

1. GENERAL INFORMATION

Bilal Farooq, Ph.D.

Canada Research Chair, Disruptive Transportation Technologies and Services
Associate Professor, Transportation Engineering
Director, Laboratory of Innovations in Transportation (<https://litrans.ca>)
Department of Civil Engineering
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2. EDUCATION

École Polytechnique Fédérale de Lausanne, Switzerland

Postdoctoral Fellow, Transportation and Mobility Lab, January 2011 – July 2013

University of Toronto, Canada

Doctor of Philosophy, Transportation Engineering, September 2006 – June 2011

Lahore University of Management Sciences, Pakistan

Master of Science, Computer Science, September 2001 – July 2004

University of Engineering and Technology, Pakistan

Bachelor of Engineering, Civil Engineering, March 1996 – January 2001

3. RECOGNITIONS

3.A Awards

- 2019 – **Certificate of Appreciation for Service**, ADB10: Travel Behavior and Values Committee, Transportation Research Board
- 2018 – **Ontario-China Young Researcher Exchange** program
- 2018 – Ontario **Early Researcher Award**
- 2017 – **Canada Research Chair in Disruptive Transportation Technologies and Services**
- 2017 – Award for Best Ph.D. Student-Led Paper, **Honourable Mention, 5th International Choice Modelling Conference**. Student: Melvin Wong, Ph.D. student under supervision of Dr. Farooq
- 2016 – Winner of **2016 MassMotion Academic Pedestrian Modelling Project of the Year**, Oasys Software (<http://www.oasys-software.com/project-of-the-year-2016>)
- 2016 – Visiting Researcher at Guangdong University of Technology (GUT), Guangzhou, China
Invitation to the President GUT for a fully funded three months stay to develop new research projects at GUT
- 2015 – Mentored my students who won in “Urban Autonomous Delivery” Hackathon organized by MIT Media lab, November 2015, Boston (<https://goo.gl/eZre33>)
- 2014 – Québec **Early Researcher Award**
- 2013 – Switzerland Representation at Global Young Scientist Summit, January 2013, Singapore
- 2011 – PhD thesis selected for presentation and inclusion in the proceedings of 90th Annual Meeting of Transportation Research Board
- 2003 – Deans Honor List, Lahore University of Management Sciences, 2001-2003
- 2000 – Among Top 3 students in the batch, 1996-2000

3.B Scholarships and Fellowships

- 2012 – Natural Sciences and Engineering Research Council (NSERC) of Canada Industrial Research and Development Fellowship, 2012-2013. (Declined)
- 2011 – Swiss Government Fellowship for International Postdoctoral Research Fellows, 2011-2014.
- 2010 – International Fellowship, Universiteit Utrecht, Netherlands
- 2010 – Ontario International Fellowship
- 2010 – Richard Soberman Fellowship, University of Toronto
- 2009 – FORTRAN Systems Scholarship
- 2010 – Doctoral Fellowship, University of Toronto, 2008–2010
- 2008 – Pakistan International Doctoral Scholarship 2006–2008
- 2001 – Pakistan Ministry of Sciences and Technology's IT Scholarship for Master in Computer Science (Declined)
- 1995 – Shaheen Foundation Scholarship, Pakistan, 1990–1995

4. EMPLOYMENT HISTORY

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|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Feb 2017 – present | Associate Professor, Civil Engineering, Ryerson University |
| May 2017 – Jan 2020 | Assistant Professor (tenure track), Civil Engineering, Ryerson University
<i>Teaching: Transportation Engineering courses at undergraduate and graduate level.</i>
<i>Research: Industry and Government funded applied research in Transportation</i>
<i>Training of Civil and Transportation Engineering students at undergraduate and graduate level</i> |
| Aug 2013 – Apr 2017 | Assistant Professor (tenure track), Civil, Mining and Geotechnical Engineering, École Polytechnique de Montréal
<i>Teaching: Transportation Engineering courses at undergraduate and graduate level</i>
<i>Research: Industry and Government funded applied research in Transportation</i>
<i>Training of Civil and Transportation Engineering students at undergraduate and graduate level</i> |
| Jan 2011 – Jul 2013 | Course Instructor, Mathematics, École Polytechnique Fédérale de Lausanne, Switzerland |
| Sep 2008 – Dec 2010 | Course Instructor, Civil Engineering, University of Toronto |
| Sep 2007 – Dec 2007 | Course Instructor, Ted Rogers Business School, Ryerson University |
| Sep 2006 – Dec 2010 | Research Assistant, Civil Engineering, University of Toronto |
| Aug 2005 – Aug 2006 | Founder and Chief Architect, xCube Innovations Software
<i>Practiced Software Engineering and its applications in distributed systems</i>
<i>Trained Software Engineers</i> |
| Aug 2005 – Aug 2006 | Lecturer, Computer Science, National University of Emerging and Computer Science, Pakistan |
| Jul 2003 – Jul 2005 | Software Engineer and Team Lead, Bentley Systems Inc. |

Practiced Software Engineering and its applications in Computer Aided Design and Modelling (CAD/CAM)

Trained Software Engineers

Sep 2001 – Jul 2003 Teaching Assistant, Lahore University of Management Sciences

5. RESEARCH FUNDING HISTORY

5.A Summary (based on approximate exchange rates)

Total Amount	~\$8,615,000
Peer-Reviewed External	~\$8,005,000
Internal Awards	~\$210,000
Research Contracts	\$400,000

5.B Peer-Reviewed External Grants

- Towards Social Intelligence in Smart Mobility Systems: Technologies, Methods, and Applications
2020/04 – 2025/03 Principal Investigator
Value: \$310,000 Source: NSERC Discovery
(Evaluation Ratings: 2 Outstanding, 1 Very Strong)
- Distributed Traffic Management System for Intelligent Vehicles: Operationalization and Testing
2020/01 – 2020/12 Principal Investigator
Value: \$125,000 Source: NSERC I2I
- Smart Campus Integrated Platform Development
2020/04 – 2025/03 Co-Principal Investigator
Value: \$1,875,000 Source: NSERC Alliance
- Smart Work Zone Management
2020/02 – 2022/01 Principal Investigator
Value: ~\$195,000 Source: MITACS & Institute of International Education
- Virtual Reality to study the role of Social Conformity in the acceptance of Autonomous vehicles (VeRONICA)
2019/03 – 2022/02 Co-Principal Investigator
Value: ~\$1,500,000 Source: Economic and Social Research Council (United Kingdom)
- Standardization of Connected Vehicle Technologies
2019/02 – 2019/06 Principal Investigator
Value: \$15,000 Source: Mitacs Accelerate for student Farah Samouh
- Machine Learning based Decision Support System for Shared Work-Fleet Management
2019/04 – 2022/04 Principal Investigator
Value: \$500,000 Source: Canadian Urban Transit Research & Innovation Consortium (CUTRIC)
- Ontario-China Young Researcher Exchange Award
2018/10 – 2018/10 Principal Investigator
Value: ~\$10,000 Source: Government of Ontario and Chinese Ministry of Science and Technology
- Ontario Early Researcher Award
2018/04 – 2023/04 Principal Investigator

- | | | |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| | Value: \$140,000 | Source: Government of Ontario |
| 10. | Canada Research Chair in Disruptive Transportation Technologies and Services
2017/11 – 2022/11
Value: \$500,000 | Principal Investigator
Source: Natural Sciences and Engineering Research Council (NSERC) |
| 11. | CarbonCount: A Personal Travel Related Greenhouse Gas Emission Accounting System
2017/11 - 2019/3
Value: \$200,000 | Principal Investigator
Source: Ministry of Environment and Climate Change, Ontario |
| 12. | Modelling Quality and Attractiveness of Public Transport Networks
2017/4 - 2020/4
Value: \$160,000 (30%) | Co-Principal Investigator
Source: Fonds Québécois de la Recherche sur la Nature et les Technologies (FQRNT) |
| 13. | DataMobile: Open Source Big Data Warehousing Platform for Urban Systems
2016/4 - 2019/4
Value: \$300,000 (53%) | Co-Principal Investigator
Source: SSHRC Insight Development and Connection |
| 14. | Development of Immersive Virtual Reality for Travel Behaviour Analysis
Summer 2016
Value: \$4,500 (100%) | Principal Investigator
Source NSERC USRA for student Zihui Zhong |
| 15. | Comparative Analysis of Pedestrian Movement and Behaviours in Shanghai and Montréal
2016/5 - 2016/8
Value: \$5,000 | Principal Investigator
Source: Mitacs Globalink for student Alexandra Beaulieu |
| 16. | Simulation platform development for reserved car (Uber, Didi) market: A Case study of Shanghai
2016/1 - 2016/4
Value: \$5,000 | Principal Investigator
Source: Mitacs Globalink for student Alexis Pibrac |
| 17. | Advances in Understanding Pedestrian Dynamics for Urban Sustainability
2015/4 - 2020/4
Value: \$135,000 | Principal Investigator
Source: NSERC Discovery |
| 18. | Understanding the Pedestrian Dynamics for Sustainable Active Mobility - Building a Modern Data Collection Infrastructure
2015/4 - 2020/4
Value: \$340,000 | Principal Investigator
Source: CFI-JREL and Québec |
| 19. | Development of Sensors Network for Large-Scale Mobility Data
Summer 2015
Value: \$5,000 | Principal Investigator
Source: Mitacs Globalink for student Viet Ba |
| 20. | Development of Simulation Environment for Mutli-Modal Traffic
Summer 2015
Value: \$5,000 | Principal Investigator
Source: Mitacs Globalink for student Thinh Phuc |
| 21. | Development of User Detection and Tracking System for Adaptive Signal Control
2015/4 - 2018/4
Value: \$146,000 (33.33%) | Co-applicant
Source: Fonds Québécois de la Recherche sur la Nature et les Technologies (FQRNT) |
| 22. | Pedestrian Behaviour in Public Spaces: Modelling and Simulation using Ubiquitous-Network Data
2014/4 - 2016/4 | Principal Investigator |

Value: \$96,100 (100%) Source: FQRNT—Programme établissement de nouveaux chercheurs universitaires

23. Post-Car World
2013/3 - 2014/3
Value: CHF1,000,000 (20%) Co-investigator
Source: SNSF

24. Pedestrian Dynamics: Flows and Behavior
2012/3 - 2014/3
Value: \$400,000 (50%) Co-investigator
Source: Swiss National Science Foundation (SNSF)

5.C Internal Grants

1. NSERC High-Rating Supplement

2020/04 Principal Investigator
Value: \$10,000 Source: FEAS, Ryerson

2. Ryerson Travel Grant

2017/11 – 2019/04 Principal Investigator
Value: \$3,000 Source: Ryerson University

3. Ryerson Undergraduate Research Intern Programme (peer-reviewed)

2017/09 – 2018/05 Principal Investigator
Value: \$3,000 Source: Ryerson University

4. Start Up Grant

2017/05
Value: \$100,000 (100%) Source: Ryerson University

5. Polytechnique Undergraduate Research Intern Programme (peer-reviewed)

2014/05 – 2017/05 Principal Investigator
Value: \$20,000 (100%) Source: Polytechnique Montréal

6. Prediction of Dynamic Traffic Conditions on Urban Roads Using GPS Traces: A Bayesian Updating Approach (peer-reviewed)

2014/02 – 2015/02 Principal Investigator
Value: \$15,000 (100%) Source: Fond Polytechnique

7. Start Up Grant

2013/09 Principal Investigator
Value: \$40,000 (100%) Source: Polytechnique Montréal

5.D Research Contracts

1. Demand Analysis of New Train Hotel between Montréal and Boston/New York

2016/5 - 2016/12 Principal Investigator
Value: \$35,000 (100%) Source: Traîn de nuit

2. Movement Analysis of Pedestrianized Streets in Gay Village

2016/5 - 2016/9 Principal Investigator
Value: \$15,000 (100%) Source: Gay Village Management

3. Study of Pedestrian Flux in train stations (PedFlux)

2012/4 – 2015/4 Co-applicant
Value: CHF 320,000 (50%) Source: Swiss Railways (SBB/CFF)

6. ACTIVITIES

6.A Student Supervision

The following tables catalogue Dr. Farooq's complete trainee supervision record in the past five years.

Position	Current Trainees		Former Trainees	
	Sole supervision	Co-supervision	Sole supervision	Co-supervision
Postdoctoral fellows	1	0	4	0
Ph.D. students	4	3	1	5
MASc. students	0	0	7	6
Undergraduate researchers	3	0	18	0
Graduate researchers	0	0	4	3

Post-Doctoral Fellows Supervised

#	Name	Project Title, Program Information, and Activities	Dates
PDF1	Ranwa Al Mallah	Cybersecurity of Transportation Systems	Feb 2020 -
PDF2	Irum Sanallah	Demand driven optimization and analysis of vehicle fleets	May 2019 – Sep 2019
PDF3	David Lopéz	Blockchain based mobility data management in Smart Cities Appointed: Assistant Professor, Instituto de Ingeniería, Universidad Nacional Autónoma de México. Postdoc Scholarship from Mexican Industry.	Mar 2018 – Mar 2019
PDF4	Dr. Shadi Djavadian	End-to-End Routing for Connected and Autonomous Vehicles Appointed: Senior Manager, Ford Mobility Nominated at Ryerson for the Banting Postdoctoral scholarship	Aug 2017 – Feb 2020
PDF5	Dr. Anae Sobhani	Advanced Travel Behavioural Modelling Postdoc, Sole Supervision Assistant Professor at University of Utrecht, Dec 2018 Senior Research Fellow at TU Delft in Oct 2017-2018	Nov 2015 – Sep 2017

Graduate Students Supervised

#	Name	Project Title, Program Information, and Activities	Start Date
GS1	Nael Alsaleh	Demand modelling for on-demand mobility services	Sep 2019 – present
GS2	Rafael Vasquez	Virtual sandbox for smart mobility Research featured by MIT Technology Review Current Work: Data Scientist at Loblaws Logistics	Sep 2018 – Sep 2019
GS3	Farah Samouh	Automated multimodal last-mile goods delivery problem Awarded: Mitacs Accelerate fund to work with Canadian Urban Transit Research and Innovation Consortium (CUTRIC) Current Work: Traffic Designer at CONSOR Engineers	May 2018 – Sep 2019

GS4	Mehdi Meshkani	Shared Autonomous Mobility Solutions Ph.D. (Ryerson), Sole Supervision	May 2018 – present
GS5	Lama Al Faseeh	Autonomous Vehicles in Mixed Traffic Conditions Ph.D. (Ryerson), Sole Supervision Awarded: Queen Elizabeth II Graduate Scholarship in Science and Technology	Sep 2017 – present
GS6	Arash Kalatian	Behavioural Analysis of Autonomous Vehicles and Pedestrian Interactions Ph.D. (Ryerson), Sole Supervision	May 2017 – present
GS7	Godwin Badu-Marfo	Integrated System for Smart-Phone based Transportation Surveys Ph.D. (Concordia), Co-Supervision with Z. Patterson	Jan 2017 – present
GS8	Ali Yazdiadeh	Advances in behavioural models using longitudinal trajectory data Ph.D. (Concordia), Co-Supervision with Z. Patterson <i>Current Work: Post Doc at Exo and IVADO, University of Montréal</i>	Sep 2016 – Feb 2020
GS9	Alexandra Beaulieu	Location Choice Modelling using Ubiquitous Wi-Fi Sensors Data MAsc. (Polytechnique), Sole Supervision Awarded: MITACS Globalink Scholarship 2016 <i>Current Work: Engineer at CIMA+</i>	Jan 2016 – Sep 2017
GS10	Melvin Wong	Hybrid Travel Demand Models using Econometrics and Machine Learning Ph.D. (Ryerson, Polytechnique), Sole Supervision <i>Directly admitted to Ph.D. programme after finishing undergraduate degree.</i> Winner: Autonomous Mobility, MIT Media lab Hackathon 2015 Honourable Mention: Best PhD Student-Led Paper at ICMC2017 <i>Current Work: Post Doc, EPFL, Switzerland</i>	Sep 2015 – Aug 2019
GS11	Tingting Zheng	Demand Analysis of Interurban Bus Service MAsc. (Polytechnique), Co-Supervision with C. Morency	May 2015 – May 2017
GS12	Antoine Grapperon	Enriching Smartcard Data with Socio-Demographics using Information Fusion MAsc. (Polytechnique), Co-Supervision with M. Trépanier Awarded: Bourse d'excellence du CIRRELT 2015-2016 Winner: Autonomous Mobility, MIT Media lab Hackathon 2015 <i>Current Work: Solution Analyst at INRO</i>	Jan 2015 – Jun 2016

GS13	Guilhem Poucin	Activity Mining in Wi-Fi Logs MAsc. (Polytechnique), Co-Supervision with Z. Patterson Winner: Autonomous Mobility, MIT Media lab Hackathon 2015 <i>Current Work: Data Scientist, Creditinfo Decision Analytic</i>	Jan 2015 – Mar 2017
GS14	Ranwa Al-Mallah	Traffic Management in Connected Vehicles using Vehicular Ad-hoc NETWORK (VANET) Ph.D. (Polytechnique), Co-Supervision with A. Quintero <i>Current Work: Postdoc, Cybersecurity lab, Polytechnique Montréal</i>	Sep 2014 – Mar 2019
GS15	Alexis Pibrac	Dynamic Estimation of Pedestrian Flow in Public Spaces MAsc. (Polytechnique), Sole Supervision Awarded: MITACS Globalink Scholarship 2016 Awarded: Oasys Best Research Project of the Year 2016 <i>Current Work: Data Scientist at TeamRise</i>	Sep 2014 – Jun 2016
GS16	Rida Shetwi	Building Information Modelling System for Large-Scale Transportation Projects MAsc. (Polytechnique), Sole Supervision Awarded: Libyan International Graduate Studies Scholarship <i>Current Work: Architect/Engineer, GAMA Engineering Inc.</i>	May 2014 – May 2016
GS17	Ali Yazdiadeh	Generalized Specification for Capturing Heterogeneity in Demand Modelling MAsc. (Concordia), Co-Supervision with Z. Patterson <i>Current Work: Started Ph.D. at Concordia</i>	Sep 2014 – Aug 2016
GS18	Mohammad Kianpour	Bayesian Estimation of Traffic Flow Conditions using Streaming GPS Data MAsc. (Polytechnique), Sole Supervision	May 2014 – Jan 2017
GS19	Dariush Ettehadieh	Systematic Parameter Optimization and Application of Automated Tracking Pedestrian-Dominant Situations MAsc. (Polytechnique), Co-Supervision with N. Saunier <i>Current Work: Consultant at WSP, London</i>	Sep 2013 – Dec 2014
GS20	Gabriel Sicotte	Modelling the Interdependence between Transportation Modes and Trip Chains MAsc. (Polytechnique), Co-Supervision with C. Morency <i>Current Work: Consultant at AMT, Montréal</i>	Sep 2013 – Dec 2014
GS21	Hamzeh Alizadeh	Route Choice Modelling using GPS Data Ph.D. (Polytechnique), Co-Supervision with N. Saunier <i>Current Work: Senior Modeller, Exo Montréal</i>	Sep 2013 – Apr 2018

GS22	Marija Nikolic	Modelling the Stochastic Relationship between Pedestrian Flow Indicators Ph.D. (EPFL, Switzerland), Co-Supervision with M. Bierlaire <i>Current Work: Senior Data Scientist, Data Analytics and AI, Swisscom</i>	Nov 2012 – Aug 2013
GS23	Flurin Hunsler	Macroscopic Demand Loading Models for Pedestrian Flow Ph.D. (EPFL, Switzerland), Co-Supervision with M. Bierlaire <i>Current Work: Assistant Professor, University of Glasgow</i>	Oct 2012 – Aug 2013
GS24	Antonin Danalet	Activity based Travel Demand Modelling for Pedestrians Ph.D. (EPFL, Switzerland), Co-Supervision with M. Bierlaire <i>Current Work: Scientific Collaborator Mobility and Transport at the Swiss Federal Office for Spatial Development (ARE)</i>	May 2012 – Aug 2013
GS25	Ricardo Hurtubia	Random Utility based Integrated Spatial Modelling Ph.D. (EPFL, Switzerland), Co-Supervision with M. Bierlaire <i>Current Work: Assistant Professor at Catholic University, Chile</i>	Jan 2011 – Aug 2012
GS26	Sohrab Saleh	Simulation based Calibration of Social Force Model MAsc. (EPFL, Switzerland), Co-Supervision with M. Bierlaire <i>Current Work: Engineer at Transitec, Switzerland</i>	Jan 2012 – Aug 2013

Undergraduate Research Students

#	Name	Project Title, Program Information, and Activities	Dates
UR1	Shivam Patel	Parallelized Traffic Simulation Platform Awarded: Ryerson University Research Lab Placement Scholarship	Sep 2019 – April 2020
UR2	Le Tran	Parallelized Traffic Simulation Platform Awarded: Dean of Engineering Research Lab Placement Scholarship	Sep 2019 – April 2020
UR3	Johnathan Lam	Parallelized Traffic Simulation Platform Awarded: Dean of Engineering Research Lab Placement Scholarship	May 2019 – Sep 2019
UR4	Paul Boutot	Virtual Sandbox for Smart Mobility Awarded: Ryerson University Research Lab Placement Scholarship	May 2019 – Sep 2019
UR5	Noah Litarri	CarbonCount app development Awarded: Ryerson University Research Lab Placement Scholarship	May 2018 – Sep 2018
UR6	Veronica Gluza	Parallelized Traffic Simulation Platform	Jan 2018 – present

UR7	Grace Yip	Design of Behavioural Experiments in Immersive Virtual and Augmented Reality Environment Sole Supervisor	Jan 2018 – April 2019
UR8	Rafael Vasquez	Open Platform for Immersive Virtual and Augmented Reality based Travel Behaviour Experiments Sole Supervision Awarded: Ryerson University Research Lab Placement Scholarship	Sep 2017 – Aug 2018
UR9	Nikki Rahnamaei	Distributed Dynamic Routing of Connected and Autonomous Vehicles Sole Supervision	May 2017 – Dec 2017
UR10	Laurent Ferradou	Analysing Mobility Patterns in Gay Village Pedestrianized Streets Sole Supervision Awarded: UPIR Scholarship (2016-2017)	Sep 2016 – Dec 2016
UR11	Pascal Desrochers	Wi-Fi Sensors Development for Mobility Detection Sole Supervision	May 2016 - Aug 2016
UR12	Felita Ong	Ubiquitous Data Collection in Gay Village Pedestrianized Streets Sole Supervision Awarded: Polytechnique Placement Scholarship	May 2016 - Aug 2016
UR13	Zihui Zhong	Immersive Virtual Reality Environment for Transportation Experiments Sole Supervision Awarded: NSERC USRA, UPIR Scholarship (2015-2016, 2016-2017)	Sep 2015 - present
UR14	Tristan Brousseau-Rigaudie	Long-term deployment of Sensors Network Sole Supervision Awarded: UPIR Scholarship (2015-2015)	Sep 2015 - May 2016
UR15	Thinh Phuc	Automated Data Processing in Ad-hoc Sensor Network Sole Supervision Awarded: MITACS Globalink Scholarship	May 2015 - Aug 2015
UR16	Viet Dang Ba	Development of Positioning System in Ad-hoc sensors network Sole Supervision Awarded: MITACS Globalink Scholarship	May 2015 - Aug 2015
UR17	Alexandra Beaulieu	Analysing Mobility Patterns in Street Festival Sole Supervision	May 2015 - Dec 2015
UR18	Richard Sim	Modelling Mobility Services Satisfaction in Montréal Sole Supervision	May 2015 - Sep 2015
UR19	Anas Balboul	Development of an agent based microsimulator for pedestrian movement Sole Supervision Awarded: UPIR Scholarship (2016-2017)	Sep 2014 - Aug 2015
UR20	Marwan Ragab	Development of an ad-hoc sensors network for transportation data collection Sole Supervision Awarded: UPIR Scholarship (2016-2017)	Sep 2014 - May 2015

UR21	Mélissa Bidegain--Yeung	Generalization of SimPSynz for Transportation Information Fusion Sole Supervisor	May 2014 - Aug, 2014
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Graduate Research Assistants Supervised

#	Name	Project Title, Program Information, and Activities	Dates
GRA1	Johannes Eckert	Blockchain based Mobility GHG Credits Market	Apr 2019 – Jun 2019
GRA2	Johanna Bürstlein	Exploring First-Mile Solutions for North American Suburbia: A Case study of Markham, Canada	Sep 2018 – Mar 2019
GRA3	Félix Roubaud	Pedestrian Density Prediction using Machine Learning	Mar 2018 – Sep 2018
GRA4	Ismail Saadi	Short-term Demand Prediction in Ride-Hailing Services Sole Supervisor <i>Current Work: Postdoc at University of Liège</i>	Jan 2017 – Apr 2017
GRA5	Yue Zhao	Optimizing Matching in Ride-Hail Pooling Sole Supervisor	Oct 2016 – Apr 2017
GRA6	Petr Jandik	Calibration and validation of dynamic traffic assignment Microsimulation Sole Supervisor <i>Current Work: Consultant at WYG, Czech Republic</i>	Sep 2014 – May 2015
GRA7	Thomas Mühlematter	Development of a Macroscopic Multi-directional Pedestrian Propagation Model Co-Supervision with M. Bierlaire <i>Current Work: Senior Data Scientist at Credit Suisse</i>	Jan 2013 – Jun 2013
GRA8	Javier Lopez-Montenegro Ramil	Visualization of Mobility in a 3D Graph Co-supervised by M. Bierlaire	Jan 2013 – Jun 2013
GRA9	Paul Anderson	Bi-Partite Transportation Association Problem Co-supervised by M. Bierlaire <i>Current Work: Ph.D. student at University of California, Berkeley</i>	Sep 2012 – Dec 2012

6.B Editorial and Review Activities

Grant Proposal Reviewer

1. CRC (2017, 2018)
2. NSERC Discovery (2015, 2016, 2017, 2018, 2019)
3. NSERC CRD (2016)
4. Swiss National Foundation (2014)
5. French National Agency of Research (2014, 2015)
6. OGS (2018, 2019)
7. MITACS (2015, 2016, 2019, 2020)
8. CUTRIC (2019)

Journal Manuscript Peer Reviewer

1. Nature (1 manuscripts reviewed)
2. Transportation Research Part A: Policy and Practice (7)
3. Transportation Research Part B: Methodologies (24)

4. Transportation Research Part C: Emerging Technologies (18)
5. Transportation Research Part D: Transport and Environment (2)
6. IEEE Transactions on Intelligent Transportation System (7)
7. IEEE Transactions on Sensors (1)
8. Intelligent Transportation Systems (2)
9. ASCE, Transportation Engineering Part A: Systems (2)
10. Canadian Journal of Civil Engineering (2)
11. Journal of Advanced Transportation (1)
12. INFORM journal of Operations Research (1)
13. Transportation (9)
14. Journal of Choice Modelling (2)
15. Transportmetrica (5)
16. Transportation and Land Use (2)
17. Euro Journal of Transportation and Logistics (1)
18. Transportation Research Record (35)
19. International Journal of Microsimulation (1)
20. Natural Hazards Review (1)

7.D Committee Memberships

1. Associate Editor: Frontiers in Future Transportation
2. Associate Editor: IEEE Intelligent Transportation Systems Society. 2018 – present
3. Transportation Research Board (TRB) *Part of National Academies of Sciences Engineering and Medicine, USA*
 - ADB10: Committee on Traveler Behavior and Values. 2017-2020
 - ADB20: Committee on Effects of Information and Communication Technologies on Travel Choices. 2015-2020
 - AHB45(2): Subcommittee Crowd Dynamics Modelling
4. Association for Unmanned Vehicle Systems International
 - Behavioral Experiments for Adoption and Use of Automated Vehicle

7.E Organization of Conferences and Workshops

1. Special Session Chair and Organizer: Cybersecurity and Privacy Issues in Emerging Transportation Technologies and Services, IEEE ITS Conference, New Zealand, October 2019.
2. Special Session Chair and Organizer: Machine Learning based Spatiotemporal Choice Modelling, International Choice Modelling Conference, Japan, August 2019.
3. Co-Chair: 2018 Annual General Meeting and Conference of Intelligent Transportation System, Canada.
4. Workshop Organizer and Chair: “Use of Virtual Reality and Gaming in Transportation Demand Analysis,” Workshop in planning for the 97th Annual meeting of the Transportation Research Board, Washington DC, January 2018.
5. Workshop Organizer (Co-Chair with Ricardo Daziano, Cornell University): “New Directions in Experimental Design,” Workshop organized as part of the International Conference on Travel Survey Methods, Montréal, October 2017.
6. Workshop Organizer (Co-Chair with Meead Saberi, Monash University, Australia): “Pedestrian Crowd Dynamics Modeling,” Workshop organized as part of the Annual Meeting of International Federation of Operational Research Societies (IFORS), Québec City, June 2017.
7. Founding Member Program Committee: International Workshop on Agent-Based Modelling of Urban Systems (ABMUS)
 - Reviewed 5 manuscripts for 1st Workshop, ABMUS2016, Singapore, May 2016

- Reviewed 4 manuscripts for 2nd Workshop, ABMUS2017, Sao Paulo, Brazil, May 2017
- 8. Member Organization and Scientific Committees: Latsis Symposium 2012: 1st European Symposium on Quantitative Methods in Transportation Systems, Lausanne, September 2012.
 - Reviewed 5 extended abstracts for the Scientific Committee
 - Chaired session entitled: Pedestrian Modelling
 - Organized volunteers for 2nd day of the conference
- 9. Scientific Committee: 13th International Association for Travel Behaviour Research (IATBR) Conference, Toronto, July 2012
 - Reviewed 21 extended abstracts for the Scientific Committee
 - Chaired session entitled: Location Choice Modelling

7.F Selected Invitations on Panels

1. The Future of Automotive (Mar 11, 2020): Invited panelist at Toronto Life's annual community gathering.
2. Data Chain: Enabling good practices in data-driven transport (Jan 10, 2020): Invited panelist at Transportation Research Board session on privacy and cybersecurity issues related to transportation data.
3. Taken for a Ride: Hailing On-Demand Transit for Good (Dec 03, 2019): Invited panelist at Ryerson Urban Innovation Café.
4. Building Transit Oriented Development (Nov 27, 2019): Invited moderator of a panel at 5th Annual Transportation Summit of the Board of Trade, Toronto.
5. Future Mobility and Smart Transportation (June 05, 2019): Invited moderator of a panel organized by FEAS, Ryerson.
6. Future of Mobility (Feb-June 2019): Invited panel on defining the direction and developing a blueprint for Infrastructure Ontario (Ministry) on future of mobility in Ontario.
7. Automated Vehicle Symposium (July 11-13, 2016): Invited to present and participate in the breakout session on Behavioral Experiments for Modeling Adoption and Use of Automated Vehicles; upon invitation only (open to the public).
8. Transport Canada, Symposium U15 with Quebec Universities, Ottawa (November 28, 2014): A one-day workshop organized by Transport Canada to discuss a diverse set transportation issues at a national scale (e.g. improving access to Global Value Chains, Resilience of transportation systems, etc.); upon invitation only (not open to the public).

7.G Consulting

Dr. Farooq has been active in consulting on issues related to urban and interurban transportation systems. In past five years, he has provided services to public organizations, including: Swiss Railways, City of Toronto, Montréal Public Transit System (STM), Montréal Commuter Train Service (AMT) and private organizations: Montréal Gay Village, Train Hôtel, Montréal MURAL Festival, Montréal Farmers Markets, Miovision (World-leading Intelligent Transportation Systems Consultant based in Ontario), Shadow Factory (VR), Jrop, and Uctrl, Guanzhou, China (1st Transportation company in China that is traded on the Shanghai Stock Exchange).

7.H Volunteering

1. Online lessons in Math, Science, and English to middle and elementary school students.
2. Royal Canadian Institute for Science, Venturing from the Lab RCIScience Annual Science Dinner, Table Host. May 2019
3. Member, Committee for Strategic Planning of Usage for Parking Space, X-Condominium, Toronto. 2017
4. Chair, Committee for Promotional Activities, Department of Civil, Geotechnical, and Mining Engineering, École Polytechnique de Montréal, 2014-2016

8. RESEARCH CONTRIBUTIONS

8.A Presentations

- P1. Emerging Transportation Technologies: Opportunities and Challenges. MaRS, AVIN Toronto. May 12, 2020.
- P2. Training Socially Aware AVs in Urban Environment. Cornell University, Feb 28, 2020.
- P3. Transit Oriented Development and Land Value Capture. City of Brampton and Urban Land Institute. September 10, 2019.
- P4. Socially-Aware Automated Vehicles in Dense Urban Areas. Deep Reinforcement Learning Summit. June 20, 2019.
- P5. A Distributed Traffic Management System for End-to-End Dynamic Routing of Intelligent Vehicles. IEEE Smart Cities Webinar. May 16, 2019.
- P6. Studying the Impacts of Autonomous Vehicles on Active Mobility. TRB Workshop on VR. January 14, 2019.
- P7. Artificial Intelligence and Transportation Systems. ienter2learn, Distinguished Speaker, Science and Technology Summit. December 11, 2018.
- P8. Using Intelligent Vehicles to Address Urban Congestion. Xiamen University, China. October 18, 2018.
- P9. Dynamic End-to-End Routing of Connected and Autonomous Vehicles. University of Waterloo. June 07, 2018.
- P10. Emerging Trends in Urban Transportation Systems. City of Toronto. December 14, 2017.
- P11. Autonomous Vehicles on Urban Roads: What About Pedestrians. University of Toronto. December 1, 2017.
- P12. New Sources of Data/Challenges/Methods: The State-of-the-art. Workshop on Modelling with Large-Datasets. April 4, 2017
- P13. Immersive Virtual Reality Discrete Choice Experiments for Disruptive Transportation Technologies. TRB Workshop 110: Use of Visualization in SP Surveys. January 9, 2017.
- P14. Patterns Mining in Ubiquitous Transportation Big Data. Guangdong University of Technology, December 16, 2016.
- P15. Ubiquitous Sensing of Urban Activities and Mobility. Hong Kong Polytechnic University, December 12, 2016.
- P16. Urban Activities, Mobility, and Ubiquitous-Networks. ITE University of Toronto, November 25, 2016.
- P17. Analyse de la demande de nouveaux services interurbains. Montréal-Sherbrooke Corridor Train Project, Bromont, July 6, 2016.
- P18. Smart Cities, Innovative Data Sources, and Data Science. Columbia University, February 29, 2016.
- P19. Harnessing Innovative Data Sources and Data Science for Transportation Systems of Tomorrow. University of Michigan Transportation Research Institute, Ann Arbor, February 19, 2016.
- P20. Micro-simulation de la gare centrale de Montréal. Invited Speaker, Agence métropolitaine de transport, Montréal, January 29, 2016.
- P21. Recent Advances in Sustainable Urban Transportation Systems Research, Special Lecture Series, McGill University. June 08, 2015.
- P22. Sustainable Active Urban Mobility: Research and Applications, City of Toronto. May 25, 2015.
- P23. Pedestrian Modelling and Public Health. Transportation and Public Health Workshop, Montreal, May 1-2, 2015.
- P24. Use of Big Data for Improving Urban Living, CityZeen Inc. Workshop on Big Data. May 03, 2015.

- P25. Activity based Travel Demand Modelling for Pedestrian Infrastructure Planning, Canada-Germany Hands-on Sustainable Urban Mobility Workshop. May 2014.
- P26. Études de la dynamique du Flux des piétons dans les installations de transport collectif, Société de transport de Montréal (STM). April 2014.
- P27. La modélisation et la micro-simulation intégrée des systèmes urbaines, Service de la modélisation des systèmes de transport, Transports Québec. January 2014.
- P28. New Directions in Population Synthesis for Microsimulation of Urban Systems, CIRRELT, Canada. October 2013.
- P29. Integrated Transportation and Urban Infrastructure Systems: Planning and Design, École Polytechnique de Montréal, Canada. December 2012.
- P30. Simulation: Theory and Application in Urban Systems, PhD course for PhD student in MIT-Portugal project, University of Coimbra, Portugal, November 2012.
- P31. Market Behaviour within Large-Scale Models of Urban Infrastructure Systems, Department of Transportation, Denmark Technical University, Copenhagen, March 2012.
- P32. Integrated Approach Towards Urban Engineering Infrastructure Systems, Pillar of Systems Engineering, Singapore University of Technology and Design, Singapore, February 2012.
- P33. Recent advances in agent synthesis for large-scale integrated models. Transportation Research Seminar Series, University of Toronto, Canada, November 2011.
- P34. Multidimensional discrete-continuous modelling of choice bundles: Theory and application. School of Economics, University of Antwerp, Antwerp, Belgium, March 2011.
- P35. Understanding the Evolution of Urban Built Space. New England Complex System Institute, Boston, November 18, 2010.
- P36. Modelling built-space supply decisions within integrated microsimulation framework of urban systems. TRANSP-OR Laboratory, Ecole Polytechnique Fédérale de Lausanne, May 2010.
- P37. Land Use and population evolution in the Integrated Land Use, Transportation, and Environment (ILUTE) modelling framework. Centre for Transport Studies, Imperial College London. August 2008.

8.B Interview and Media Relations

1. Teaching a self-driving car the emergency stop is harder than it seems, **MIT Technology Review** (<https://www.technologyreview.com/f/613410/should-a-self-driving-car-protect-a-passenger-or-pedestrian-ideally-both/>). April 2019.
2. City pushes back completion of Union Station revitalization to 2019, **680news** (<https://www.680news.com/2018/11/12/city-pushes-back-completion-of-union-station-revitalization-to-2019/>). November, 2018.
3. Road to China's global 5G dominance is here, **OZY** (<https://www.ozy.com/fast-forward/the-road-to-chinas-global-5g-dominance-is-here/89333>). October, 2018.
4. Uber partnerships with car-rental startups could increase congestion, experts say , **CBC** (<https://www.cbc.ca/news/canada/toronto/uber-partnerships-with-car-rental-startups-could-increase-congestion-experts-say-1.4778393>). August, 2018.
5. **Radio Canada/CBC**, Report on study conducted by my research group on new train service (<https://goo.gl/Mz4p43>)
6. Breakfast Television, **City TV**. Interview on URBANFlux System. Aired: July 6, 2016 (www.btmontreal.ca/videos/5023121711001/)
7. Le Code Chastenay. **Télé Québec**. Interview and featured research on crown movement in the popular science programme. Aired: March 8, 2016 (<http://goo.gl/rNTmqX>)
8. **Métro Daily Journal**. Mention of the research project on MURAL Festival. September 11, 2015.

8.C Publications and Citations

Published Refereed Contributions**Articles in Scholarly Refereed Journals (Trainee names with *):**

- J1. Benarbia, T., Axhausen, K. W., Farooq, B. (2020). "Modeling, Relocation, and Real-Time Inventory Control of One-Way Electric Cars Sharing Systems in a Stochastic Petri Nets Framework." IEEE Transactions on Intelligent Transportation Systems.
- J2. Alfaseeh, L.*, Farooq, B. (2020). "Multifactor Taxonomy of Ecorouting Models and Future Outlook." Journal of Sensors, 2020.
- J3. Lopez, D.*, Farooq, B. (2020) "Multi-layered Blockchain for Smart Mobility Data-markets," Transportation Research Part C: Emerging Technologies. 111 (2020): 588-615.
- J4. Wong, M.*, Farooq, B. (2020) "A bi-partite generative model framework for analyzing and simulating large scale multiple discrete-continuous travel behaviour data," Transportation Research Part C: Emerging Technologies. 110 (2020): 247-268.
- J5. Alfaseeh L.*, Tu, R., Farooq, B., Hatzopoulou, (2020) "Greenhouse Gas Emission Prediction on Road Network using Deep Sequence Learning," Under review in: Transportation Research Part D: Transport and Environment.
- J6. Wong, M.*, Farooq, B. (2020) "ResLogit: A residual neural network logit model." Under review in Transportation Research Part B: Methodological.
- J7. Djavadian, S.*, Tu, R., Farooq, B., Hatzopoulou, M. (2020) "Multi-Objective Eco-Routing for Dynamic Control of Connected & Automated Vehicles." Under review in (with minor revisions) Transportation Research Part D: Transport and Environment.
- J8. Kalatian, A.*, Farooq, B. (2020) "Decoding pedestrian and automated vehicle interactions using immersive virtual reality and interpretable deep learning." Transportation Research Part C: Emerging Technologies.
- J9. Badu-Marfo, G.*, Farooq, B., Patterson, Z. (2020) "Composite Travel Generative Adversarial Networks for Tabular and Sequential Population Synthesis." Under review in Transportation Research Part B: Methodological.
- J10. Kalatian, A.*, Farooq, B. (2020) "A semi-supervised deep residual network for mode detection in Wi-Fi signals," under-review Journal of Big Data Analytics in Transportation.
- J11. Tu, R., Alfaseeh, L., Djavadian, S., Farooq, B., Hatzopoulou, M. (2019). "Quantifying the impacts of dynamic control in connected and automated vehicles on greenhouse gas emissions and urban NO2 concentrations." Transportation Research Part D: Transport and Environment, 73, 142-151.
- J12. Yazdizadeh, A.*, Patterson, Z., Farooq, B., 2019. Ensemble Convolutional Neural Networks for Mode Inference in Smartphone Travel Survey. IEEE Transactions on Intelligent Transportation Systems.
- J13. Beaulieu, A.*, Farooq, B. (2019) "A Dynamic Mixed Logit Model with Agent Effects for Pedestrian Next Location Choice Using Ubiquitous Wi-Fi Network Data" International Journal of Transportation Science and Technology. Accepted: 25-02-2019.
- J14. Badu-Marfo, G.*, Farooq, B., Patterson, Z., (2019) "Perturbation Privacy for Sensitive Locations in Transit Data Publication: A Case Study of Montreal Trajet Surveys," Accepted Journal of Transportation Research Record.
- J15. Aliabadi H.A.*, Farooq, B., Morency, C., Saunier, N. (2019) "Frequent Versus Occasional Drivers: A Hybrid Route Choice Model," Transportation Research Part F: Traffic Psychology and Behaviour, Accepted: 13-05-2019.

- J16. Yazdizadeh, A.*, Patterson, A., Farooq, B. (2019) Semi-supervised GANs to Infer Travel Modes in GPS Trajectories. Under-review (2nd iteration submitted) IEEE Access.
- J17. Al-Mallah, R.*, Quintero, A., Farooq, B. (2018) "Cooperative Evaluation of the Cause of Urban Traffic Congestion via Connected Vehicles" IEEE Transactions on Intelligent Transportation Systems. Accepted: 24-10-2018.
- J18. Sobhani, A.*, Aliabadi, H.A.*, Farooq, B. (2018) "Metropolis-Hasting based Expanded Path Size Logit Model for Cyclists' Route Choice Using GPS Data," International Journal of Transportation Science and Technology, Accepted: 13-10-2018.
- J19. Badu-Marfo, G.*, Farooq, B., Patterson, Z., (2018) "A Perspective on the Challenges and Opportunities for Privacy-Aware Big Transportation Data," Journal of Big Data Analytics in Transportation, Accepted: 08-10-2018.
- J20. Yazdizadeh, A.*, Patterson, A., Farooq, B. (2018) "An Automated Approach from GPS Traces to Complete Trip Information," International Journal of Transportation Science and Technology, Accepted: 16-08-2018.
- J21. Sobhani, A.*, Farooq, B. (2018) "Head-Mounted Immersive Virtual Reality based Analysis of Smartphone Distractions on Pedestrian Street Crossings Behaviour," Accepted Transportation Research Part F: Traffic Psychology and Behaviour.
- J22. Farooq, B., Cherchi, E., Sohrabi, A.*, (2018) "Virtual Immersive Reality for Stated Preference Travel Behaviour Experiments: A Case study of Autonomous Vehicles on Urban Roads," Manuscript#18-02075, Accepted Journal of Transportation Research Record.
- J23. Wong, M.*, Farooq, B., Bilodeau, G.A. (2018) "Discriminative conditional restricted Boltzmann machine for discrete choice and latent variable modelling," Journal of Choice Modelling, Accepted: November 2017, Manuscript# JOCM_2017_79.
- J24. Poucin, G.*, Farooq, B., Patterson, Z. (2018) "Activity Patterns Mining in Wi-Fi Access Point Logs," Computer Environment and Urban Systems. 67: 55-67.
- J25. Saadi, I.*, Farooq, B., Mustafa, A., Teller, J., Cools, M. (2018) "An Efficient Hierarchical Model for Multi-Source Information Fusion" Accepted Expert Systems With Applications. ESWA-D-17-05375.
- J26. Anderson, P.*, Farooq, B. (2017) "A Generalized Partite-Graph Method for Transportation Data Association," Transportation Research Part C: Emerging Technologies 76: 150-169. doi:10.1016/j.trc.2017.01.004
- J27. Aliabadi H.A.*, Farooq, B., Morency, C., Saunier, N. (2017) "On the Role of Bridges as Anchor Points in Route Choice Modeling," Transportation: 1-26 (available online). doi:10.1007/s11116-017-9761-7
- J28. Al-Mallah, R.*, Quintero, A., Farooq, B. (2017) "Distributed Classification of Urban Congestion Using VANET," IEEE Transactions on Intelligent Transportation Systems: 1-8 (available online). doi:10.1109/TITS.2016.2641903
- J29. Saadi, I.*, Mustafa, A., Teller, J., Farooq, B., Cools, M. (2016) "Hidden Markov Model based Population Synthesis," Transportation Research Part B: Methodological 90: 1-21. doi:10.1016/j.trb.2016.04.007 *Ranked 15 in the TOP 25 viewed articles of Transportation Research Part B during May-July 2016.*
- J30. Nikolić*, M., Bierlaire, M., Farooq, B., Delapperant, M. (2016) "Probabilistic Speed–Density Relationship for Pedestrian Traffic," Transportation Research Part B: Methodological 89: 58-81. doi:10.1016/j.trb.2016.04.002

- J31. Elgar, I., Farooq, B., Miller E.J. (2015) Simulation of Firm Location Decisions: An Attempt to Replicate Office Location Choices in the Greater Toronto Area. *Journal of Choice Modelling* 17, 39–51. doi:10.1016/j.jocm.2015.12.003
- J32. Wissen, H.U., Efthymiou, D.*, Farooq, B., von Wirth, T., Teich, M., Neuenschwander, N., and Grêt, R.A. (2015) “Indicators for the Quality of Urban Patterns: Spatially Explicit Evidence for Multiple Scales,” *Landscape and Urban Planning* 142(0), 47-62. doi:10.1016/j.landurbplan.2015.05.010
- J33. Hänseler, F.S.*, Bierlaire, M., Farooq, B., Mühlematter, T.* (2014) “A Macroscopic Loading Model for Time-Varying Pedestrian Flows in Public Walking Areas,” *Transportation Research Part B: Methodological* 69: 60-80. doi:10.1016/j.trb.2014.08.003 *Ranked 11 in the TOP 25 hottest articles of Transportation Research Part B during October-December 2014.*
- J34. Danalet, A.*, Farooq, B., Bierlaire, M. (2014) “A Bayesian Approach to Detect Pedestrian Destination-Sequences from Wi-Fi Signatures,” *Transportation Research Part C: Emerging Technologies* 44: 146-170. doi:10.1016/j.trc.2014.03.015
- J35. Anderson, P.*, Farooq, B., Efthymiou, D.*, Bierlaire, M. (2014) “Association Generation in Synthetic Population for Transportation Applications: Graph-Theoretic Solution,” *Transportation Research Record* 2429: 38–50. doi:10.3141/2429-05
- J36. Efthymiou, D.*, Farooq, B., Bierlaire, M., Antoniou, C. (2014) “Multidimensional Indicator Analysis for Transport Policy Evaluation,” *Transportation Research Record* 2430: 83–94. doi: 10.3141/2430-09
- J37. Farooq, B., Bierlaire, M., Hurtubia, R.*, Flötteröd, G. (2013) “Simulation Based Population Synthesis,” *Transportation Research Part B: Methodological* 58: 243-263. doi:10.1016/j.trb.2013.09.012
- J38. Farooq, B., Miller E.J., Chingcuanco F.*, Giroux-Cook M.* (2012) “Microsimulation Framework for Urban Price-Taker Markets,” *Journal of Transportation and Land Use*. 6(1): 41-51.
- J39. Farooq, B., Miller E.J., Haider M. (2012) “A Multidimensional Decision Modeling Framework for Built Space Supply,” *Journal of Transportation and Land Use*. 6(3): 61-74.
- J40. Farooq, B., Miller E.J. (2012) “Towards Integrated Land Use and Transportation: A Dynamic Disequilibrium based Microsimulation Framework for Built Space Markets,” *Transportation Research Part A: Policy and Practice*, 46 (7), 1030-1053. doi:10.1016/j.tra.2012.04.005
- J41. Miller, E.J., Farooq, B., Chingcuanco, F. Wang, D. (2011) “Historical Validation of an Integrated Transport–Land Use Model System,” *Transportation Research Record*, 2 (2255), 91-99.
- J42. Farooq, B., Miller E. J., Haider, M. (2010) “Hedonic Analysis of Office Space Rent,” *Transportation Research Record*. 2174, 118–127.
- J43. Elgar, I., Farooq, B., Miller E. J. (2009) “Modeling Location Decisions of Office Firms: Introducing Anchor Points and Constructing Choice Sets into the Model System,” *Transportation Research Record*, 2133 (2), 56–63.

Books

- B1. Djavadian, S.*, Farooq, B., Vasquez, R.*, Yip, G.* (2020) “Virtual Immersive Reality based Analysis of Behavioral Responses in Connected and Autonomous Vehicle Environment,” *Mapping the Travel Behavior Genome: The Role of Disruptive Technologies, Automation, and Experimentation*, Elsevier.

- B2. Meshkani, S.M.*, Djavadian, S.*, Farooq, B. (2019) "Demand for shared mobility to replace private mobility using connected and automated vehicles," Shared Mobility and Automated Vehicles, Editors: Susan Shaheen, Ata Khan, IET Press.
- B3. Djavadian, S.*, Farooq, B., Meshkani, S.M.* (2019) "Demand for shared mobility to complement public transportation: Human driven and autonomous vehicles," Shared Mobility and Automated Vehicles, Editors: Susan Shaheen, Ata Khan, IET Press.
- B4. Farooq, B., Müller, K., Bierlaire, M. Axhausen K.W. (2014) "Methodologies for synthesizing populations, in Integrated Transport and Land Use Modeling for Sustainable Cities," Editors: Michel Bierlaire, André de Palma, Ricardo Hurtubia and Paul Waddell, EPFL Press.
- B5. Farooq, B., Hurtubia, R.*, Bierlaire, M. (2014) "Simulation based generation of synthetic population for Brussels case study," in Integrated Transport and Land Use Modeling for Sustainable Cities, Editors: Michel Bierlaire, André de Palma, Ricardo Hurtubia and Paul Waddell, EPFL Press.

Other Refereed Contributions

Papers Published in Conference Proceedings (Trainee names with *):

- C1. Tu, R., Yijun, G., Farooq, B., Hatzopoulou M. (2020) Electric Vehicle Charging Optimization to Minimize Marginal Greenhouse Gas Emissions. 99th Annual Meeting of Transportation Research Board. Washington, DC, January 2020.
- C2. Djavadian, S.*, Alfaseeh, L. *, Tu, R., Farooq, B., Hatzopoulou M. (2020) Multi-Objective Eco-Routing in a Distributed Traffic Management Framework with a Case study of Downtown Toronto. 99th Annual Meeting of Transportation Research Board. Washington, DC, January 2020.
- C3. Wong, M. *, Farooq, B. (2020) Residual Neural Network Learning Approach for Behaviour Choice Modelling. 99th Annual Meeting of Transportation Research Board. Washington, DC, January 2020.
- C4. López, D. *, Yazdizadeh, A. *, Farooq, B. Patterson, P. (2020) A Distributed Framework for Privacy Aware Mode Inference. 99th Annual Meeting of Transportation Research Board. Washington, DC, January 2020.
- C5. Samouh, F. *, Gluza, V. *, Meshkani, S.M. *, Djavadian, S. *, Farooq, B. (2020) Simulation based Design and Application of Multimodal Automated Last-Mile Delivery System. 99th Annual Meeting of Transportation Research Board. Washington, DC, January 2020.
- C6. López, D. *, Farooq, B. (2020) Privacy-by-Design Mode Choice Modelling using Blockchain. 99th Annual Meeting of Transportation Research Board. Washington, DC, January 2020.
- C7. Djavadian, S. *, Farooq, B. (2020) Analysis of Driver Willingness to Adapt to Connected and Automatized Vehicles using Virtual Immersive Reality Environment. 99th Annual Meeting of Transportation Research Board. Washington, DC, January 2020.
- C8. Kalatian, A. *, Farooq, B. (2019) DeepWait: Pedestrian Wait Time Estimation in Mixed Traffic Conditions Using Deep Survival Analysis, IEEE Intelligent Transportation Systems Conference (ITSC), 2034-2039.
- C9. Vasquez, R. *, Farooq, B. (2019) Multi-Objective Autonomous Braking System using Naturalistic Dataset, IEEE Intelligent Transportation Systems Conference (ITSC), 4348-4353.

- C10. López, D. *, Farooq, B. (2019) Privacy-Aware Distributed Mobility Choice Modelling over Blockchain, IEEE International Smart Cities Conference (ISC2), 1-6.
- C11. Alfaseeh, L. *, Djavadian, S. *, Tu, R., Farooq, B., Hatzopoulou M. (2019) Multi-objective Eco-routing in a Distributed Routing Framework, IEEE International Smart Cities Conference (ISC2), 747-752.
- C12. Wong, M. *, Farooq, B. (2019) "A generalized Product of Experts model for non-linear utility specifications in travel behaviour models," Proceedings of the Transportation Research Board 98th Annual Meeting Transportation Research Board. Washington, DC, January 2019.
- C13. Lopez, D. *, Farooq, B. (2019) "Distributed Mobility Data Management, Privacy, and Cyber-Security using Blockchain Technology," Proceedings of the Transportation Research Board 98th Annual Meeting Transportation Research Board. Washington, DC, January 2019.
- C14. Tu, R. *, Alfaseeh, L. *, Djavadian, S. *, Saleh, M., Farooq, B., Hatzopoulou, M. (2019) "What Happens to On-Road Emissions when Travel Time on a Road Network is Improved Through End-to-End Dynamic Routing for Connected Autonomous Vehicles?," Proceedings of the Transportation Research Board 98th Annual Meeting Transportation Research Board. Washington, DC, January 2019.
- C15. Badu-Marfo, G. *, Farooq, B., Patterson, Z. (2019) "Perturbation Privacy for Sensitive Locations in Mobility Data Publication: A Case Study of Montreal Trajet Surveys," Proceedings of the Transportation Research Board 98th Annual Meeting Transportation Research Board. Washington, DC, January 2018.
- C16. Lopez*, D., Farooq, B. (2018) "A Blockchain framework for Smart Mobility," Proceedings of the IEEE International Smart Cities Conference, Kansas City, September, 2018.
- C17. Alfaseh*, L., Djavadian*, S., Farooq, B. (2018) "Impact of Distributed Routing of Intelligent Vehicles on Urban Traffic," Proceedings of the IEEE International Smart Cities Conference, Kansas City, September, 2018.
- C18. Kalatian*, A., Farooq, B. (2018) "Mode Detection in WiFi Signals," Proceedings of the IEEE International Smart Cities Conference, Kansas City, September, 2018.
- C19. Alizadeh, H., Farooq, B., Morency, C., Saunier, N. (2018) "Frequent Vs Occasional Drivers: A Hybrid Route Choice Model," Proceedings of the Transportation Research Board 97th Annual Meeting Transportation Research Board. Washington, DC, January 2018.
- C20. Alizadeh, H., Morency, C., Saunier, N., Farooq, B. (2018) "Factors Affecting Drivers' Consideration Set of Route Alternatives," Proceedings of the Transportation Research Board 97th Annual Meeting Transportation Research Board. Washington, DC, January 2018.
- C21. Sobhani, A., Farooq, B., Zhong, Z. (2017) "Distracted pedestrians crossing behaviour: Application of immersive head mounted virtual reality," Proceedings of the Intelligent Transportation Systems (ITSC), 2017 IEEE 20th International. Yokohama, November 2017.
- C22. Wong*, M., Farooq, B., Sobhani, A. (2017) "On the Similarities between Integrated Choice and Latent Variable (ICLV) and Conditional Restricted Boltzmann Machine (C-RBM)

- Models,” Proceedings of the International Conference of Hong Kong Society for Transportation Studies, December, 2017.
- C23. Beaulieu*, A., Farooq, B. (2017) “Next Location Choice Modelling Using Ubiquitous Wi-Fi Signals Data,” Proceedings of the 6th European Association for Research in Transportation, September, 2017.
- C24. Yazdizadeh*, A., Patterson, Z., Farooq, B., (2017) “Using Smartphone Travel Survey Experiment for Transportation Mode Detection: An Application on DataMobile Trip Data in Montreal,” 11th International Conference on Transport Survey Methods, September, 2017.
- C25. Aliabadi*, H.A., Bourbonnais, P.L., Morency, C., Farooq, B., Saunier, N. (2017) “An Online Survey to Enhance the Understanding of Car Drivers Route Choices,” International Conference on Transport Survey Methods, September, 2017.
- C26. Sobhani*, A., Farooq, B. (2017) “Immersive Head Mounted Virtual Reality based Safety Analysis of Smartphone Distracted Pedestrians at Street Crossing,” International Conference on Road Safety and Simulation, October, 2017.
- C27. Yazdizadeh*, A., Farooq, B., Patterson, Z. (2017) “Generic Form for Capturing Unobserved Heterogeneity in Discrete Choice Modeling: Application to Neighborhood Location Choice,” Transportation Research Board Annual Meeting, January, 2017.
- C28. Aliabadi*, H.A., Farooq, B., Morency, C., Saunier, N. (2017) “Classifying Behavioral Dynamics of Taxi Drivers Route Choice using Longitudinal GPS Data,” Transportation Research Board Annual Meeting, January, 2017.
- C29. Grapperon*, A., Farooq, B., Trépanier, M. (2016) “Activity Based Approach to Estimation of Dynamic Origin-Destination Matrix Using Smartcard Data,” 9th TRISTAN symposium, Aruba, 13-17 June 2016.
- C30. Wong*, M., Farooq, B., Bilodeau, G.A. (2016) “Next Direction Route Choice Model for Cyclist using Panel Data,” 51th Annual Conference of Canadian Transportation Research Forum, May, 2016.
- C31. Beaulieu*, A., Farooq, B. (2016) “Large-Scale Multi-sensor Monitoring of Pedestrian Dynamics in Public Spaces: Preliminary Results,” Transportation Research Board Annual Meeting, January, 2016.
- C32. Poucin*, G., Farooq, B., Patterson, Z. (2016) “Pedestrian Activity Pattern Mining in Wi-Fi Network Connection Data,” Transportation Research Board Annual Meeting, January, 2016.
- C33. Farooq, B., Beaulieu*, A., Ragab*, M., Ba*, V.T. (2015) “Ubiquitous Monitoring of Pedestrian Dynamics: Exploring Wireless Ad Hoc Network of Multi-Sensor Technologies,” IEEE SENSORS, Busan, Korea. November 2015.
- C34. Pibrac*, A., Farooq, B. (2015) “Microscopic Dynamic OD Matrix for Pedestrian Movement in a Transportation Hub,” 14th International Conference on Travel Behaviour Research. London. July 2015.
- C35. Anderson*, P., Farooq, B. (2015) “Generalized Partite-Graphs Solutions for Association Problems in Transportation,” 14th International Conference on Travel Behaviour Research. July 2015.
- C36. Shetwi*, R.Y., Farooq, B., Popa, C. (2015) “Optimizing Large-Scale Transportation Infrastructure Projects using Building Information Modelling (BIM),” 50th Annual Conference of Canadian Transportation Research Forum, May, 2015.

- C37. Reinoso*, G., Farooq, B. (2015) "Urban Pulse Analysis using Big Data," 50th Annual Conference of Canadian Transportation Research Forum, May, 2015.
- C38. Ettehadieh*, D.E., Farooq, B., Saunier, N. (2015) "Systematic Parameter Optimization and Application of Automated Tracking in Pedestrian-Dominant Situations," Transportation Research Board.
- C39. Ettehadieh*, D., Farooq, B., Saunier, N. (2014) "Automated Pedestrian Data-Collection and Flow Analysis in Public Spaces," Transportation Research Procedia (PED2014) 2: 207-212.
- C40. Nikolic*, M., Bierlaire, M., Farooq, B. (2014) "Probabilistic Speed-Density Relationship for Pedestrians based on Data Driven Space and Time Representation," 14th Swiss Transport Research Conference, Monte Verità, Switzerland, May 2014.
- C41. Nikolic*, M., Bierlaire, M., Farooq, B. (2013) "Spatial Tessellations of Pedestrian Dynamics," 2nd Symposium of the European Association for Research in Transportation, Stockholm, Sweden. September, 2013.
- C42. Danalet*, A., Bierlaire, M., Farooq, B. (2013) "A Bayesian Estimation of Pedestrian Activities Using Sensors Data," TRISTAN VIII, San Pedro de Atacama, Chile, June 2013.
- C43. Hänseler*, F., Farooq, B., Mühlematter*, T., Bierlaire, M. (2013) "Mesoscopic Model for Pedestrian Flow in Train Stations," 13th Swiss Transport Research Conference, Monte Verità, Switzerland, April 2013.
- C44. Farooq, B., Bierlaire, M. (2013) "Simulation Based Associations Generation in Synthetic Population," 13th Swiss Transport Research Conference, Monte Verità, Switzerland, April 2013.
- C45. Efthymiou*, D., Farooq, B., Bierlaire, M., Antoniou, C. (2013) "Agent-based Indicators Analysis in the Context of Policy Evaluation," 13th Swiss Transport Research Conference, Monte Verità, Switzerland, April 2013.
- C46. Danalet*, A., Farooq, B., Bierlaire, M. (2013) "Pedestrian Activity Choice Modeling from Sensors Data," 13th Swiss Transport Research Conference, Monte Verità, Switzerland, April 2013.
- C47. Nikolić*, M., Farooq, B., Bierlaire, M. (2013) "Exploratory Analysis of Pedestrian Flow Characteristics in Mobility Hubs using Trajectory Data," 13th Swiss Transport Research Conference, Monte Verità, Switzerland, April 2013.
- C48. Danalet*, A., Farooq, B., Bierlaire, M. (2012) "Estimating Pedestrian Activities from Digital Footprints," Latsis Symposium 2012: 1st European Symposium on Quantitative Methods in Transportation Systems, Lausanne, September 2012.
- C49. Danalet*, A., Bierlaire M., Farooq B. (2012) "Estimating Pedestrian Destinations using Traces from WiFi Infrastructures," 6th International Conference on Pedestrian and Evacuation Dynamics, June 2012.
- C50. Sahaleh*, S., Bierlaire, M., Farooq, B., Danalet*, A. (2012) "Microscopic Calibration and Validation of Pedestrian Models: Integrating Discrete Choice Model into Social Force Model," 6th International Conference on Pedestrian and Evacuation Dynamics, June 2012.
- C51. Hänseler*, F., Farooq, B., Bierlaire, M. (2012) "Preliminary Ideas for Dynamic Estimation of Pedestrian Origin-Destination Demand within Train Stations," 12th Swiss Transport Research Conference, Ascona, May 2012.
- C52. Sahaleh*, S., Bierlaire, M., Farooq, B., Danalet*, A., Hänseler, F.S. (2012) "Scenario Analysis of Pedestrian Flow in Public Spaces," 12th Swiss Transportation Research Conference, Ascona, May 2012.

- C53. Danalet*, A., Bierlaire, M., Farooq, B. (2012) "Preliminary Exploration of Pedestrian Destinations using Traces from Wi-Fi Infrastructures," 12th Swiss Transport Research Conference, Ascona, May 2012.
- C54. Farooq, B., Bierlaire, M., Flötteröd, G. (2012) "A New Approach to Synthesize Heterogeneous Agents and their Associations for Urban Microsimulations," Proceeding of the 2nd Workshop of Urban Dynamics, Chile, March 2012.
- C55. Hurtubia*, R.G., Farooq, B., Bierlaire, M. (2011) "Simultaneous Modeling Approach for Location Choice and Real Estate Prices in a Microsimulation Context," Proceedings of the European Regional Science Conference, Barcelona, August 2011.
- C56. Farooq, B., Miller, E.J., Chingcuanco*, F., Giroux-Cook*, M. (2011) "Microsimulation Framework for Urban Price-Taker Markets," Proceedings of the World Symposium on Transport and Land Use Research, Whistler BC, July 2011.
- C57. Farooq, B. (2011) "Towards a Unified Framework of Urban Built Space Evolution," Proceedings of the Swiss Transportation Research Conference, Monte Verità, Switzerland, May 2011.
- C58. Farooq, B., Miller, E.J., Haider, M. (2011) "A Multidimensional Decision Modeling Framework for Built Space Supply," Proceedings of the 90th Transportation Research Board Conference, Washington DC, January 2011.
- C59. Farooq, B., Chingcuanco*, F., Miller, E.J. (2010) "Modelling Transportation Markets: A Price-Taker Market Framework," Proceedings of the TRANSLOG, Hamilton, July 2010.
- C60. Farooq, B., Miller, E.J., Haider, M. (2010) "Modelling the Evolution of Office Space Supply," Proceedings of the World Conference on Transportation Research, Lisbon, July 2010.
- C61. Miller, E. J., Farooq, B., Wang, D. (2010) "Microsimulating Urban Spatial Dynamics: Historical Validation Tests using the ILUTE Model System," Proceedings of the World Conference on Transportation Research. Lisbon, July 2010.
- C62. Derrible, S., Farooq, B. (2010) "The Four Outcomes of Transit and Land-Use," Proceedings of the CTRF 45th Annual Conference, Canadian Transportation Research Forum. 2010.
- C63. Farooq, B., Miller, E.J., Chingcuanco*, F. (2009) "A Dynamic Microsimulation Model for Demographic Update," Proceedings of the North American Meetings of the RSAI, San Francisco, November, 2009.
- C64. Farooq, B., Miller E.J., Habib, A. (2009) "A Microsimulation Housing Market Clearing Model," Proceedings of the 12th International Conference on Travel Behaviour Research, Jaipur, December, 2009.
- C65. Farooq, B., Miller E.J., Habib, A., Haider, M. (2008) "Dynamic Microsimulation of Housing Market for the Greater Toronto Area within the Integrated Land-Use Transportation and Environment (ILUTE) Framework," Proceedings of the North American Meetings of the RSAI. New York, November 2008.
- C66. Habib, A., Farooq, B., Miller E.J. (2008) "A Microsimulation Model of Residential Location Processes," Proceedings of the North American Meetings of the RSAI. New York, November, 2008.
- C67. Habib, A., Miller E.J., Farooq, B. (2008) "Estimating a Reference Dependent Residential Location Choice Model within a Relocation Context," Proceedings of the North American Meetings of the RSAI. New York, November, 2008.
- C68. Elgar, I., Farooq, B., Miller E.J., (2007) "Modelling Office Firm Relocation Decisions," Proceedings of the North American Meetings of the RSAI. 2007.

Non-refereed Contributions

Conference Abstracts Published in Proceedings (Trainee names with *):

- A1. Wong M.*, Farooq B. (2019) "Distributed heterogeneous data learning approach for choice modelling using residual neural networks," International Choice Modelling Conference, August 2019.
- A2. Djavadian S., Farooq, B., Vasquez, R. (2019) "Should I give or should I take? Choice issues in automated vehicle control," International Choice Modelling Conference, August 2019.
- A3. Meshkani, S.M.*, Djavadian, D.*, Farooq, B. (2019) "A Decentralized Shared CAV System Design and Application," 10th Triennial Symposium on Transportation Analysis, Hamilton, Australia, June 2019.
- A4. Kalatian, A.*, Farooq, B. (2018) "Automated travel mode inference using ubiquitous Wi-Fi signals," 15th International Travel Behaviour Conference, Santa Barbara, CA, July 2018.
- A5. Yazdizadeh, A.*, Patterson, A., Farooq, B. (2018) "An Automated Approach from GPS Traces to Complete Trip Information," 15th International Travel Behaviour Conference, Santa Barbara, CA, July 2018.
- A6. Wong, M.*, Farooq, B. (2018) "Restricted Boltzmann Machine based Multiple Discrete Continuous Model for very Large Datasets," 15th International Travel Behaviour Conference, Santa Barbara, CA, July 2018.
- A7. Farooq, B., Beaulieu*, A. (2017) "Large-Scale Pedestrian Movement Analysis using a Network of Wi-Fi Sensors," Conference of the International Federation of Operational Research Societies, May 2017.
- A8. Sobhani*, A., Farooq, B. (2017) "Innovative Intercity Transport Mode: Application of Choice Preference Integrated with Attributes Nonattendance and Value Learning," Conference of the International Federation of Operational Research Societies, May 2017.
- A9. Saadi*, I., Wong*, M., Farooq, B., Teller, J., Cools, M. (2017) "Short-Term Demand Estimation for Ride-hailing Systems using Machine Learning Approaches," Conference of the International Federation of Operational Research Societies, May 2017.
- A10. Wong*, M., Farooq, B., Bilodeau, G.A. (2017) "Latent Behaviour Modelling using Restricted Boltzmann Machines," International Choice Modelling Conference, April 2017.
- A11. Farooq, B., Cherchi, E., Sobhani*, A. (2017) "Virtual Immersive Reality Environment (VIRE) for Disruptive Vehicular Technology Choice Experiments," International Choice Modelling Conference, April 2017.
- A12. Farooq, B., Cherchi, E. (2016) "Immersive Virtual Reality Experiments for Analyzing Autonomous Vehicle Demand," Transportation Research Board Invited Speaker at Automated Vehicles Symposium 2016, San Francisco, 18-22 July 2016.
- A13. Grapperon*, A., Farooq, B., Trépanier, M. (2016) "Enrichir les données de validation des titres de transport en commun," 51^e congrès de l'Association Québécoise des Transports, Québec, 11-13 avril 2016.
- A14. Farooq B., Bierlaire, M., Flötteröd, G. (2012) "A New Approach to Synthesize Heterogeneous Agents and their Associations for Urban Microsimulations," 2nd Workshop of Urban Dynamics, Chile, March 2012.

Technical and Consulting Reports (Trainee names with *):

- R1. Farooq, B., Ahmad, O.*, Kalatian, A. (2020) "Ryerson Campus Mobility Patterns Analysis," Ryerson University.
- R2. Farooq, B., Sobhani*, A. (2017) "Train Hôtel: Analysis of Expected Future Demand," Night Train Foundation.

- R3. Beaulieu*, A., Farooq, B. (2016) "Pedestrianized Gay Village: Large-Scale Multi-Sensor Monitoring of Pedestrian Dynamics over Summer 2016," Gay Village Authority.
- R4. Ferradou*, L., Beaulieu*, A., Farooq, B. (2016) "Large Scale Multi-Sensor Monitoring of Pedestrian Dynamics during the Montréal MURAL Festival in June 2016," Organizers of MURAL Festival.
- R5. Farooq, B., Pibrac*, A., Sim*, R., Beaulieu*, A. (2015) "Analyse des mouvements piétonniers autour de la station d'autobus et de métro Rosemont," Société de transport de Montréal (STM).
- R6. Beaulieu*, A., Farooq, B. (2015) "Large-Scale Multi-Sensor Monitoring of Pedestrian Dynamics during the Montréal MURAL festival in June 2015," Organizers of MURAL Festival.
- R7. Hänseler*, F.S., Sahaleh*, S., Farooq, B., Bierlaire, M., (2012) "Analysis of Pedestrian Flow in Lausanne Train Station," Swiss Railways.
- R8. Haider, M., Farooq, B. (2010) "Employment Distribution Forecasting for the Greater Toronto Area," City of Toronto.
- R9. Miller, E.J., Chingcuanco* F., Farooq B., Habib K.M.N., McElroy, D. P. (2008) "Development of an Operational Integrated Urban Model System, Volume IV: Demographic & Labour Market," Transport Canada, Transportation Planning and Model Integration (TPMI) Initiative.
- R10. Miller, E.J., Farooq B., Habib M.A. (2008) "Development of an Operational Integrated Urban Model System, Volume V: Microsimulating Spatial Market: Conceptual Design and Implementation of a Housing Market Model," Transport Canada, Transportation Planning and Model Integration (TPMI) Initiative.
- R11. Elgar, I, Miller E.J., Farooq B. (2008) "Development of an Operational Integrated Urban Model System, Volume VI: Modelling Firm Mobility & Location Choice," Transport Canada, Transportation Planning and Model Integration (TPMI) Initiative.
- R12. Farooq B., Salvini, P.A., Miller, E.J., (2008) Development of an Operational Integrated Urban Model System, Volume X: Software Documentation," Transport Canada, Transportation Planning and Model Integration (TPMI) Initiative.

Theses

- T1. Farooq, B. (2011), "Evolution of Urban Built Space: Markets and Decisions," Ph.D. Thesis, University of Toronto. Toronto, Canada.

Open Source Projects

- O1. *Blockchain for Smart Mobility Data-Markets (BSMD)* The code is available at: <https://github.com/billjee/bsmd>
- O2. *Smart Card Enricher (BataclanSlim)* A set of tools for developing complete trip chain and associate socio-demographics to tap-in smart card transaction data. The code is available at: <https://github.com/billjee/BataclanSlim>
- O3. *Simulation based Population Synthesizer (SimPSynz)* A set of tools for the information synthesis and fusion for transportation applications. The code is available at: <https://github.com/billjee/simpsynz>
- O4. *Pedestrian Cell Transmission Model (PedCTM)* A tool for dynamic pedestrian flow allocation on a network of cells in a public pedestrian infrastructure. The code is available at: <https://github.com/flurinus/PedCTM>

- O5. *Tracker Optimization for Object Identification/Tracking (TrOPed)* A tool for the calibration of video based trackers via simulated annealing for object tracking in a given video. The code is available at: <https://github.com/Drushkey/TrOPed>

Invited Short Courses

- E1. Simulation: Theory and Application in Urban Systems. PhD course for PhD student in MIT-Portugal project, University of Coimbra, Coimbra, Portugal. March 2013.
- E2. Choice Modelling. TransportNet Course on Research Methodologies for PhD students, Marie-Curie Fund, European Union, Antwerp, Belgium. January 2012.

8.D Intellectual property

Invention Disclosure (Trainee names with *):

- I1. Farooq, B., Djavadian, A.* A Distributed Traffic Management System for Intelligent Vehicles. February 16, 2019. (Patent # 62/865,725)
- I2. Farooq, B., Beaulieu*, A., Poucin*, G., Rajab*, M. URBANFlux: Internet of Things based Urban Services and Analytics. Polytechnique Montréal Invention Disclosure. June 15, 2016.

7. PROFESSIONAL ASSOCIATIONS

- Professional Engineers Ontario ID: 100540544
- Engineering in Training, Quebec Order of Engineers (2013-2017) ID: 5048148
- Pakistan Engineering Council, ID: 272210