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Welcome to the CanWheel Corner!
A place to find out what is going on in the CanWheel world.

2013 CANWHEEL ANNUAL TEAM MEETING

This year's CanWheel Annual Team Meeting was held on June 21st in Vancouver, with an enjoyable team dinner held on the evening of June 20th. This one-day meeting was held at ICORD, with individual project meetings in the morning and the AGM in the afternoon. The meeting was well attended and well received by our pan-Canadian team!

The team is currently discussing where and when to hold the next annual meeting. Tentative dates have been set for June 11th or 12th, 2014.

TEAM UPDATE

We welcome new team members!



Angus Leigh is a MSc student in Computer Science at McGill University. Previously, he completed a Bachelor's degree in Systems Design Engineering at the University of Waterloo. He is currently working under the supervision of Dr. Joelle Pineau in the areas of machine learning, robotic navigation and computer vision.

Victor Gan is a MSc student at the University of British Columbia under the supervision of Dr. Ian Mitchell. He holds a Bachelor's degree in Systems Design Engineering at the University of Waterloo. His research interests include robotics, control, machine learning and computer vision.



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Martin Gerdzhev is a PhD student in Computer Science at McGill University, under the supervision of Dr. Joelle Pineau. He holds a Master's degree in Electrical and Computer Engineering from Ryerson University. His research work at Ryerson focused on creating an enhanced system for augmenting urban search and rescue canines. His areas of research interests are in Mobile Robotics, Autonomous Systems and Vehicles, Human Computer Interaction and Accessibility.



Emma Smith is a PhD student in the Rehabilitation Sciences program at UBC, supervised by Dr. Bill Miller. She is an Occupational Therapist with a clinical background in Assistive Technology, and a focus on wheelchairs and alternate access to computing and AAC devices. Emma's research focus is on power mobility use and training in older adults.



Andrew Sutcliffe is a MSc student in the Reasoning and Learning Lab at McGill. He is currently working on designing evaluation methods regarding the navigation of autonomous robots amongst people. The aim is to develop methods that are broad enough to be applied to a variety of robots including the Intelligent Power Wheelchair, a collaboration between McGill, Université de Montréal and Polytechnique Montréal. Andrew obtained his bachelor's degree in Mathematics and Computer Science from McGill in 2013.



Neil Traft is a MSc student in the Laboratory for Computational Intelligence at the University of British Columbia under the supervision of Dr. Ian Mitchell. He holds a Bachelor of Science in Computer Science from Tulane University. His research interests are in the areas of computer vision and situational awareness for robotics.

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PROJECT UPDATES

P1-P3

The Wizard of Oz study, affectionately known as the WoO study will be commencing in October 2013. This project aims to determine how intelligent wheelchairs can affect the mobility, independence, and Quality of Life for older adults with cognitive impairment in long-term care facilities, who are currently excluded from powered wheelchair use because of safety concerns. Many residential care facilities in Vancouver Coastal (Banfield, George Pearson) and Providence (Holy Family, St. Paul's Mount Saint Joseph, St. Vincent's and Youville) have enthusiastically signed on to the project, which we greatly appreciate! This study will collect a plethora of quantitative and qualitative data which will help inform the design of our intelligent wheelchair.

P2

As of January 2014, 5 out of 6 sites will have completed data collection for all time-points spanning one year. Vancouver, testing over two years, will be complete as of fall 2014. Preliminary results from P2 were recently presented at the RESNA conference in June and at AAATE in September. To date, there have been 25 presentations, one submitted paper on the qualitative findings, and several manuscripts are currently planned or in preparation by our co-investigators.

P4

Team members are currently completing a scoping review of the literature to determine what sensor technology is most effective in capturing useful information for both manual and power wheelchairs. Findings from this scoping review will be used to inform the creation of a survey to collect researcher, clinician and user perspectives on sensor technology uses in research and practice. The end goal is to use this information to inform the design of our intelligent wheelchair. Dr. Jaimie Borisoff has also joined the project team!

P5

The P5 project is running smoothly at all sites. Our goal is to collect data for 108 wheelchair users over our 6 research centers and as of September 2013, 84 individuals have enrolled in the study so we are well on our way! Further, a few sites have added a Satisfaction Survey to data collection, which may provide some additional useful data. A spin-off Caregiver study, where caregivers receive a series of power wheelchair training sessions, has begun in Vancouver. We are looking to recruit 8-10 participants, and 4 have been completed training thus far.

CANWHEEL ADVISORY COMMITTEE (CAC)

The next advisory committee meeting is scheduled for October 30th, 2013.

CANWHEEL TRAINEE JOURNAL CLUB

A Journal Club was implemented in early 2013. Each month, a different trainee from our diverse disciplines summarizes and posts on Wikispace an interesting or relevant article for the group. If you would like to have access to the Wikispace, please contact Kate at kate.keetch@vch.ca.

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CANWHEEL FACEBOOK PAGE



CanWheel is getting social! Please "Like" our Facebook page here: <https://www.facebook.com/canwheel>

CANWHEEL WEBSITE

The CanWheel website is maintained regularly; however, please check to ensure that all information is up-to-date (e.g. trainees, publications, biographies, spelling, etc.). To request a change, please contact Kate at kate.keetch@vch.ca.

TRAINEE SPOTLIGHT



Pooja Viswanathan (PhD, Computer Science, University of British Columbia)



Tell me a bit about the research you're currently working on.

I'm currently working on a study to test a modified powered wheelchair with cognitively-impaired older adults in a long-term care setting. This wheelchair includes a tele-operator interface that can be used to assist the driver in collision avoidance, steering, wayfinding, as well as driving from one location to another. Feedback obtained from users in this study will be used to develop intelligent wheelchairs that will eventually provide drivers with assistance automatically, based on the drivers' physical and cognitive abilities.

What would you say are the implications of this research?

This research will help restore mobility and independence to several cognitively-impaired long-term care residents who are currently excluded from powered wheelchair use due to safety concerns. By allowing these residents to use powered wheelchairs safely, we hope to increase their participation in daily activities, and improve their overall quality of life.

What got you into this line of research?

As an undergraduate student at the University of Waterloo, I walked into a seminar that was serving free food. The seminar happened to be showcasing several assistive technologies, including wayfinding devices for people with vision impairments. I felt like I'd found my calling and signed up to work as a research assistant to help develop the wayfinding device. This work eventually led me to the Intelligent Assistive Technology and Systems Lab in Toronto, where I began my research on intelligent wheelchairs.



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Is there anything else you'd like to say about your research?

The most important thing I've learned about carrying out assistive technology research is the need to keep an open mind. Over the last 8 years, I have learned so much about a population that I feel is largely ignored by society. Participants in my studies have consistently surprised me, demonstrating abilities that neither caregivers nor I expected to witness. It has been very rewarding to learn that the wheelchair technology my colleagues and I work on could make a significant impact in the lives of long-term care residents, especially those with dementia.

Tell me a "fun fact" about you.

I went solo skydiving and ended up landing in (hanging from) a tree!

CONFERENCES

Recent Conferences

[RESNA 2013 Annual Conference](#)

June 19-24, 2013
Hyatt Regency Bellevue
Seattle, Washington



Two team workshops were conducted:

- Kirby RL, Smith C, Rushton PW, Auger C, Demers L. Overview of a Power Wheelchair Outcomes Tool Kit.
- Kim B, Mihailidis A, Mitchell IM, TalebiFard P, Viswanathan P, Wang RH. Collaboratively Controlled Intelligent Robotic Wheelchairs: Capabilities and User Interfaces.

[ICORR World Congress on Gerontology and Geriatrics](#)

June 14-26, 2013
University of Washington
Seattle, Washington

One team workshop abstract was conducted:

- Viswanathan P, Wang R, Urdiales Garcia C, Mandel C, Routhier F, Arthanat S, Moffatt K. Evaluation of Intelligent Powered Wheelchairs.

[AAATE Conference](#)

September 19-22, 2013
Hotel Tivoli Marina Vilamoura
Algarve, Portugal

Three papers were presented:

- Rushton PW, Demers L, Miller WC, and CanWheel Research Team. Changes that Occur Among New and Experienced Older Adult Power Wheelchair Users: A One-Year Longitudinal Study.



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- Rushton PW, Miller WC, CanWheel Research Team. Understanding and Improving Power Mobility Use Among Older Adults: An Overview of the CanWheel Program of Research.
- Viswanathan P, Wang RH and Mihailidis M. Wizard-of-Oz and Mixed-Methods Studies to Inform Intelligent Wheelchair Design for Older Adults with Dementia

The CanWheel Research team also presented two posters at the Crossroads of Knowledge 2013 Conference in Montreal, QC, April 9, 2013.

KUDOS

We have many reasons to offer congratulations to members of our CanWheel Research Team!

- Dr. Laura Titus successfully defended her thesis on June 24th, 2013. Congratulations, Laura!
- Pooja Viswanathan and Paula Rushton did a fantastic job presenting at this year's AAATE meeting in Portugal!

Well done everyone! ☺



**Happy Fall from
the CanWheel Research Team!**



Please contact Kate Keetch (kate.keetch@vch.ca) with comments, questions or Kudos for the next newsletter.

**For more news and updates, please be sure to check out our website at
<http://www.canwheel.ca>**

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