

**Contact Information**

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**Research Interests**

I enjoy working on problems that involve finding and extracting interesting phenomena from large collections of sensor data, and understanding how we can leverage any latent patterns to solve practical problems, build useful applications, or learn interesting things.

**Education****Doctor of Philosophy, Computer Science**

Institution: University of Illinois at Chicago  
Dates: Aug 2007 - June 2014 (expected)  
Advisor: Jakob Eriksson  
GPA: 4.0/4.0

**Bachelor of Science, Computer Science**

Institution: University of Illinois at Chicago  
Dates: Aug 2002 - Dec 2006  
GPA: 3.95/4.0

**Relevant Experience**

Graduate Research Assistant

Chicago, IL

**University of Illinois at Chicago**

Aug 2007 to present

Designed and implemented unified extrapolation framework for predicting future vehicle trajectories using machine learning algorithms [3]. Developed hybrid map inference algorithm to overcome existing methods' limitations with coverage disparity and measurement error in GPS traces [5]. Modified standard map inference technique to handle problems associated with sparsely sampled data, and evaluated performance on a large-scale real-world dataset [6]. Conducted survey of road map inference literature, and implemented and compared three reference algorithms using a novel quantitative evaluation metric [1, 4]. Designed and implemented system for automatic transit network inference from GPS traces using smartphones [7, 8]. Built real-time transit network simulator for evaluating performance of crowd-sourced bus tracking system [9]. Developed and deployed smartphone-based transit navigator [10], with 70,000+ unique users to date.

Research Intern

Redmond, WA

**Microsoft Research**

Jun 2012 - Sep 2012

Developed and evaluated algorithms for assessing the similarity of daily activity patterns collected from GPS traces, and applied findings to the task of clustering said activity patterns. Conducted user study to gather raw data and validate experimental results [2].

Intern Software Engineer

Libertyville, IL

**Motorola**

May 2006 - Aug 2006

Created application for Motorola service centers that enabled automatic transfer of mobile device data to a centralized repository. Developed data-logging application for user-trial participants, to be used while testing new mobile devices.

## Refereed Journal Publications

- [1] James Biagioni and Jakob Eriksson. “Inferring Road Maps from Global Positioning System Traces: Survey and Comparative Evaluation”. In: *Transportation Research Record: Journal of the Transportation Research Board*, No. 2291 (2012), pp. 61–71.

## Refereed Conference Publications

- [2] James Biagioni and John Krumm. “Days of Our Lives: Assessing Day Similarity from Location Traces”. In: *User Modeling, Adaptation, and Personalization*. Vol. 7899. Lecture Notes in Computer Science. Springer Berlin Heidelberg, 2013, pp. 89–101.
- [3] James Biagioni, A.B.M. Musa, and Jakob Eriksson. “Thrifty Tracking: Online GPS Tracking with Low Data Uplink Usage”. In: *SIGSPATIAL GIS*. ACM, 2013, pp. 506–509.
- [4] James Biagioni and Jakob Eriksson. “Inferring Road Maps from GPS Traces: Survey and Comparative Evaluation”. In: *91st Annual Meeting of the Transportation Research Board*. 21 pages. 2012.
- [5] James Biagioni and Jakob Eriksson. “Map Inference in the Face of Noise and Disparity”. In: *SIGSPATIAL GIS*. ACM, 2012, pp. 79–88.
- [6] Xuemei Liu, James Biagioni, Jakob Eriksson, Yin Wang, George Forman, and Yanmin Zhu. “Mining Large-Scale, Sparse GPS Traces for Map Inference: Comparison of Approaches”. In: *KDD*. ACM, 2012, pp. 669–677.
- [7] James Biagioni, Tomas Gerlich, Timothy Merrifield, and Jakob Eriksson. “EasyTracker: Automatic Transit Tracking, Mapping, and Arrival Time Prediction Using Smartphones”. In: *SenSys*. ACM, Nov. 2011, pp. 68–81.
- [8] Tomas Gerlich, James Biagioni, Timothy Merrifield, and Jakob Eriksson. “Demo: Tracking Transit with EasyTracker”. In: *SenSys*. ACM, 2011, pp. 401–402.
- [9] Arvind Thiagarajan, James Biagioni, Tomas Gerlich, and Jakob Eriksson. “Cooperative Transit Tracking using Smart-phones”. In: *SenSys*. ACM, 2010, pp. 85–98.
- [10] James Biagioni, Adrian Agresta, Tomas Gerlich, and Jakob Eriksson. “Demo Abstract: TransitGenie - A Context-Aware, Real-Time Transit Navigator”. In: *SenSys*. ACM, 2009, pp. 329–330.
- [11] James Biagioni, Piotr Szczurek, Peter Nelson, and Abolfazl Mohammadian. “Tour-Based Mode Choice Modeling: Using an Ensemble of Conditional and Unconditional Data Mining Classifiers”. In: *88th Annual Meeting of the Transportation Research Board*. 16 pages. 2009.

## Invited Talks

<b>Inferring Road Maps from GPS Traces</b> Google	Mountain View, CA Mar 2013
<b>Inferring Road Maps from GPS Traces</b> Microsoft Bing	Bellevue, WA Jul 2012

## Honors, Awards & Fellowships

<b>Dean’s Scholar Award</b> University of Illinois at Chicago Awarded by the Dean of the Graduate College in recognition of scholarly achievement. The most distinguished award offered to current graduate students.	Chicago, IL Aug 2012 - Aug 2013
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<b>Best Presentation</b> ACM SenSys 2011 Awarded for “EasyTracker: Automatic Transit Tracking, Mapping, and Arrival Time Prediction Using Smartphones.”	Seattle, WA Nov 2011
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**Honorable Mention (Demo)**

ACM MobiCom 2010

Awarded for “UrbanExplorer: An Automated Activity Discovery and Planning Assistant.”

Chicago, IL

Sep 2010

**NSF-IGERT Fellowship**

University of Illinois at Chicago

Chicago, IL

Aug 2007 - May 2011

**Graduated B.S. in CS with Highest Honors**

University of Illinois at Chicago

Chicago, IL

Dec 2006

**Professional Service**

Reviewer for GeoInformatica (2014).

Reviewer for ACM SIGMOD Record (2013).

External Reviewer for International Conference on Pervasive Computing (2012).

Student Volunteer for ACM SIGSPATIAL GIS (2012, 2013).

**Outreach Activities**

President of UIC Computer Science Graduate Student Association, 2012 - 2013.

Weekly high school intern mentor for Proviso Mathematics and Science Academy, 2009 - 2012.

**References**

Available upon request.