

# Olufolajimi (Jimi) B. Oke

Department of Civil and Environmental Engineering  
University of Massachusetts Amherst  
USA

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## APPOINTMENTS

### University of Massachusetts Amherst, MA

2019 – date     *Assistant Professor:* Civil and Environmental Engineering  
*Director:* Networks for Accessibility, Resilience & Sustainability Laboratory

### Massachusetts Institute of Technology, Cambridge, MA

2016 – 2019     *Postdoctoral Associate:* Civil and Environmental Engineering (Advisor: Moshe Ben-Akiva)  
*Project Manager:* Future Urban Mobility, MIT Energy Initiative Mobility of the Future Study

### The Pennington School, Pennington, NJ

2011 – 2012     *Faculty:* Department of Mathematics; Center for Learning  
2010 – 2011     *Teaching Fellow:* Center for Learning

## EDUCATION

### Johns Hopkins University, Baltimore, MD

2016     *Doctor of Philosophy:* Civil Engineering (Advisor: Sauleh Siddiqui)  
2014     *Master of Science in Engineering:* Civil Engineering

### Williams College, Williamstown, MA

2010     *Bachelor of Arts:* Physics, Music  
           Honors Thesis in Physics (Advisor: Jefferson Strait)  
           Senior Recital, Classical Guitar (Teacher: Robert Phelps)

## FUNDING

2019     Research Support Fund (\$1000), *Massachusetts Society of Professors*  
2019     Flex Grant for Teaching/Faculty Development (\$500), *Center for Teaching & Learning, UMass Amherst*

## AWARDS & FELLOWSHIPS

### Massachusetts Institute of Technology

2019     Kaufman Teaching Certificate, *Teaching & Learning Lab*  
2017     Postdoctoral Teaching Fellowship, *Department of Civil and Environmental Engineering*  
2013     Half-tuition Scholarship: “Modeling and Simulation of Transportation Networks”, *MIT Professional Education Short Programs*

## Johns Hopkins University

- 2015 Gordon Croft Fellowship, *Environment, Energy, Sustainability & Health Institute (E<sup>2</sup>SHI)*
- 2015 Article selected for Promotion, Elsevier, *Journal article "Tracking global bicycle ownership patterns"*
- 2015 Civil Engineering Graduate Service Award, G.W.C. Whiting School of Engineering
- 2015 Teaching-as-Research Fellowship, *Center for the Integration of Research, Teaching and Learning*
- 2013 Educational Training Core Traineeship, *Global Obesity Prevention Center*
- 2012 Whiting School of Engineering Research Fellowship

## Williams College

- 2010 Howard P. Stabler Prize in Physics
- 2010 William W. Kleinhandler Prize for Excellence in Music
- 2010 Sigma Xi Honors
- 2008, 09 Williams College Summer Science Research Fellowship

## PUBLICATIONS

### Journal Papers [Peer Reviewed]

- [J12] B. Nahmias-Biran, **J. B. Oke**, N. Kumar, A. P. Akkinipally, C. L. Azevedo, P. C. Zegras, J. Ferreira, M. Ben-Akiva, *Who Benefits from AVs? Social Implications of Autonomous Vehicle Policies in Full-Scale Cities*, *In preparation* (2020).
- [J11] **J. B. Oke**, A. P. Akkinipally, S. Chen, Y. Xie, Y. M. Aboutaleb, B. Nahmias-Biran, C. L. Azevedo, C. Zegras, J. Ferreira, M. Ben-Akiva, *Simulation and Evaluation of Automated Mobility On-Demand Strategies in Dense Transit-Oriented Cities*, *Transportation*, *In review* (2020).
- [J10] D. A. Martinez, J. Cai, **J. B. Oke**, A. Jarrell, F. Feijoo, J. Appelbaum, E. Klein, S. Barnes, S. R. Levin, *Where is my Infusion Pump? Harnessing Network Dynamics for Improved Hospital Equipment Fleet Management*, *JAMIA*, *In press* (2020).
- [J9] **J. B. Oke**, A. P. Akkinipally, S. Chen, Y. Xie, Y. M. Aboutaleb, C. L. Azevedo, C. Zegras, J. Ferreira, M. Ben-Akiva, *Evaluating systemic effects of automated on-demand services through large-scale, agent-based simulation of auto-dependent, prototype cities* *Transportation Research Part A*, *In review* (2020).
- [J8] B. Nahmias-Biran, **J. B. Oke**, N. Kumar, C. L. Azevedo, M. Ben-Akiva, *Evaluating the impacts of shared automated mobility on-demand: an activity-based accessibility approach*, *Transportation*, *Accepted* (2020).
- [J7] **J. B. Oke**, Y. M. Aboutaleb, C. L. Azevedo, Y. Han, A. Akkinipally, P. C. Zegras, J. Ferreira, M. E. Ben-Akiva, *A novel global urban typology framework for sustainable mobility futures*, *Environmental Research Letters*, 14(9), 95006 (2019).
- [J6] B. Nahmias-Biran, **J. B. Oke**, C. L. Azevedo, N. Kumar, A. Araldo, K. Basak, R. Seshadri, M. Ben-Akiva, *From traditional to automated mobility on demand: a comprehensive framework for modeling mobility on demand services in SimMobility*, *Transportation Research Record*, 2673(12), 15–29 (2019).
- [J5] **O. Oke**, D. Huppmann, M. Marshall, R. Poulton, S. Siddiqui, *Multimodal transportation flows in energy networks with an application to crude oil markets*, *Networks and Spatial Economics*, 19(2): 521-555 (2019).
- [J4] **O. Oke**, K. Bhalla, D. C. Love, S. Siddiqui, *Spatial associations in global bicycle ownership*, *Annals of Operations Research*, 263(1-2): 529:549 (2018).
- [J3] **O. Oke**, K. Bhalla, D. C. Love, S. Siddiqui, *Tracking global bicycle ownership patterns*, *Journal of Transport and Health*, 2(4): 490-501 (2015).

- [J2] **O. Oke**, S. Siddiqui, *Efficient automated schematic map drawing using multiobjective mixed integer programming*, Computers and Operations Research, 61:1-17 (2015).
- [J1] C. Chudzicki, **O. Oke**, W. K. Wootters, *Entanglement and Composite Bosons*, Physical Review Letters, 104(7):070402 (2010).

### Conference Papers & Extended Abstracts [Peer Reviewed]

- [C3] B. Nahmias-Biran, **J. B. Oke**, N. Kumar, A. P. Akkinapally, C. L. Azevedo, P. C. Zegras, J. Ferreira, M. Ben-Akiva, *Who Benefits from AVs? Equity Aspects of Autonomous Vehicles Policies in a Full-Scale Prototype Cities*, TRB Annual Meeting (2020).
- [C2] E. Gross, **J. Oke**, A. P. Akkinapally, B. Nahmias-Biran, C. L. Azevedo, C. Zegras, J. Ferreira, M. Ben-Akiva, *Accessibility and energy consumption evaluation under different strategies of mobility on-demand deployment*, TRB Annual Meeting (2019).
- [C1] Y. Han, **J. Oke**, S. Hua, J. Zhou, C. L. Azevedo, C. Zegras, J. Ferreira, M. Ben-Akiva, *Global urban typology discovery with a latent class choice model*, TRB Annual Meeting (2018).

### Working Papers

- [W2] Z. Han, **J. B. Oke**, *Sustainability of mass transit systems: a review* (2020).
- [W1] **O. Oke**, D. Huppmann, M. Marshall, R. Poulton, S. Siddiqui, *Mitigating environmental and public-safety risks of United States crude-by-rail transport*, DIW Discussion Papers, 1575 (2016).

### Theses and Reports

- [R5] W. H. Green et al., *Insights Into Future Mobility: A Report from the Mobility of the Future Study*, MIT Energy Initiative, Cambridge, MA, November 2019.
- [R4] **O. Oke**, *Network modeling and optimization for energy and sustainable transit*, Doctoral Dissertation in Civil Engineering, Johns Hopkins University, May 2016.
- [R3] **J. Oke**, S. Siddiqui, K. Bhalla, D.C. Love, J. De Vito, M. Van Doren, Max Marshall, *Making Baltimore More Bike Friendly*, Department of Civil Engineering, Johns Hopkins University, March 2014.
- [R2] **O. Oke**, *Bicycling in Baltimore: key concerns*, Report (submitted to Baltimore DOT), Department of Civil Engineering, Johns Hopkins University, January 2013.
- [R1] **O. Oke**, *A nonlinear optical loop mirror modelocked fiber laser*, Honors Thesis in Physics, Williams College, May 2010.

### COMMUNICATIONS

#### Invited Presentations

- [IP15] *Analysis of future mobility on-demand systems in global urban typologies*, INFORMS Annual Meeting, Seattle, WA, October 2019.
- [IP14] *New urban typologies for sustainable mobility*, Department of Civil and Environmental Engineering, University of Illinois Urbana-Champaign, IL, February 2019.
- [IP13] *New urban typologies for sustainable mobility*, Department of Civil and Environmental Engineering, University of Massachusetts Amherst, MA, February 2019.
- [IP12] *Discovering new urban typologies*, Department of Civil and Environmental Engineering, University of Pittsburgh, PA, January 2019.

- [IP11] *Discovering sustainable future urban mobility policies via simulation of prototype cities from global urban typologies*, Systematizing and upscaling urban solutions for climate change mitigation, Berlin, Germany, September 2018.
- [IP10] *Discovering Robust Urban Mobility Futures via Agent Based Simulation in Prototype Cities*, 7th TRB Innovations in Travel Modeling Conference, Atlanta, GA, June 2018.
- [IP9] *Need for and Uses of Risk Analysis: Technical approaches from the university perspective*, Risk Analysis Workshop, 7th TRB Innovations in Travel Modeling Conference, Atlanta, GA, June 2018.
- [IP8] *Urban mobility simulation for scenario discovery in globally representative prototypes*, Physics Colloquium, Department of Physics, Williams College, MA, October 2017.
- [IP7] *Exploring sustainable mobility strategies in future cities*, Log Lunch Series, Center for Environmental Studies, Williams College, MA, October 2017.
- [IP6] *A Crude Oil Market Model for the United States*, INFORMS Annual Meeting, Philadelphia, PA, November 2015.
- [IP5] *An Equilibrium Model of the US Crude Oil Market*, the 22nd International Symposium on Mathematical Programming, Pittsburgh, PA, July 2015.
- [IP4] *Redefining Infrastructural Space*, Environment, Energy, Sustainability & Health Institute Art/Science Roundtable, Maryland Institute College of Art, Baltimore, May 2015.
- [IP3] *Tracking Global Bicycle Ownership Patterns*, INFORMS Data Mining and Analytics Workshop, San Francisco, CA, November 2014.
- [IP2] *An efficient automated multiobjective programming approach to map schematization*, Systems/Policy/Energy Seminar, Johns Hopkins University, March 2014.
- [IP1] *A Mixed-integer Programming Tool for Creating Effective Schematic Urban Transit Maps*, INFORMS Annual Meeting, Minneapolis, MN, October 2013.

### **Contributed Presentations**

- [CP8] *Assessing the energy impacts of automated on-demand service deployment strategies in sprawling, auto-dependent cities*, Transatlantic Infraday Conference, Federal Energy Research Commission, Washington, DC, November 2018.
- [CP7] *Discovering Urban Typologies For Future Mobility Scenarios In Prototype Cities*, INFORMS Annual Meeting, Houston, TX, October 2017.
- [CP6] *Analyzing United States Crude Oil Flows*, Transatlantic Infraday Conference, Federal Energy Research Commission, Washington, DC, October 2015.
- [CP5] *An Oil Market Model for the United States*, Modeling and Optimization: Theory and Applications, Lehigh University Department of Industrial and Systems Engineering, Bethlehem, PA, July 2015.
- [CP4] *Solving the Crude on Rail Problem using an Equilibrium Model of the US Crude Oil Market*, Critical Infrastructure Symposium, Linthicum, MD, April 2015.
- [CP3] *Global Bicycle Availability*, INFORMS Annual Meeting, San Francisco, CA, November 2014.
- [CP2] *Multiobjective optimization for automatic schematic map drawing*, Modeling and Optimization: Theory and Applications, Lehigh University Department of Industrial and Systems Engineering, Bethlehem, PA, August 2014.
- [CP1] *Schematic map automation and optimization*, Civil Engineering Graduate Seminar, Johns Hopkins University, November 2013.

## TEACHING

### University of Massachusetts Amherst, MA

#### **Instructor**, Department of Civil and Environmental Engineering

- Spring 2020      Big Data and Machine Learning for Engineers (Graduate)  
                    *16 students; new course*
- Fall 2019        Probability & Statistics in Civil Engineering (Undergraduate)  
                    *127 students*

### Massachusetts Institute of Technology, MA

#### **Teaching Assistant**, Department of Civil and Environmental Engineering

- Fall 2018        Transportation Systems Analysis: Demand and Economics (Graduate)  
                    *15 students, recitations, content development*
- Summer 2018    Modeling and Simulation of Transportation Networks (Professional)  
                    *content development*
- Fall 2017        Transportation Systems Analysis: Demand and Economics (Graduate)  
                    *25 students, recitations, content development, assessments*
- Spring 2016     **Teaching Fellow**, Department of Civil and Environmental Engineering  
                    Multivariate Data Analysis (Undergraduate)  
                    *16 students, recitations, lectures, Jupyter notebook development, innovative assessments, project*

### Johns Hopkins University, MD

#### **Instructor**, Hopkins Engineering Applications & Research Tutorials Program

- Fall 2015        Reality Distortion: The Impact and Automation of Schematic Maps (Undergraduate)  
                    *3 students, content development: GAMS, Python, optimization, visualization*
- Spring 2015     **Teaching-as-Research Fellow**, Department of Civil Engineering  
                    Probability and Statistics in Civil Engineering (Undergraduate)  
                    *97 students, designed 12 applied MATLAB projects, surveys & focus group to measure impact*
- Oct 2013        **Teaching Assistant**, Department of Civil Engineering  
                    Optimization and Equilibrium Modeling in Systems Engineering (Graduate, day-long)  
                    *11 students, GAMS installation and programming help*
- Spring 2013     Probability and Statistics in Civil Engineering (Undergraduate)  
                    *55 students, office hours, wrote and graded quizzes & exam problems*
- Fall 2012        Statics and Mechanics of Materials (Undergraduate)  
                    *110 students, taught 10 of 12 lab sections, assessed lab reports, course grade manager*

### The Pennington School, NJ

- 2011 – 2012    **Faculty Member**, Mathematics Department  
                    Algebra II Honors, Precalculus (Course Leader)  
                    *developed innovative assessments, redesigned Precalculus curriculum*

2010 – 2012 **Teaching Fellow – Faculty Member**, Center for Learning  
 Algebra II, Math Skills Tutorial, Writing Skills Tutorial, Communication Skills  
*small classes, students with learning differences, focused mentorship*

### **Williams College, MA**

**Physics Tutor**, Office of Academic Resources  
 2008 – 2010 Peer Tutor Program  
*one-on-one appointments several times a week*  
 2007 – 2010 Math and Science Resource Center  
*walk-in/group sessions, 2-hour shifts, 2 – 4 times a week*

**Teaching Assistant**, Department of Physics  
 Spring 2009 “Waves and Optics”  
*grading, homework assistance*  
 Fall 2008 “Particles and Waves, Enriched”  
*grading, homework assistance*

**Teaching Assistant**, Department of Art  
 Fall 2007 Drawing  
*studio manager, curated student work, occasional modeling*

## **SERVICE**

### **Graduate Research Mentorship**

2020–date Zhuo Han (MSCE<sup>1</sup>, Class of 2019, MIT)  
 2018–19 Yifei Xie (MST<sup>2</sup>, Class of 2021, UMass Amherst)  
 2018–19 Siyu Chen (MST<sup>2</sup>, Class of 2019, MIT)  
 2017–18 Eytan Gross (MST<sup>2</sup>, MIT 2018)  
 2017–19 Youssef Medhat (MST<sup>2</sup>, Class of 2019, MIT)  
 2017–18 Iveel Tsogsuren (MEng, Class of 2018, MIT)  
 Summer 2017 Jin (Jasmine) Zhou (MA, Class of 2018, Columbia University)<sup>3</sup>  
 Spring 2017 Scott Foster (Leaders for Global Operations Fellow, Class of 2018, MIT)  
 Fall 2016 Akshay Padmanabha (MEng, Class of 2017, MIT)  
 2016–17 Sean Hua (MEng, Class of 2017, MIT)  
 2016–17 Michael Choi (Class of 2017, MIT)

### **Undergraduate Research Mentorship**

2017–18 Sharlene Chiu (Super UROP<sup>4</sup>, Class of 2019, MIT)  
 Spring 2017 Joseph Noszek (UROP<sup>4</sup>, Class of 2020, MIT)  
 Spring 2017 Abenezzer Samuel (UROP<sup>4</sup>, Class of 2020, MIT)  
 Winter 2017 Gabriel Madonna (Mini UROP<sup>4</sup>, Class of 2020, MIT)  
 2013–16 Max Marshall (Class of 2016, JHU)

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<sup>1</sup>Masters of Science in Civil Engineering

<sup>2</sup>Masters of Science in Transportation

<sup>3</sup>Now PhD student at University of Southern California

<sup>4</sup>Undergraduate Research Opportunities Program

2014–15 Ricky Poulton (Class of 2017, JHU)  
 2013–14 Molly Van Doren (Class of 2014, JHU)

### **Internal Service, Department and School**

Civil & Environmental Engineering Postdoc Committee, Massachusetts Institute of Technology  
 2016–17 Member

Homewood Graduate Board, Johns Hopkins University  
 2015–16 Graduate Representative, Whiting School of Engineering

Civil Engineering Graduate Association, Johns Hopkins University  
 2015–16 President  
 2014–15 Social Coordinator (Founder)

Graduate Seminars, Department of Civil Engineering, Johns Hopkins University  
 2014–15 Cochair (Systems track)  
 2013–14 Committee member

### **External Service**

Manuscript Review

2020 Transportation Research Record  
 2019 Transportation Research Board  
 2018 Transportation Research Part A  
 2018 International Journal of Geographical Information Science  
 2018 Journal of Transport & Health  
 2017 International Journal of Sustainable Transportation  
 2017 Computational Optimization and Applications  
 2016 Optimization and Engineering  
 2015 IEEE Transactions on Power Systems  
 2014 INFORMS Data Mining & Analytics Workshop

Conference Organization

2017 Session Chair, INFORMS Annual Meeting

### **Outreach**

STEM Achievement in Baltimore Elementary Schools (SABES)  
 2014 – 16 Graduate Student Mentor

Bicycling in Baltimore

2015 Contributor, Baltimore City Bicycle Master Plan 2015  
 2013 Project co-coordinator, “Making Baltimore More Bicycle Friendly”

**Academic Affiliations**

American Society of Civil Engineers (ASCE)

Association for Computing Machinery

Institute for Operations Research and Management Sciences (INFORMS)

Network Science Society