

# Pete Bunch

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## EMPLOYMENT

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### Senior Modeling Scientist

2015 – present

*Quantcast, Brand Advertising*

- Masterminded the design and implementation of a new framework to balance between multiple customer performance goals, including derivation of optimal pricing equations, development of a new control system, and planning and coordination of software changes across the bidding stack, resulting in reliable and consistent performance and fewer unhappy customers.
- Wrote new libraries for real-time model scoring and bid targeting configuration, rendering obsolete many thousands of lines of impenetrable spaghetti code, and adding a new layer of abstraction which facilitated faster product development and cleaner code deployment.
- Upgraded the statistical methodology underlying the A/B test framework, introducing Bayesian inference and hypothesis testing, and providing a rigorous foundation for judging the results of modeling experiments.
- Improved log parsing procedures to extract double the volume of seed data for search-based audience targeting.
- Investigated numerous improvements to demographic modeling, including alternative multi-class classification models, methods for model calibration, and unsupervised approaches to discovering hidden classes.
- Won a company-wide hackathon for innovations in bid pricing strategies, and granted three trade secret awards.
- Mentored two summer interns and a winning intern hackathon team, and gave regular “Modeling Onboarding” talks.

### Data Scientist and Modeling Consultant

2014 – 2015

*Tesco, Supply Chain Development*

- Developed custom machine learning algorithms and statistical models for probabilistic forecasting. Reduce annual waste bill by £12M.
- Implemented new procedures in MATLAB and SQL to run at scale on a Teradata data warehouse.

### Postdoctoral Research Associate

2014 – 2015

*Cambridge University Engineering Department*

- Engineered a number of new Markov chain Monte algorithms for system learning.
- Created a lab series of ‘Coffee Conference’ internal seminars. Conducted undergraduates admissions interviews.
- Taught small groups of undergraduate engineers in MATLAB, signal processing, and mathematics. (Modules included linear algebra, probability, vector calculus, differential equations, and filter design.)

### Summer Intern – Paid

Jun – Aug 2009

*Metaswitch Networks, Network Protocols Division*

- Developed software in C and Python, adding support for a new protocol to client-deliverable product code, for a leading telecomms software company.

### Industry Intern – Paid, and DSTL Scholar

2005 – 2010

*DSTL (Defence Science & Technology Laboratories), Electronics Department*

- Designed algorithms for in-service and prototype radio frequency detectors for military search applications.
- Lead a £300,000 program of research into acoustic landmine detection technology.

## EDUCATION

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University of Cambridge, Cambridge, UK

*PhD in Statistical Modeling and Algorithm Design*

2010 – 2014

- Thesis: “Particle filtering and smoothing algorithms for challenging time series models.”
- Formulated and applied statistical models and Bayesian algorithms for inference and learning.
- Published seven journal papers and presented at four international conferences.
- Worked on theoretical and applied projects, including development of new sequential Monte Carlo methods, and algorithm design for detection of heartbeats in cardiography data.

*BA & MEng in Information Engineering (1<sup>st</sup> with Distinction)*

2006 – 2010

- Highest mark in the class in 2008 and 2010; second highest in 2009. Equivalent of 4.0 GPA every year.
- Modules in signal processing, communications, control, hardware and software architecture, and electronics.

## SKILLS AND ACTIVITIES

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- Coding in MATLAB and Python, including numpy and scipy (expert), SQL, VBA, C and C++ (proficient).
- Comfortable with software engineering principles and object oriented programming.
- Experienced with Git, SVN, LaTeX and office software.
- Men’s Captain, Cambridge ’99s Rowing Club. Raced at Henley Royal Regatta. 2013 – 2014
- Captain, Cambridge University Sailing Team. Semi-finals of University Nationals. 2007 – 2008
- I write poetry and I love statistics. Sometimes I write poems about statistics.