

# Dawn Woodard

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Data science lead with expertise in forecasting, statistics, experimental design, and machine learning. Experienced in building and guiding cross-functional teams to create core product technologies, such as pricing and matching systems within the sharing economy.

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## PROFESSIONAL POSITIONS

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### **Senior Data Science Manager of Maps, Uber (San Francisco), 10/2017 - Current**

Leading data science for the mapping platform used in Uber's rider app, driver app, and decision systems (such as pricing and dispatch). Our technologies include road map definition, points of interest detection, map search, route optimization, travel time prediction, and navigation.

### **Senior Data Science Manager of Dynamic Pricing, Uber (San Francisco), 7/2016 - 10/2017**

I managed data science for four teams within Marketplace. Initially these were a single team, Dynamic Pricing, which created Uber's real-time pricing systems (including surge pricing). In January 2017 three teams were spun off; they perform modeling of demand, experimental measurement, and calculation of rider/driver fares.

### **Data Science Manager of Marketplace, Uber (San Francisco), 5/2015 - 7/2016**

I led the data science team for Marketplace, which creates the decision systems that form Uber's marketplace. Examples include dynamic pricing, dispatch, rider matching for UberPOOL, and restaurant recommendation for UberEATS. I led the team through a period of transformative growth, starting with 10 data scientists, and finishing with 49 including 7 managers.

### **Associate Professor (with tenure), Cornell University (Ithaca, NY), 7/2014 – 12/2015**

In the School of Operations Research and Information Engineering and Department of Statistical Science.

### **Visiting Scholar, Department of Statistics, Stanford University (Palo Alto, CA), 1/2015 – 5/2015.**

### **Visiting Researcher, Microsoft Research (Redmond, WA), 8/2014 – 12/2014**

I developed methods for predicting travel time in a road network, for use in commercial mapping services (like Bing Maps or Google Maps).

### **Assistant Professor, Cornell University (Ithaca, NY), 7/2008 - 6/2014**

Research in forecasting, Bayesian statistics, and Markov chain Monte Carlo. Collaborations with Microsoft, Citi Bike, Toronto Paramedic Services, and Optima Corporation. For example, I developed forecasting methods to be used in decision support software for ambulance fleets. These include methods for predicting ambulance demand and travel time.

### **Consultant, Microsoft Research (Mountain View, CA), 2/2009 – 5/2013**

Developed methods for automated diagnosis of performance problems in data centers.

### **Consultant, Tibco Corp. (Durham, NC), 5/2006 - 12/2009**

Developed software packages for Bayesian statistical analysis of pharmaceutical data.

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## PROGRAMMING SKILLS

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**C, C++, Java, R, MATLAB, SQL.**

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## EDUCATION

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<b>Ph.D. in Statistics, Duke University Department of Statistical Science</b> Performance assessment for radiology; analysis of the computational efficiency of Markov chain Monte Carlo methods.	2002-2007
<b>B.S. in Mathematical and Computational Science, Stanford University</b> With honors and distinction.	1997-2001

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## SELECTED PUBLICATIONS (see also [full list of publications](#))

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### BIOMEDICAL STATISTICS:

[Latent factor regression models for grouped outcomes.](#) Woodard, Love, Thurston, and Ruppert (2013). *Biometrics*.

[Hierarchical adaptive regression kernels for regression with functional predictors.](#) Woodard, Crainiceanu, and Ruppert (2013). *Journal of Computational and Graphical Statistics*.

[Performance assessment for radiologists interpreting screening mammography.](#) Woodard, Gelfand, Barlow, and Elmore (2007). *Statistics in Medicine*.

### DEMAND FORECASTING:

[Predicting bike usage for New York City's bike sharing system.](#) Singhvi, Singhvi, Frazier, Henderson, O'Mahony, Shmoys and Woodard (2015). *AAAI 2015 Workshop on Computational Sustainability*.

[A spatio-temporal point process model for ambulance demand.](#) Zhou, Matteson, Woodard, Henderson and Micheas (2015). *Journal of the American Statistical Association*.

[Forecasting Emergency Medical Service call arrival rates.](#) Matteson, McLean, Woodard, and Henderson (2011). *Annals of Applied Statistics*.

### TRAVEL TIME FORECASTING:

[Predicting travel time reliability using mobile phone GPS data.](#) Woodard, Nogin, Koch, Racz, Goldszmidt, and Horvitz (2017). *Transportation Research Part C*.

[Large-network travel time distribution estimation for ambulances.](#) Westgate, Woodard, Matteson and Henderson (2016). *European Journal of Operational Research*.

[Travel time estimation for ambulances using Bayesian data augmentation.](#) Westgate, Woodard, Matteson and Henderson (2013). *Annals of Applied Statistics*.

### DISTRIBUTED SYSTEMS FAULT DIAGNOSIS:

**Real-time identification of performance problems in large distributed systems.** Goldszmidt, Woodard and Bodik (2011). In *Machine Learning and Knowledge Discovery for Engineering Systems Health Management*.

[Online model-based clustering for crisis identification in distributed computing.](#) Woodard and Goldszmidt (2011). *Journal of the American Statistical Association*.

[Fingerprinting the datacenter: Automated classification of performance crises.](#) Bodik, Goldszmidt, Fox, Woodard, and Andersen (2010) *EuroSys 2010: Proceedings of the 5<sup>th</sup> European Conference on Computer Systems*.

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**GRANTS, AWARDS, & MAJOR SERVICE POSITIONS**

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<b>National Science Foundation (NSF), Principal Investigator:</b> “Asymptotically Efficient and Efficiently Computable Bayesian Estimation,” \$120,000, Statistics Program.	2014-2017
<b>NSF, Principal Investigator:</b> “Bayesian Computation, Guaranteed Efficient (or Intractable),” \$150,000, Statistics Program.	2012-2015
<b>NSF, Principal Investigator:</b> “Statistical Analysis of Emergency Services Data,” \$329,936, Service Enterprise Systems Program.	2009-2012
<b>Visiting Fellowship, Isaac Newton Institute for Mathematical Sciences</b>	2014
<b>Ralph S. Watts '72 Excellence in Teaching Award,</b> Cornell University	2012
<b>Gertrude M. Cox Scholar,</b> American Statistical Association	2003
<b>University Scholar and James B. Duke Fellow,</b> Duke University	2002
<b>Associate Editor:</b>	
• Journal of the American Statistical Association	Current
• Stochastics: An International Journal of Probability & Stochastic Processes	2015
• Electronic Journal of Statistics	2012