INTERNATIONAL SOCIETY FOR GERONTECHNOLOGY
11TH WORLD CONFERENCE OF GERONTECHNOLOGY

7-11 May 2018
St. Petersburg, USA

Prepared by:

Alice Fong, Officer, The Hong Kong Council of Social Service
Clive Chan, Service Director, The Hong Kong Society for the Aged
Y.C Wong, Associate Professor, The Chinese University of Hong Kong

Date of Submission: 13 Aug 2018
A. Introduction

• Theme
  o “Evolving Designs for Our Future Selves

• Presentations
  o Keynote: 5
  o Symposium: 11
  o Roundtable: 2
  o Paper session: 24
  o Poster presentations: 44

• Speakers (Keynote)
  o Alex Mihailidis, Professor, University of Toronto
  o Jeffrey Kaye, Layton professor of neurology and biomedical engineering and the director of the Layton Aging and Alzheimer's Disease Center
  o Goldie Nejat, Canada Research Chair in Robots for Society. Associate Professor and Director of the Autonomous Systems and Bio-mechatronics Laboratory (ASBLab), Director of the Institute for Robotic and Mechatronics, University of Toronto. AGE-WELL Robotics Research Project
  o Mary Furlong, Ed.D, Mary Furlong and Associates' president and CEO
  o Paul Webster, Co-Founder and Lead Architect of Hardware Systems, Ubisense Limited

• Organized by
  o ISG North American Chapter
  o University of South Florida (USF)
  o Simon Fraser University (SFU)

B. Evaluation of the Event Programme

• Key note 1: Leading the Way in Gerontechnology: New Approaches and Promising Solutions
  • Speaker: Alex Mihailidis, Professor, University of Toronto
The conference was kick-started by Prof. Alex Mihailidis’s keynote session. In his speech, Alex mentioned that there are growing number of good designs but the majority of these solutions/devices have not made it to market due to the clients’ affordability and acceptance. These limitations included that many of them being too expensive and difficult to use, some of them are stigmatizing and technology development itself is a moving target.

Therefore, we will need disruption in the current technology landscape and new way of thinking, so as to enable aging-in-place, and the support care givers and families. New technologies have to be built into the user environment and that use of Artificial Intelligence (AI) to ensure that they are zero-effort for the user and caregivers. There are three areas to work upon: smart homes (supporting, monitoring and measuring), robotics (social, cognitive), and big data (smart home + robot generate big data with predictive functions). New delivery model should consider such devices as consumer products rather than medical products. Also designer should look into the need and ability of the future cohorts, not the current one.

- **Key note 2: Making pervasive computing pervasive**
  - Speaker: Jeffrey Kaye, Layton professor of neurology and biomedical engineering and the director of the Layton Aging and Alzheimer's Disease Center

During the past decade, a profusion of technologies and protocols have been developed to more effectively assess and deliver care to older adults with cognitive impairment, challenged health and declining function. These technologies take advantage of important developments in sensing and pervasive computing, wearable technologies, mobile and wireless communications, health information technology and “big data” analytics. Despite great promise, challenges including standardization gap, evidences based on samples and usability not clear, remain to realizing the full potential of these technologies and approaches. These significant gaps in research and development have hampered the spread of this potential. Recent and ongoing developments that are focused on addressing these challenges were presented.
• **Key note 3: Let us help you: The development of intelligent socially assistive robots as the next generation of healthcare helpers**

Speaker: Goldie Nejat, Canada Research Chair in Robots for Society. Associate Professor and Director of the Autonomous Systems and Bio-mechatronics Laboratory (ASBLab), Director of the Institute for Robotic and Mechatronics, University of Toronto. AGE-WELL Robotics Research Project

In her speech, Dr. Nejat introduced the development of the intelligent socially assistive robot. Robots are becoming an important part of our society as we age, especially in assisting activities of daily living, providing companionship, social and cognitive interventions, and providing aid in preventing depression and improving vital signs via their interaction capabilities. Goldie shared pilot studies conducted with the autonomous human-like assistive robots, Brian, Tangy, Casper and Leia in human-robot interaction scenarios. These innovative robotic technologies have the potential to improve the quality of life of older adults and their caregivers, as well as promoting independence and aging-in-place.

• **Key note 4: Blueprint to the longevity marketplace**

Speaker: Mary Furlong, Ed.D, Mary Furlong and Associates' president and CEO, Heidi Culbertson, Co-Founder & CEO, Marvee LLC

This session introduced how the longevity business ecosystem offers boundless opportunities for emerging companies, established corporations, investors and everyday consumers. There are many great businesses coming up, such as the “Voice first technology” and other innovations. Therefore, it is important for business owners to learn how to move from smart start-up to a successful, sustainable business, by understanding the true needs of the consumers and caregivers.
• Key note 5: From cars to care: Providing context to the Internet-of-Things and how Industry 4.0 will revolutionize future healthcare

• Speaker: Paul Webster, Co-Founder and Lead Architect of Hardware Systems, Ubisense Limited

In the age of Internet of Things (IOT), the most powerful cues are being the location of the specific interaction or sensor reading. Many of these sensing technologies can provide better location information, allowing the interactions between objects, or between people and objects, to become input events. The idea of Sentient Computing: computer system uses one or more sensors to perceive the environment and allow it to react. This can apply to production process (such as car manufacturing), but to health care also.

One of the examples shared by Paul is the “Smart Home” project by the Department of Veterans Affairs. The sentient computing system provided an invisible assistant for people recovering from brain injury. Another example is the use of location data as diagnostic aid, unobtrusively measuring cognitive decline or providing an early warning of elevated fall risks.

• Symposia
  o Presidential Symposium – Building creative gerontotechnology research funding to support international collaborations.
  o Use of gerontotechnology to support “successful ageing”.
  o Insights into the measurement of mobile device proficiency across cultures.
  o Technology design to support successful aging with disability.
  o Technology, innovation and the emerging silver economy.
  o An integrative approach to understand the use of technology to support functional autonomy in cognitively impaired older adults.
  o From user integration to usage: recent findings and evidence from Germany.
  o Caregiver-centered design of gerontotechnologies for supporting unpaid care in the community.
  o An ICT community standard supporting older adults and caregivers.
- Three new approaches to medication adherence to ensure a better self.

**Roundtable**
- Roundtable: The evolving role of ISG chapters and challenges managing non-profit member organizations
- Roundtable: Celebrating the contributions of Dr. Neil Charness – ISG’s Newest Grand Master

**Site visit 1 - USF Center for Advanced Medical Learning and Simulation (CAMLs)**

CAMLs is a free-standing simulation facilities exclusively dedicated to training healthcare professionals opened in 2012. It can replicate nearly any clinical/medical environment using virtual and human ‘patients’ (standardized patients) as well as testing resources. The standardized patients are trained “actors”, for medical students to practice communication skills in real-life scenarios, including telling bad news. The use of technology in simulation training facilitated students to be confident and competence.

If we also have such kind of centre in Hong Kong for advanced aged care, can this help to improve our services and also attract more young people to the industry?

**Site visit 2 - James A. Haley Veterans Hospital (JAHVH)**

JAHVH is a tertiary care facility with comprehensive health care capacity, and a teaching hospital (USF). It has five Veterans Health Administration facilities at various locations in Central Florida. It’s a part of the Veterans Integrated System Network 8. It has 415 hospital beds in the main hospital at Tampa and 118 Nursing home care unit (also at the main hospital).

We have visited the Spinal Cord Injury (SCI) unit, talked to two patients under their Assistive Technology Programme, and understood their use of 3D printing, prosthetics, exoskeleton, wheelchairs and even their new inventions in helping
patients to regain daily living abilities. We are being impressed by the extensive use of robotic in rehabilitation and also the use of Virtual Reality (VR) both therapeutically and recreationally.

- **Site visit 3 - USF Center for Assistive Rehabilitation and Robotics Technology (CARRT)**

  CARRT is a multidisciplinary center that integrates research, education and service for the advancement of assistive & rehabilitation robotics technologies. Researchers from various departments & colleges at USF including the College of Engineering, the School of Physical Therapy and Rehabilitation Sciences, the College of the Arts, and the College of Behavioral and Community Sciences collaborate on various projects.

  During our visit, young and talented students not only showcased their inventions but also demonstrated their passion in helping those in needed by applying their knowledge. Innovative designs by the students included:
  - Wheelchair controlled by body position and movement (calibrated by smartphone)
  - EEG headset controlled moving arm for object identification
  - Different kinds of robot and robotic arms

  We are all being impressed by the Rehabilitation Engineering and Electromechanical Design Lab (REED) and the CAREN (Computer Assisted Rehabilitation Environment) is a versatile, multisensory system that includes a real-time motion capture system, a 6-DOF motion platform with a split belt instrumented treadmill, a projection screen, a surround sound system and an integrated software package. The CAREN system can be used to measure how individuals walk with prosthesis and adapt to changes in the environment.

**C. Observation / Implications to Hong Kong / Recommendations**

Gerontechnology contributes to healthy, independent, and active ageing, and as a result promotes economic development. The rapid growth in ageing population induced a pressing need to release the burden on healthcare system and the carers. The
adoption of technology is an inevitable trend in this Digital Era. It makes healthcare work more efficient and effective, introduces new labour type and bring new business opportunities into the silver market. Most importantly, it reduces healthcare costs. This bring a new page to the current mode of caring, which needs modification to meet the increase and changing needs.

It is important to note that the new cohort of baby boomers reaching retirement age is very different: they are healthier, having youthful self-image, more tech savvy, felt more comfortable to use technology, and have higher expectations, etc. therefore, gerontechnology should look more into the future for this group of consumer. As a social service practitioner, we also need to remind ourselves that the use of technology is not only for the convenience of workers/ helpers. We shall also empower the older adults to make use of the technical solutions in their daily lives and gradually manipulate technology on their own.

Therefore, designers/ service provider/ manufacturers shall have a growing awareness of the consumer aspects in the development of gerontechnology products and solutions, to ensure the solutions are easy to use and affordable, non-stigmatizing and even include user integration/ involvement in various stages of development. Cross-disciplinary collaboration is also required to design comprehensive and practical solutions.

Apart from the existing assistive technologies, it is observed that the use of AI, making use of natural language or voice-first technology will be one of the biggest trends in gerontechnology, especially for social assistive robots and companion robots. Another major trend is the use of smart devices, smart living solutions and big data. Both of these trends required a well-developed Information and Communication Technology (ICT) infrastructure as prerequisite. However, the use of ICT in nursing home, elderly centres and the public/ private residential of senior citizens still has much room for improvement in Hong Kong. Collaboration by the government, commercial, education and social service sector is required to promote the development of ICT in social service.

Healthcare and social service agencies shall be well planned on the development of
technology adoption in service, from basic infrastructure to the application of computer systems and other equipment. On the other hand, government shall standardize the rules and regulations on the use of ICT and gerontechnology products and provide support to agencies with limited resources/ knowledge on ICT. As practitioners, we maintain and update our knowledge on related areas, especially learning from the good practice of other countries, will surely help us to maximize the utilization of resources.

Another observation for the conference is the participation of Asia Pacific countries and the changes on presentation topics. Compared to the conference in 2014 which was held in Taipei, the participation from Asia Pacific areas were much higher than in 2018. In 2014, the presentations from Asia Pacific areas focus more on dementia, digital engagement, product development for the aged, and fewer presentations on games, health and robotics, while in 2018, more presentations on mobility, robotics and health were found. It was also noticed that Korea became more active in the development and promotion of gerontechnology. They are also hosting the Internation Gerontechnology Expo & Forum (Gerontechnology & Care for aged person) in 8 – 10 November.

For Europe and America countries, their presentation focus more on rehabilitation, sensor, technology acceptance, cognition training, apps development, care givers and reflection of role of technology. The presentation topics reflected the development stage and the concerns on the need of senior citizens in different countries.

D. Evaluation of the Event Organization

The conference was a good opportunity for researchers, practitioners and professional bodies from different fields to exchange their ideas and connect with each other. Despite the organizing committee has inadequate manpower for logistic support, we still appreciated their effort in organizing this conference and the fruitful site visits.

E. Conclusion

After the conference, we found that there still areas we need to learn from other countries, apart from sending delegates to learn from other countries’ experience, it was suggest by one of our delegate, Mr. Clive Chan that the Hong Kong Council of
Social Service shall considering hosting the conference in coming future, say 2022, so as to attract more experts from East and West, to come to Hong Kong and provide us a wide range of research and experience sharing.