

# CEAL NEWSLETTER

CEAL Summer, 2011



## Onward and upward!

Dear CEAL Partners,

All of the CEAL labs are receiving their final touches and research pilot testing in WinterLab and StairLab is well underway. Great progress has been made in StreetLab now that the curved projection screens are installed, the visual database is being compiled, the warping and shading of the visual projections has recently been completed, the sound system is functioning, and the wheelchair simulator is being machined.

In StairLab the on-site testing of the motion control software is now finished and we are collecting biomechanical data of simple stair navigation. The active safety harness (Robocap) has been carefully tuned in a way that will allow a fall to be initiated, but will catch and lower the participants gently.

Finally, despite the fact that it is summer outside, it is chilly and windy in WinterLab. Measured wind speeds of over 30 km/h are exceeding initial expectations.

We have now hosted literally hundreds of local, national, and international visitors to CEAL for tours, conferences, and collaborative meetings. We anticipate that the excitement and interest will continue to build as we near the official launch.

Sincerely,

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## Scooter Safety

Scooters are rapidly increasing in popularity as a mode of transport for people with mobility limitations. However, maneuvering scooters both indoors and outdoors can be challenging due to small spaces, obstacles, and varying surface conditions. While there has been some progress in developing indoor built environments that are accessible to scooters, there remains limited understanding of scooter performance in outdoor conditions and in particular, outdoor winter environments.

Winter conditions such as ice, snow, and slush pose serious challenges to drivability. These conditions can reduce slip resistance and form obstacles making it difficult to maintain heading and to stop safely and can also increase the potential for sliding and tipping, especially when turning or traveling over sloped surfaces. CEAL's WinterLab provides an ideal setting for studying winter scooter performance in a safe,

controlled, and reproducible manner that has not been possible in the past.

Research in WinterLab will be used to measure the outdoor performance of a sample of scooters in simulated challenging winter environments. WinterLab is equipped with force plates and a motion capture system which will enable us to quantify scooter slipping, rolling or sliding resistance, errors in heading, and tipping, to assess performance of scooters on different winter surface conditions and a range of slope angles with both pneumatic and solid tires.

The results of this research will be helpful for developing testing standards that can be used to characterize traction and stability in winter, for informing universal design guidelines for urban outdoor environments, for helping users to select appropriate scooters, and for scooter design.

## FICCDAT was a huge success!

Nearly 1,300 delegates from 60 different countries attended this year's Festival of International Conferences on Caregiving, Aging and Technology in Toronto in June.

During the conference over 200 delegates also had the opportunity to tour CEAL. Extra tours were added to the agenda given the high levels of excitement and interest.



## International Conference on Stair Safety: the first of its kind

The International Conference on Stairway Usability and Safety was held in Toronto on June 9<sup>th</sup> and 10<sup>th</sup> following FICCDAT to address the increasing rates of stair related injury around the world and to come up with a plan to address the problem. Participants at the meeting included experts in stair related injury epidemiology, forensics, law, as well as ergonomics and biomechanics.

The meeting concluded that the three highest priority areas in need of further study are:

- 1) Epidemiology of stair falls
- 2) In-laboratory studies of stair biomechanics
- 3) In-laboratory studies of handrails and guardrails

Working groups were formed around these three areas to co-ordinate further research.

