolaidis, I., Miguel Cruz, A., Rios Rincon, A. (2015). Smart homes and home health monitoring technologies for older adults: A systematic review. Canadian Association on Gerontology, Oct. 24, 2015, Calgary, Canada.
67. Triscott, J., Liu, L. (for Bremault-Phillips S). (2015). Enhancing cultural awareness of seniors in future health care professionals. 44th Annual Scientific and Educational Meeting of the Canadian Association on Gerontology, October 24, 2015, Calgary, Canada.
68. *Azad Khaneghah, P, Liu, L. (2015). Review of mobile applications for older adults with depression. Poster presented at the 44th Annual Scientific and Educational Meeting of the Canadian Association on Gerontology, October 23, 2015, Calgary, AB.
69. Liu, L., Esmail, S., Taylor, L., Rios Rincon, A., Miguel Cruz, A. (2015). Health professional students' acceptance of mobile information communication technologies for learning - A study using the Unified Theory of Acceptance and Use of Technology (UTAUT). The Tenth International Multi-Conference on Computing in the Global Information Technology, October 14, 2015, St. Julians, Malta.
70. *Arora, P., Liu, L., Roberts, M., King, S., Freund, R. (2015). Reliability and validity of the Hindi version of the Falls Efficacy Scale - International among older adults in Alberta (received: Kemot Youth Talent Trophy for the Best Scientific Paper at OTICON 2015). 52nd annual National Conference of All India Occupational Therapists' Association, New Delhi, India.
71. Liu, L., Ruptash, T., Miguel Cruz, A. (2015). Usability of GPS technology to support people with dementia living in the community: client and caregiver experiences. e-Health 2015: Making Connections, Toronto, Canada.
72. Liu, L., Miguel Cruz, A., & Rios Rincon, A. (2014). What factors determine therapists' acceptance of new rehabilitation technologies – a study using the Unified Theory of Acceptance and Use of Technology (UTAUT) World Federation of Occupational Therapists (WFOT) conference, Yokohama, Japan, June 18-21, 2014.
73. King, S., Peacock, K., & Liu, L. (2014). A Blended Health Science Education Graduate Program: Integrating Technology Assignments into Coursework. CSEDU, 6th International Conference on Computer Supported Education, April 2-4, Barcelona, Spain.
74. *Smyth, M., *Dublenko, H., Liu, L., Wickman, R, Wilson, V. (2013) Aging-friendly homes: Validity of the Home for Life™ Guideline, Poster presented at the Canadian Association of Occupational Therapists Conference, May 29 to June 1, 2013, Victoria BC.
75. *Cheung, T., *Guana, V., *Labas, M., *Lok, A., Liu, L., Stroulia, E. (2013) Computerized tablet-based cancellation assessment for spatial inattention. Poster presented at the Canadian Association of Occupational Therapists Conference, May 29 to June 1, 2013, Victoria BC
76. *Sekulic, A., Liu, L., Bremault-Phillips, S., Esmail, S., King, S. (2013) Occupational

- Therapist as Ethnographer: A natural fit? Poster presented at the Canadian Association of Occupational Therapists Conference, May 29 to June 1, 2013, Victoria BC.
77. *Sekulic, A., Liu, L., Brémault-Phillips, S., Esmail, S., King, S. (2013) Information and communication technology use by Health Care Aides. Poster presented at the Canadian Association of Occupational Therapists Conference, May 29 to June 1, 2013, Victoria BC
 78. Mulholland, S., Esmail, S., Taylor, L., Liu, L. (2013). The future is here! An occupational therapy university satellite program. Poster presented at the Canadian Association of Occupational Therapists Conference, May 29 to June 1, 2013, Victoria BC.
 79. Stroulia, E., *Bazelli, B., *Fairbairn, S., *Gibbs, D., Liu, L., Lederer, R. (2013). Mobile self-health applications for lasting behavior change and health management. Poster presented at eHealth 2013, Ottawa, ON, May 26-29, 2013.
 80. Liu, L., Lederer, R., Rasmussen, G., Sadowski, C., Stroulia, E., Nikolaidis, I. (2013). The Smart Condo™ – Inter-professional Health Sciences Education meets Innovation. Hawaiian International Conference on Education, January 6-10, 2013, Honolulu.
 81. *Abby, B., *Alipour, A., *Gilmour, L., *Camp, C., *Hofer, C., Lederer, R., Rasmussen, G., Liu, L., Nikolaidis, I., Stroulia, E., Sadowski, C. (2012). A remotely programmable smart pillbox for enhancing medication adherence. 25th IEEE International Symposium on Computer-Based Medical System (CBMS 2012), Rome, Italy, June 20-22, 2012.
 82. *Abby, B., *Alipour, A., *Gilmour, L., *Camp, C., *Hofer, C., Lederer, R., Rasmussen, G., Liu, L., Nikolaidis, I., Stroulia, E., Sadowski, C. Student Design Competition: The Smart Pillbox Ranked among top 10 finalists) Rehabilitation Engineering and Assistive Technology Society of North America (RESNA), Baltimore, MD, June 28-July 3, 2012.
 83. Miyazaki, M., & Liu, L. (2012). Therapeutic robot for occupational therapy. Paper presented at Canadian Association of Occupational Therapists Conference, Quebec City, QC, June 6-9, 2012.
 84. Brémault-Phillips, S., Liu, L., Esmail, S., & *Appleton, T. (2012). Fostering Belonging and Connectivity Between Community Based Health Service Providers. Paper presented at Canadian Association of Occupational Therapists Conference, Quebec City, QC, June 6-9, 2012.
 85. Liu, L., Stroulia, E., King, S., Brémault-Phillips, S., Esmail, S., Nikolaidis, I., Ingolfson, A. (2012). On the role of technology in support of home-care aides. E-Poster presented at e-Health 2012, Vancouver, BC, May 27-30.
 86. Esmail, S., Brémault-Phillips, S., Liu, L., *Appleton, T. (2012). The impact of technologies on the intra and inter-personal aspects of HCAs' daily occupation. Poster presented at Canadian Society of Occupational Science (CSOS) Conference, Edmonton, AB, May 3-5, 2012.
 87. Brémault-Phillips, S., Esmail, S., Liu, L., Lee, J. (2012). Occupational Elements that Front-Line Health Care Aides Find Most Meaningful. Paper presented at Canadian Society of Occupational Science (CSOS) Conference, Edmonton, AB, May 3-5, 2012.
 88. Liu, L. (2012). Quality of Life – Independent Living; Technologies to support home care services and community living). Panel presentation at Best of Analytics, Edmonton, AB, April 24-25, 2012.
 89. *Woo, K., Liu, L., Lechelt, K., Waag, A., Maier, G. (2012). Usability of medication adherence technologies among older adults. Paper presented at Covenant Health Research Day, Edmonton, AB, February 9, 2012.
 90. *Sekulic, A., Liu, L., Brémault-Phillips, S., Esmail, S., King, S. Information communication technologies to support workflow of health care aides: Enduring user acceptance. Poster

presented at Covenant Health Research Day, Edmonton, AB, February 9, 2012. (This poster was also presented at Research on Aging: Nibble, Nosh and Network IX, University of Alberta, January 20, 2012; sponsored by the Alberta Centre on Aging and Alberta Association on Gerontology)

91. Esmail, S., Liu, L., Johnson, S., Deneka, J., Vang, L., Brémault-Phillips, S. (2011). Use of technology to improve the quality of care provided to home care clients by health care aides. Paper presented at The 5th Asia Pacific Occupational Therapy Congress (APOTC), Chiang Mai, Thailand, November 19-24, 2011.
92. *Woo, K., *Ganev, V., *Vlasenko, J., Liu, L., Nikolaidis, I., Stroulia, E. Poster: Medication adherence technologies (MATs): A clinical trial and survey (this poster was presented before in May 2011 at hSITE, Montreal) Glenrose Spotlight on Research Breakfast and Symposium, Edmonton, AB, October 25, 2011.
93. *Lee, J., *Morton, C., *Chen, T., *Schmitt, J., & Liu, L. (2011) Connected Assistive Lifestyle Monitoring Device (CALM). Poster presented at FICCDAT (Festival of International Conferences on Caregiving, Disability, Aging and Technology), June 5-8, 2011, Toronto, ON.
94. *Millar, K., *Cochrane, E., *Faulkner, R., Rasmussen, G., & Liu, L. (2011). Dialysis made interactive. Poster presented at FICCDAT (Festival of International Conferences on Caregiving, Disability, Aging and Technology), June 5-8, 2011, Toronto, ON.
95. Warren, S., *Harmer, W., *Tomnuk, J., & Liu, L. (2011). MATS – the Mobilizing Visual Tactile System. Poster presented at FICCDAT (Festival of International Conferences on Caregiving, Disability, Aging and Technology), June 5-8, 2011, Toronto, ON.

Appendix D: Invited Presentations

Selected invited presentations related to the Smart Condo™ since 2011

(* denotes student or trainee)

1. Liu, L. (2017). Alberta Association on Gerontology Symposium – Innovations on Dementia Care. Calgary, to be presented on March 14, 2017. “Latest technology assistance for individuals with dementia and what the future will look like”.
2. Stroulia, E., Liu, L. (2016). Pan WP 6.0 presentation at the second AGE-WELL AGM and Conference, October 19-20, 2016.
3. *Azad Khaneghah, P., *Tong, P., *Wilkinson, A., *Guana, V., Chignell, M., Stroulia, E., Liu, L. (Oct. 20, 2016). Mental health assessments in older adults. WP 6.1 Poster presented at the second AGE-WELL AGM and Conference, October 19-20, 2016.
4. Liu, L., *Neubauer, N. (presenter), Rios Rincon (Oct. 20, 2016). A conceptual framework to describe levels of risk associated with wandering in dementia. WP 7.4 Poster presented at the second AGE-WELL AGM and Conference, October 19-20, 2016.
5. Liu, L. (2016). Using mobile technologies to support the work of health care aides in home and community care. Alberta Continuing Care Association (ACCA) Conference, Edmonton Expo Centre, Northlands, September 14, 2016.
6. Liu, L. (2016). GPS wearable tracking devices for persons with dementia: Acceptance and recommendations by users in an AHS study. Geriatric Grand Rounds, Glenrose Rehabilitation Hospital, September 13, 2016.
7. Liu, L. (2016). Locator Devices. Kaye Edmonton Clinic, August 26, 2016.
8. Liu, L. (2016). What gerontechnology can help keep older, functioning or cognitively impaired people at home? Geriatric Medicine 2016: Art and Science Conference. Edmonton, Alberta, June 11, 2016.
9. Liu, L. (2016). Home for Life™. EXPO 2016, Continuing Care and Community Living Conference, May 6, 2016, Northlands, Edmonton.
10. Liu, L., Ruptash, T., Juzwishin, D., Barnard, S., Miguel Cruz, A. (2016). GPS devices for monitoring dementia clients in the community can give caregivers peace of mind. Poster presented at A Place to Call Home Conference, May 6, 2016, Northlands, Edmonton.
11. Liu, L. (2016). Dementia clients who wander from home: Can GPS devices give caregivers peace of mind? Presented to the Alberta Association on Gerontology, March 22, 2016, UofA Faculty Club, Edmonton.
12. Liu, L. (2016). Finding Your Way working group on locating technology. Presentation provided at the Finding Your Way Provincial Forum. Organized by the Alzheimer Society of Ontario, March 10, 2016, Toronto, ON.
13. Liu L. (2015). Supporting Canadians Living with Dementia Enabling individuals living with dementia to remain in the community: Technology and public awareness. Provincial/Territorial Health Care Innovation Working Group: Canadian Association on Gerontology Pre-Conference Symposium, October 23, 2015, Calgary, Canada.
14. Liu, L., Nikolaidis, I., Stroulia, E., Yang, H., *Cheng, G., *Fernandez, V., *Goto, Y., *Guana, V. (2015). Smart Condo: A living lab. WP6.2 CogAssess. Poster presented at AGE-WELL’s first AGM and Conference, October 23, 2015, Calgary, AB.

15. Chignell, M., Liu, L., *Tong, T., *Azad Khaneghah, P., *Guana, V., *Wilkinson, A. (2015). ICT applications for screening, assessment and interventions to enhance mental health. WP6.1 MenAssess. Poster presented at AGE-WELL's first AGM and Conference, October 23, 2015, Calgary, AB.
16. Fast, J., Strickfaden, M., Eales, J., Kim, C., Vermeer, Y., Ren, H., Martin, M., Fiorentinio, C., Keating, N., Liu, L., Mortenson, B. (2015). Assistive technologies that care for the caregiver. WP2.4 ATaCC. Poster presented at AGE-WELL's first AGM and Conference, October 23, 2015, Calgary, AB.
17. Liu, L. (2015). Learn the latest in home care delivery. Lethbridge Alumni Tea. June 20, 2015. Coast Lethbridge Hotel and Conference Centre.
18. Daum, C., Liu, L., & Mayan, M. (June 4, 2015). Thinking outside the home: Examining the function of activities in the lives of older women residing in inner city neighbourhoods. Poster presented at the first Faculty of Rehabilitation Medicine Research Day, University of Alberta, Edmonton, AB. [Award for best presentation]
19. Liu, L. (2014). Evolution of universal design in the context of occupational therapy practice. *OT Now*, 16(5), 3-4. Guest Editor for *OT Now* Special Issue on Universal Design. http://www.caot.ca/otnow/sept14/OTNow9_2014.pdf
20. Liu, L. (2014). Role of technology in therapeutic environments for seniors with mental health and other complex needs. Found in Translation (hosted by Alberta Addition and Mental Health research Partnership Program), Edmonton, Canada (poster presentation)
21. Liu, L., Schmitz, C., Hinrichs, J.(2014). U of A MSc OT program in Calgary: Teaching professional competencies at a satellite site. Canadian Association of Occupational Therapists pre-conference, Fredericton, Canada.
22. Liu, L.(2014). Practical application of gerontechnology for older adults. Canadian Geriatrics Society 34th Annual Scientific meeting, Edmonton, Canada
23. Azad Khaneghah P, Miguel Cruz A, Bentley P, Liu L, Eleni Stroulia, Ferguson-Pell M. (2014). Usability Evaluation of Online Personal Health Records in Monitoring and Management of Patients with Type 2 Diabetes. e-Health 2015: Making Connections, Toronto, Canada
24. Liu, L. & Stroulia, E. (2014). Practical application of gerontechnology for older adults. Canadian Geriatrics society 34th Annual Scientific meeting, Edmonton, AB, April 10-12, 2014.
25. Liu, L. (2014). Ten reasons for occupational therapists to participate in Hacking Health. *OT Now*, 163, 29-30.
26. Liu, L., & Stroulia, E. (2013) Health care aid and technology project. Technology Solutions for People with Disabilities, March 21, 2013, Standard Life Centre, Room 330, organized by Alberta Human Services
27. Stroulia, E., Liu, L., Nikolaidis, I. (2013) Seminar #2: U of A Smart Condo Team iSenior – Innovations in Seniors Living, November 16, 2012, 8:30 to 12:00 noon, LifeStyle Options Terra Rosa, organized by Seniors Housing Society of Alberta
28. Liu, L. (July/Aug 2013). 2013 COTF Lunch with a Scholar - Occupational therapy scholarship and information communications technology. *OT Now*, 15(4), 22-23. (This paper was presented by Liu as recipient of the COTF Scholar Award, at the Canadian Association of Occupational Therapists Conference, May 29 to June 1, 2013, Victoria BC.
29. *Woo, K., & Liu, L. (May/June 2013). Medication adherence technologies and older adults. *OT Now*, 15(3), 20-21.

30. Miyazaki, M., Liu, L., & Pankiw, T. (Mar/Apr 2013). Robotics and occupational therapy. *OT Now*, 15(2), 13-15.
31. Liu, L., & Reel, K. (2012). Open for Debate: Is technology now an essential component of good dementia care? Webinar for CAOT Lunch & Learn Series, January 31, 2012, 12:00 to 1:00 PM
32. *Ganev, V., *Vlasenko, J., *Woo, K., Nikolaidis, I., Stroulia, E., & Liu, L. (2011). Sensing technologies integration in the Smart Condo™. Poster presented at hSITE Annual Review, McGill University, Montreal, Quebec, June 16-17, 2011.
33. *Vlasenko, J., *Ganev, V., *Woo, K., Nikolaidis, I., & Stroulia, E., & Liu, L. (2011). Closing the loop between sensing and acting through virtual worlds. Poster presented at hSITE Annual Review, McGill University, Montreal, Quebec, June 16-17, 2011.
34. *Woo, K., *Ganev, V., *Vlasenko, J., Liu, L., Nikolaidis, I., & Stroulia, E. (2011). Medication adherence technologies (MATs) – Clinical trial and survey. Poster presented at hSITE Annual Review, McGill University, Montreal, Quebec, June 16-17, 2011.
35. Liu, L. (2011). Linking medication monitoring to hospital-based support. Presented at hSITE (Healthcare Support through Information Technology Enhancements) Annual Review, McGill University, Montreal, Quebec, June 16-17, 2011.
36. Liu, L. (2011). Key Topics in Rehabilitation for Persons with Obesity: Environmental Assessments and Interventions. Second National Obesity Summit Rehabilitation Workshop, Montreal, April 28-May 1, 2011.
37. Liu, L. (2011). Designing for an Aging Population. Alberta Association of Architects Annual General Meeting, Shaw Convention Centre, April 15, 2011.
38. Liu, L., *Boers, N. (2011). The Smart Condo – Technologies for home health services. Geriatric Grand Rounds, Glenrose Rehabilitation Hospital, Edmonton, Alberta, February 22, 2011.