iCity-ORF: Urban Informatics for Sustainable Metropolitan Growth

3rd Annual Research Day, June 22, 2018

University of Toronto, 35 St. George Street, Galbraith Building, GB202

10:00	**Welcome**	Eric Miller, iCity-ORF Principal Investigator
10:15	**Foundations in Ontologies, Taxonomies, Platforms and Software 4 x 20 minutes**	The iCity Ontology: Reasoning with and Visualizing Transportation Knowledge, Megan Katsumi and Ajaz Hussain
		Working with a User-Centred Taxonomy, Jeremy Bowes
		iCity ITSoS and its Visualizations, Ahmed Aqra and Nannini Lee Balakrishnan
		ILUTE: Integrated Land Use, Transportation and Environment Model *Reboot*, Eric Miller
11:45	**Quantitative and Qualitative Complete Streets Surveys**	Evaluating Walkable Streets with a 3D Stated Preference Survey, Dena Kasraian and David Kossowsky
		Preparing a Qualitative Survey of the King Street Pedestrian Experience, Sara Diamond and Mudit Ganguly
12:30	**Lunch**	
1:15	**Choose a hands-on demonstration of a survey or game**	In the ITS Lab SF3103:
		Visualizing Alternative Complete Streets in Waterfront Toronto 3D Survey
		iCity Park: A Virtual Parking Simulation Game
		In GB202:
		Complete King Street Pedestrian Experience Survey
2:00	**Research Café** **Choose 3 from among 9 presentations 3 x 25 minutes**	In the lunch break, please choose 3 from among 9 presentations described on the reverse page by claiming one pink, one green and one yellow sticky from the boards labelled Session 1, Session 2 and Session 3.
3:15	**Roadmap and Vision**	Steve Easterbrook
3:50	**Closing comments**	Eric Miller

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1) Pedestrian Intersection Safety Index, Elkan Wan *with Ahmed Aqra and Baher Abdulhai* As active transportation becomes more important to inner-city travel, cities like Toronto are calling for a proactive approach to ensuring pedestrian safety. We use GIS spatial analysis easily observed traffic data to create a pedestrian safety index to enable transportation planners and engineers to make decisions to implement road safety measurements.	**2) ITSoS GIS Services**, Anastassios Dardas *with Ahmed Aqra and Baher Abdulhai* The massive amounts of geospatial data created daily must be analyzed and visualized to provide useful information to stakeholders. Example interactive WebGIS services implemented on the Intelligent Transportation System of Systems enable stakeholders to conduct more efficient yet effective decision-making to improve the performance of transportation systems on the metropolitan scale.	**3) Investigation of Transportation and Land Use Co-Evolution in the GTHA**, Dena Kasraian *with Shivani Raghav, Bilal Yusuf, and Eric Miller* Have there been more land developments near highways or transit stations? Are car and transit accessibilities related to the distribution of population and jobs? This research discusses the dynamics of transportation and land use in the GTHA over the past 40 years.
4) Evaluation of Bus Bridging Scenarios for Railway Service Disruption Management: A User's Delay Modelling Tool, Aya Aboudina and Alaa Itani *with Ehab Diab, Siva Srikukenthiran and Amer Shalaby* Bus bridging is a strategy used by transit agencies to provide service during a subway disruption. We have developed a tool for aiding transit agencies to select the most appropriate bus-bridging plan by estimating the associated total user delay. The tool is tested through case studies of the TTC.	**5) Modelling the Determinants of Streetcar Bunching**, Ehab Diab *with Paula Nguyen, Aya Aboudina and Amer Shalaby* This research aims at understanding the factors affecting the likelihood of streetcar bunching and investigates the external and internal factors that affect the time to the initial bunching incident from the terminal departure time. It also develops a model that predicts the time to bunching occurrence on individuals trips for real-time applications.	**6) Capturing Pedestrians in Travel Forecasting Models Through Smart Data**, Jeff Casello and Xiaomeng Xu We'll present the conceptual frameworks necessary to model pedestrian activities in both conventional (four-step) and activity-based travel forecasting models. The former use estimates of trip generation, trip distribution, and utility functions for mode choice; the latter consider households' abilities to satisfy a subset of total travel demand through walking using empirically gathered data on pedestrian tours – their lengths, their duration and the number of activities accomplished.
7) Maximum City YouthScore, Angela Ma *with Josh Fullan, Sam Perry* YouthScore is both an engagement tool and a metric to evaluate streets, places and neighbourhoods based on their youth friendliness. The tool uses quantitative and qualitative methods to assess criteria that youth identify as important features of safe, welcoming, sustainable, and enjoyable city places.	**8) The Compara and VIZLAND Café**, Marcus Gordon *with Sara Diamond, Jeremy Bowes, Michael Carnevale, Minsheng Zheng* There is a plethora of software and visual supports on the internet today, and it is difficult for users working in particular use domains to select appropriate and applicable toolset support. Compara selectively sources key related software applications while VIZLAND, being designed to appropriate visualization representations by use domain, supports the building of a successful taxonomy framework and dashboard for users.	**9) Constraint-Based Methods for the Design and Analysis of Urban Systems**, James Williams *with Steve Easterbrook* Cities are complex, interdependent systems of systems: interventions to address issues in one domain can have unforeseen consequences in others and in the context of resilience, cascading failures can ripple from one subsystem to another. We are adapting constrained heuristic search techniques that capture multi-stakeholder requirements and applying them to urban models to provide better decision support.