Curriculum Vitae **James Biagioni** Nov 2014

Contact Information

Personal website: http://biagioni.net/

Research Interests

I enjoy working on problems that involve finding and extracting interesting phenomena from large collections of sensor data. More specifically, I have a keen interest in looking at how people and vehicles move through space, especially along transportation networks, and 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 - Aug 2014
Thesis title: "Inferring Semantic Information from User Mobility Data"
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

Software Engineer — Seattle, WA
Amazon — Sep 2014 - present
Developing back-end software for Amazon's geospatial products.

Graduate Research Assistant — Chicago, IL
University of Illinois at Chicago — Aug 2007 - Jul 2014
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

Inferring Road Maps from GPS Traces — Mountain View, CA
Google (`youtube.com/watch?v=byJzKjCta3c`) — Mar 2013

Inferring Road Maps from GPS Traces — Bellevue, WA
Microsoft Bing — Jul 2012

Honors, Awards & Fellowships

Fast Forward Preview Session Runner-Up — Orlando, FL
ACM SIGSPATIAL GIS 2013 — Nov 2013
Awarded for "Thrifty Tracking: Online GPS Tracking with Low Data Uplink Usage."

Dean's Scholar Award — Chicago, IL
University of Illinois at Chicago — Aug 2012 - Aug 2013
Awarded by the Dean of the Graduate College in recognition of scholarly achievement. The most distinguished award offered to current graduate students.

Paper Session Best Presentation Seattle, WA
ACM SenSys 2011 Nov 2011
Awarded for "EasyTracker: Automatic Transit Tracking, Mapping, and Arrival Time Prediction Using Smartphones."

Demo Session Honorable Mention Chicago, IL
ACM MobiCom 2010 Sep 2010
Awarded for "UrbanExplorer: An Automated Activity Discovery and Planning Assistant."

NSF-IGERT Fellowship Chicago, IL
University of Illinois at Chicago Aug 2007 - May 2011

Graduated B.S. in CS with Highest Honors Chicago, IL
University of Illinois at Chicago 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.