s/MAP certificate training program, 2020-2025
McMaster University, University of Manitoba and University of Windsor

Paula Gardner, Co-PI

https://smap.mcmaster.ca

What is s/MAP?

s/MAP Smart Mobility for Aging Population is an Interdisciplinary Training Program fo diverse graduate students, administered and managed at McMaster

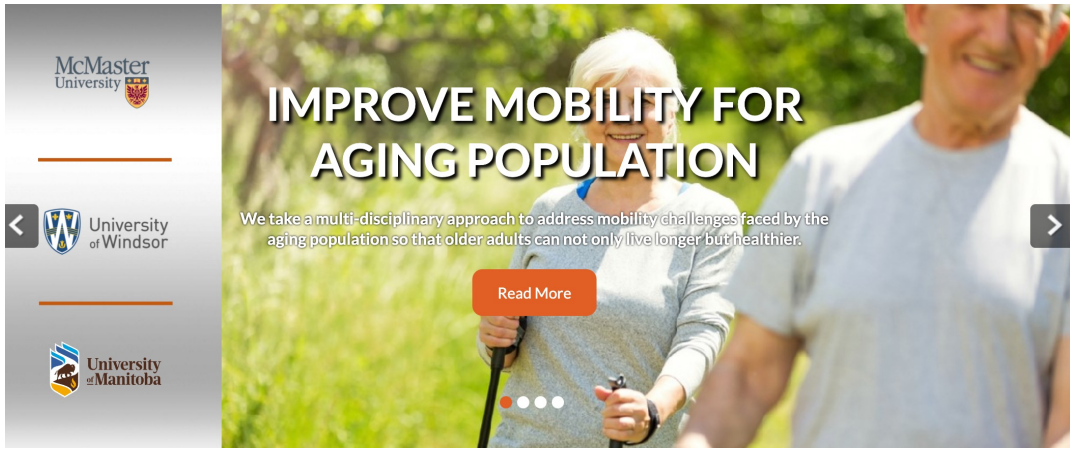
Faculty from three major Canadian research universities: McMaster University, University of Manitoba, and University of Windsor

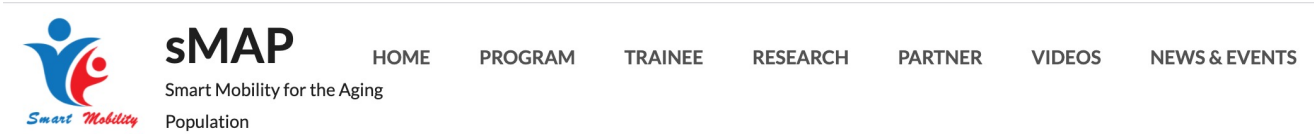
Focusing on user-centered design approaches, with breadth in engineering, computation, gerontology and frailty science training, qualitative and quantative methods, offered by trans-faculty experts

Generously funded by an NSERC Create grant

s/MAP Smart Mobility for Aging Population Interdisciplinary Training Program at McMaster

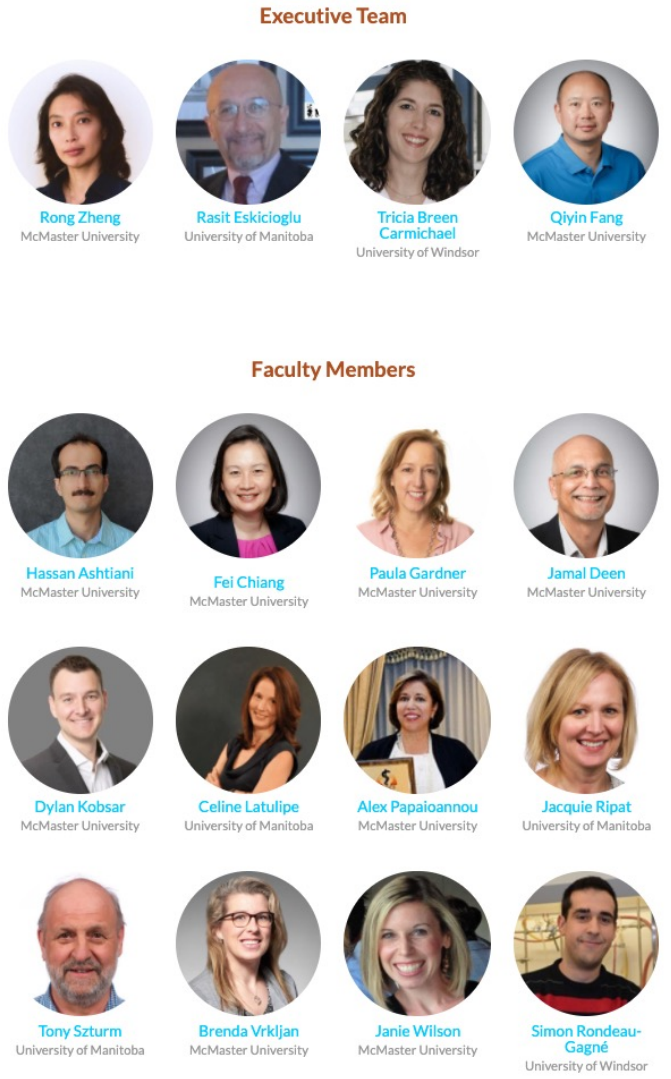
- The proportion of older adults (aged 65 and older) worldwide has been increasing steadily over the past 40 years. In Canada, it has been projected that seniors will represent up to 25% of the total population by 2036. Mobility is a crucial indicator of functional status, and a predictor of quality of life and longevity; hence, it is often called the sixth vital sign. Recent advancements in mobile technologies, artificial intelligence, embedded and sensing devices create exciting opportunities to address mobility challenges faced by the aging population. The NSERC-funded sMAP CREATE program is a multi-university, multi-disciplinary program aiming to foster a world-class, collaborative training environment and provide highly qualified personnel with unique experiential training opportunities centered around technologies and best practices for smart mobility for the aging population.





s/MAP Team

- The s/MAP team consists of technical leaders and healthcare professionals with diverse expertise and backgrounds including mobile computing and mobile data analysis, machine learning and data management, microelectronic and biophotonics, stretchable electronic devices, biomechanics and statistical & pattern analysis, user interaction and interfacing, and rehabilitation and geriatric care. Additionally, we have several clinicians as collaborators, who will not only provide valuable inputs to the training program but also facilitates user study and clinical trials of the technologies developed.



Curriculum Modules delivered by interdisciplinary faculty

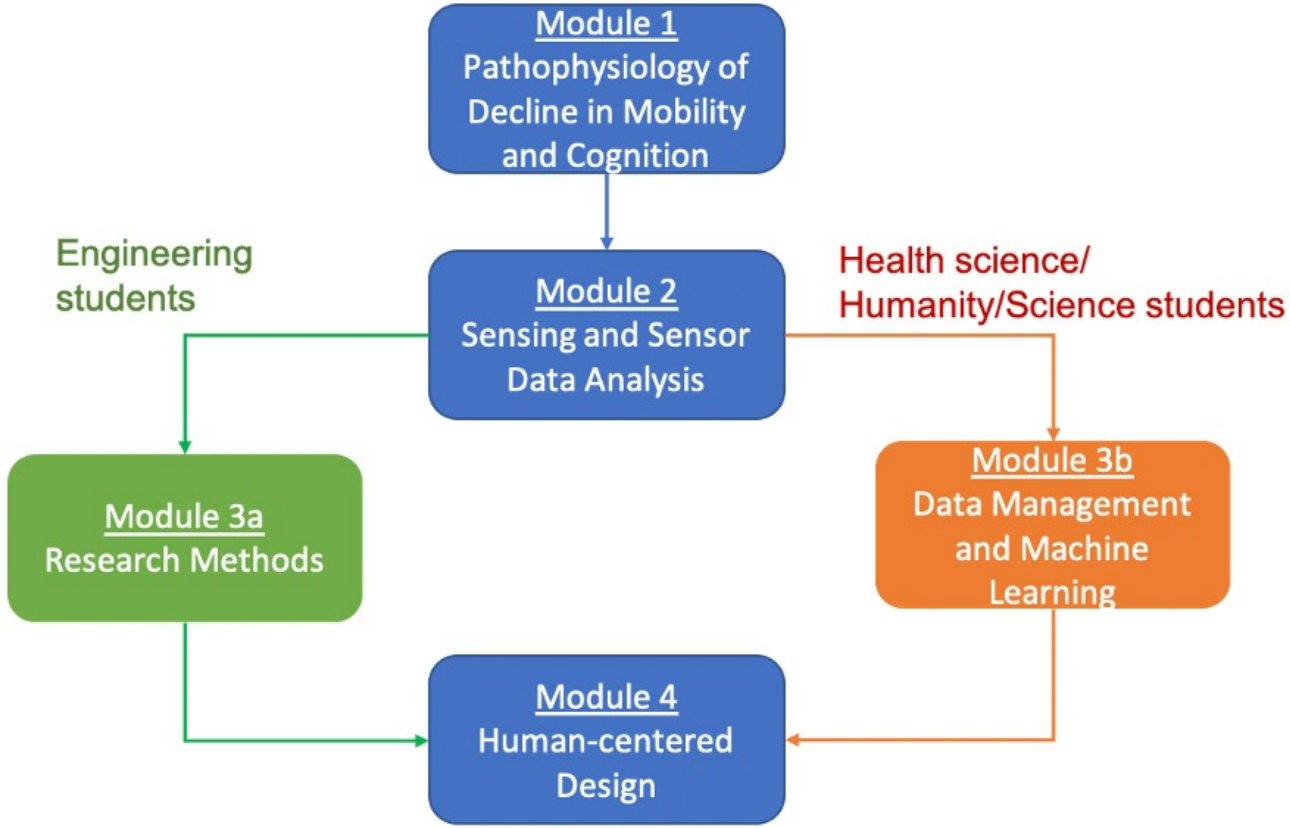


Figure 1. A Suggested Path of Completion

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My team's user-centered design curriculum modules

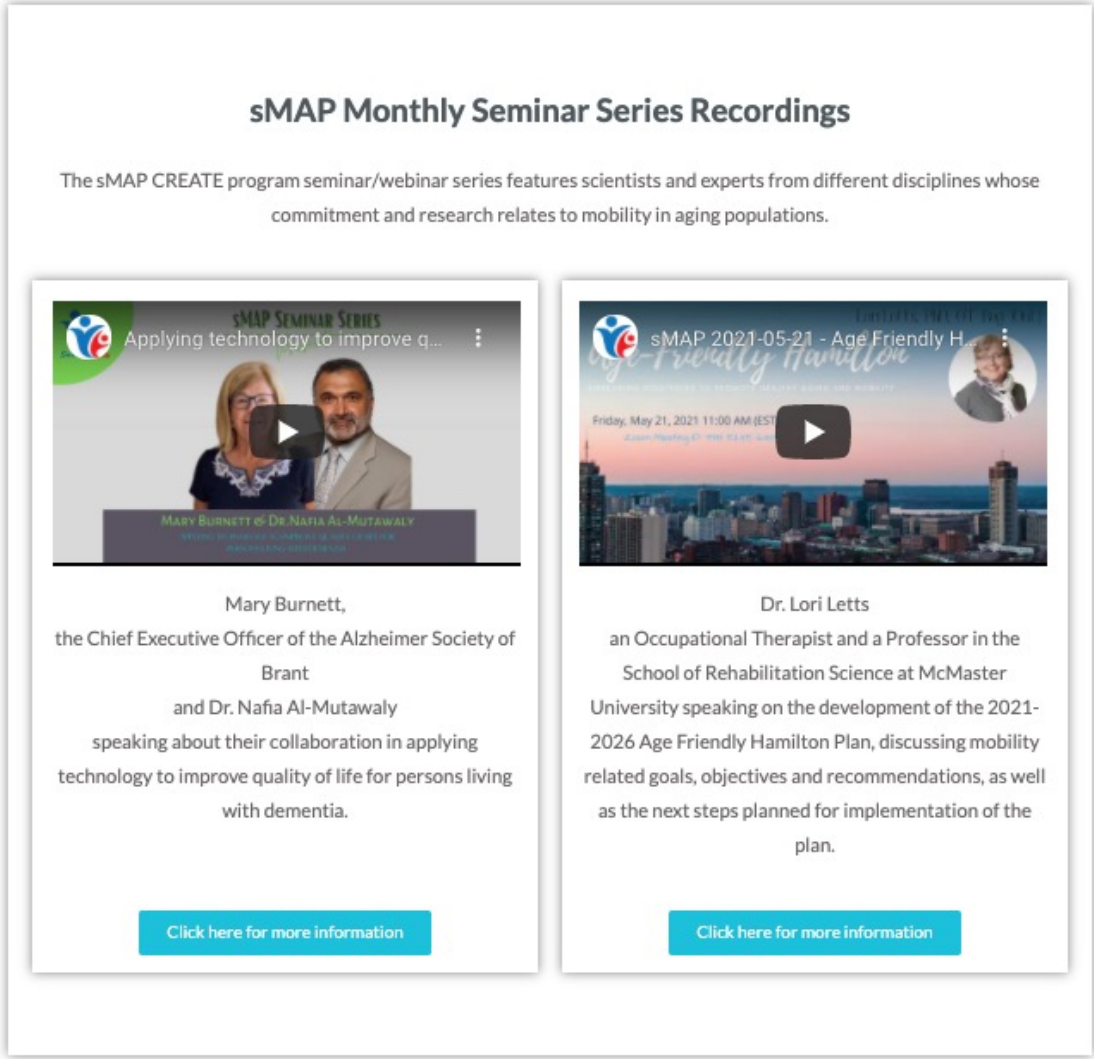
Prepared and delivered by P . Gardner, B. Vrkljan (McMaster) and C Latulipe (U Manitoba)

Module 4: Human-Centered Design			
Instructors	Paula Gardner, Dept. of Communication Studies and Multimedia, McMaster University (gardnerp at mcmaster dot ca)	Celine Latulipe, Dept. of Computer Science, University of Manitoba (Celine.Latulipe at umanitoba dot ca)	Brenda Vrkljan, School of Rehabilitation Science, McMaster University, (vrkljan at mcmaster dot ca)
Synopsis	This module will introduce students to literature examining approaches to interdisciplinary research binding health science, computer science and traditional and contemporary critical design approaches in ageing research. Students will be trained in diverse approaches to critical human-centered design including user interaction design, participatory design and co-design, with attention to distinct needs of diverse older adult populations. Students will be introduced to human-centered evaluation methods effective with aging populations with attention to remote testing environments. Organization of the materials		
Learning Objectives	• To gain literacy in diverse approaches to interdisciplinary research approaches in the area of aging • To distinguish among traditional and contemporary human-centered design approaches and the value of each to diverse aging research contexts • To understand aging, frailty and disability-informed approaches to human-centered research design • To gain familiarity in the design of research plans employing interdisciplinary and critical human-centered design approaches in aging research • To gain familiarity with evaluation assessment methods employing human-centered design with diverse aging populations • To gain familiarity with ethics protocols in the Canadian research environment, and consider consent processes as applied to older adult participants		
Prerequisites	none		

Schedule	Topics	Lecture Content	Instructor
Week 1 (Nov. 24th)	**Ethics, Interdisciplinarity and Traditional Need-finding**	Background, traditional HCI need-finding, visit with older adults (Slides) (Videos: 1, 2, 3, 4, 5, 6)	Dr. Gardner, Dr. Latulipe, Dr. Vrkljan 1-hr Q & A, Dec. 1st, Tue. 10 - 11am EST/9-10am CST
Week 2 (Dec. 1st)	**Design Approaches, Ideation & Prototyping**	Contemporary user-centered approaches, creative techniques (and how to choose), clinician as proxy and case study (ppt, videos: 2a1, 2a2, 2b, 2c1, 2c2, 2d)	Dr. Gardner, Dr. Latulipe, Dr. Vrkljan 1-hr Q & A, Dec 8th, Tue. 10 - 11am EST/9-10am CST
Week 3 (Dec. 8th)	**Evaluation in User-Centred Design**	Qualitative and quantitative Methods (interdisciplinary methods), combining multiple evaluation methods, User-centered design summary (ppt, video)	Dr. Gardner, Dr. Latulipe, Dr. Vrkljan 1-hr Q & A, Dec 15th, Tue. 10 - 11am EST/9-10am CST
Evaluation	Practice exercises, study report		

Learning Objectives	• To gain literacy in diverse approaches to interdisciplinary research approaches in the area of aging • To distinguish among traditional and contemporary human-centered design approaches and the value of each to diverse aging research contexts • To understand aging, frailty and disability-informed approaches to human-centered research design • To gain familiarity in the design of research plans employing interdisciplinary and critical human-centered design approaches in aging research • To gain familiarity with evaluation assessment methods employing human-centered design with diverse aging populations • To gain familiarity with ethics protocols in the Canadian research environment, and consider consent processes as applied to older adult participants
Prerequisites	none

Reference Material	1. Research team publication, published HCI 2019, Springer. "Employing Interdisciplinary Approaches in Designing with Fragile Older Adults; Advancing ABLE for Arts-Based Rehabilitative Play and Complex Learning " 23 pages key words: Participatory design - User interaction design - Interdisciplinary practice - Geriatrics - Physical therapy -Human computer interaction - Prevention - Fragility - Dementia - Neuroplasticity -Complex learning theory 2. TBA 3. TBA Human-Centered ResearchConferences (w published, open access papers) ACM Computer Human Interaction ACM Designing Interactive Systems Human Computer Communication
Activities/Deliverables	Exercises are embedded in the video lectures. Deliverables (short written and/or orally presented exercises) to be discussed in synchronous meetings.

https://smap.mcmaster.ca/index.php/smap-video-library/

Course Video Training Curriculum example, with community stakeholders