

## **Theja Putta**

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## **EDUCATION**

### **Doctor of Philosophy, Civil Engineering**

December 2019

(Concentration: Transportation – GPA: 3.91)

- Northeastern University, Boston, MA
- Dissertation Topic: Evaluating Bicycle Networks: Visualizing and Measuring Low-Stress Connectivity and Accessibility
- Advisor: Dr. Peter Furth

### **Bachelor of Technology, Civil Engineering**

July 2010

- Indian Institute of Technology Madras (IIT-M), Chennai, India
- Final Project: Short-Term Prediction of Traffic Conditions Using Machine Learning
- Advisor: Dr. Lelitha Devi Vanajakshi

## **SOFTWARE & COMPUTER SKILLS**

- |                |             |
|----------------|-------------|
| • ArcGIS       | • SketchUp  |
| • QGIS         | • Matlab    |
| • Python       | • R         |
| • VISSIM       | • AutoCAD   |
| • Synchro      | • MS Office |
| • TransModeler | • Arena     |

## **PUBLICATIONS**

### **Journal Publications (JP)**

JP1. Putta, T., Furth, P. “A Method to Identify and Visualize Barriers in a Low-Stress Bike Network,” *Transportation Research Record*, Vol. 2673, no. 9, Sept 2019, pp. 452–460.

JP2. Furth, P., Putta, T., Moser, P. “Measuring Low-Stress Connectivity in Terms of Bike-Accessible Jobs and Potential Bike-to-Work Trips: A Case Study Evaluating Alternative Bike Route Alignments in Northern Delaware,” *Journal of Transport and Land Use*, Vol. 11, 2018, pp. 815-831.

## **Conference Publications (CP)**

- CP1. Theja. P.V.V.K and L. Vanajakshi, “Short Term Prediction of Traffic Parameters Using Support Vector Machines Technique,” *2010 3rd International Conference on Emerging Trends in Engineering and Technology*, Goa, November 19-21, 2010, pp. 70-75.

## **PRESENTATIONS (SELECT)**

1. Theja Putta, Peter Furth – “How One-way Streets Create Network Barriers for Low-Stress Bicycling, and the Potential of Bicycle Contraflow to Improve Jobs Accessibility and Equity”. Boston Area Research Initiative Spring Conference, Boston, April 26, 2019.
2. Stephanie Upson, Theja Putta, Peter Furth – “What Boston Area Neighborhoods have Good Bike Accessibility to Supermarkets? How Could it Improve?”. Boston Area Research Initiative Spring Conference, Boston, April 26, 2019.
3. Theja Putta, Peter Furth – “A Method to Identify and Visualize Barriers in a Low-Stress Bike Network”. 2019 Annual Meeting, Transportation Research Board, Washington D.C, January 16, 2019.
4. Theja Putta – “Analysis of Low-Stress Bicycling Network Connectivity in New Castle County, Delaware”. 12<sup>th</sup> Annual NEITE Student Research Symposium, Boston, 2016.
5. Theja Putta – “Low Stress Bike Accessibility to Jobs in Boston”. ITE Meeting. Northeastern Chapter, September 25, 2017.
6. Peter Furth, Theja Putta – “Low-Stress Bike Accessibility to Jobs from Boston Neighborhoods: The Dismal Present and our Revolutionary Potential”. Boston Area Research Initiative Spring Conference, Boston, April 27, 2018.
7. Peter Furth, Theja Putta – “Evaluating Boston’s Bike Network in Terms of Low-Stress Accessibility to Jobs and Other Destinations”. 8<sup>th</sup> Annual Streetwork 10-in-1, Boston, December 4, 2018

## **RESEARCH PROJECTS – SPONSORED**

### **Low-Stress Bike Connectivity in Newcastle County, Delaware** (Sponsor: DelDOT)

- Created a reliable road/bicycle inventory file by combining multiple sources of GIS data
- Classified county streets based on their stress-level for cyclists
- Compared network benefits of trail alternatives between Newark and Wilmington

### **Arlington County: Low-Stress Bike Network Mapping** (Sponsor: Arlington, VA)

- Developed a python script tool in ArcGIS to calculate LTS using street attributes
- Mapped low-stress streets which were then used for a destination accessibility study
- Identified barriers that disconnect or create long gaps in the low-stress network

### **Mapping Bike Accessibility to BART Stations in Oakland, California** (Sponsor: Oakland, CA)

- Calculated the stress level of streets using the GIS data of streets
- Quantified and mapped pedestrian and bike accessibility to BART stations
- Developed a custom ArcGIS/Python toolbox for generating bike accessibility maps

### **Bike Network Analysis for Boston Area** (Sponsor: Helen & William Mazer Foundation)

- Updated the road inventory data of Boston Metro area with bike facility information
- Measured and mapped bike accessibility to jobs in the Boston Metro area
- Performed scenario analysis to quantify the effect of network improvements

## **OTHER PROJECTS**

### **Mapping Barriers in a Bike Network Using GIS Data**

- Developed an algorithm that identifies and draws barriers in a low-stress bike network
- Demonstrated the algorithm using three networks – Boston, Arlington (VA) and Oakland
- Built an ArcGIS toolbox using Python to automate the process of drawing barriers

### **Evaluating the Network Benefits of Bicycle Contraflow**

- Created a directed street network for Boston, Brookline, Cambridge and Somerville
- Developed a systematic method for identifying priority streets for bike contraflow
- Performed scenario analysis to measure the network benefits of contraflow

### **Simulating the Allston-Brighton Toll Operations on MassPike**

- Built an Arena model to simulate toll operations for the Simulation Analysis class
- Compared user/agency costs for different combinations of EZ-pass and cash lanes
- Won the best term project presentation by peer voting

## Redesigning Blue Hills Parkway and Brook Road Intersection, Milton, MA

- Built a VISSIM model to simulate the signal and intersection operation
- Proposed alternative signal plans to reduce vehicular and pedestrian delay
- Demonstrated the strengths of the proposed signal plans compared to existing plans

## PROFESSIONAL EXPERIENCE

**Northeastern University, Boston**

2013-present

**Post-Doctoral Researcher**, Mar 2020-present

**Instructor**, Statics and Strength of Materials Recitation, Fall 2018

- Taught two recitation sections with 48 students
- Created and delivered content to illustrate application of theoretical concepts
- Held office hours for students requiring assistance

**Program Assistant**, Dialogue of Civilizations, Netherlands, Summer (2016, 2017, 2018)

- Assisted in organizing “Sustainable Urban Transportation” summer program
- Provided logistical, teaching and grading support for the 5-week program
- Organized and led field trips for groups of 25-30 students

**Teaching Assistant**

Course/Lab	Responsibilities	Term-Year
Transportation Planning and Engineering (5 times)	Grading homework	Fall-2019, Spring-2019, Fall-2017, Spring-2017, Fall-2015
Statics and Strength of Materials	Grading homework	Fall-2018
Concrete Canoe (3 times)	Supervising work sessions	Spring-2019, Fall-2017, Spring-2017
Energy Systems: Science, Technology, and Sustainability	Grading homework	Spring-2017
Probability and Engineering Economy for Civil Engineering	Grading homework, Holding office hours	Fall-2013
Construction Management (2 times)	Teaching MS Project session, Grading homework, Holding office hours	Spring-2014, Fall-2013
Construction Equipment and Modeling	Grading homework, Holding office hours	Spring-2014

**Evitca Inc, Hyderabad, India**

Sep 2011 to Mar 2012

- Assisted in building a website that connects fitness professionals and users
- Tested the backend code for the website
- Understood the development and internal challenges of a tech start-up

**Jindal Steel & Power Limited (JSPL), Angul, India**

Jul 2010 to Dec 2010

- Served as civil site engineer in the construction of JSPL's steel plant
- Scheduled, executed and monitored the construction of the coal gasification plant
- Negotiated change orders with contractors

**Ramky Infrastructure Limited, Hyderabad, India**

Summer 2009

- Read technical drawings and ensured highway construction complies with specifications
- Recorded and reported daily work progress to the project monitoring team
- Performed concrete slump tests, subgrade core sampling and pavement roughness testing

## **AFFILIATIONS**

**Young Professionals in Transportation, Boston Chapter, Member** – (Jan 2020-present)

**Boston Cyclists Union, Volunteer, member** – (2014-present)

**Graduate Student Government, Northeastern University, Senator** – (2014-2018)

**Lodge Committee, Northeastern University Hus-skiers and Outing Club** – (2015-present)

**Institute of Transportation Engineers, Northeastern University Chapter** – (2015-2019)

**Association of Pedestrian & Bicycle Professionals, Member** – (2019-present)

**Transportation Research Board, Member** – (2015-2018)