

# Dr Dimitra (Mimie) Liotsiou

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## PROFESSIONAL EXPERIENCE

### University of Oxford, Postdoctoral Researcher, Jan 2018 –

Data science research at the Oxford Internet Institute. Computationally analysing and measuring the impact of online misinformation. Engaged with policy makers, industry practitioners and the media. Main projects:

- Built the Junk News Aggregator, a novel public platform consisting of three interactive tools for examining in near-real-time the content and popularity of public Facebook posts from US and EU junk news sources.  
*Tools:* Python (scientific stack and HTTP requests), MySQL, Facebook API, Unix shell.
  - **Press:** *TechCrunch, Newsweek, BuzzFeed News, The Bulletin of the Atomic Scientists (video interview)*
- Research on the Russian IRA's propaganda campaign across social media platforms around the 2016 US elections. Contributed novel findings, offering the most detailed and extensive insights on the subject to date.  
*Tools:* Python (scientific stack, including NLTK Vader for sentiment analysis). *Methods:* linear regressions (OLS, Poisson and Negative Binomial GLMs for count data), Machine Learning regression and classification models (ensemble decision tree methods: random forests, gradient boosting), for prediction and inference.
  - **Policy impact:** Initial study requested by the US Senate, cited by the UK House of Commons Digital, Culture, Media and Sport (DCMS) Committee's Final Report on Disinformation and 'fake news'. **Selected press:** *The Washington Post* and *The New York Times* (front page), *BBC, MSNBC, Ars Technica*.
- *Other activities:* research talks and seminars, including for the Oxford University AI portal, podcast, and Women in CS event; reviewer for EPJ Data Science (2018), ACM Conference on Hypertext and Social Media (2019)

### University of Southampton, Computer Science Teaching Assistant, Oct 2014 – Dec 2016

Teaching courses, seminars and mentoring group projects, for students at the bachelor's, master's, and PhD level and for practitioners, on: machine learning for text data in Python, introduction to data science in Python, social network analysis, Java programming, functional programming in Scheme, Software Engineering.

### Department of Health UK, Operational Research Intern, June - Sept 2014

- **Award-winning** MSc thesis project at the dentistry division of the Department of Health in London, on projecting dental care need in England over the next 20-30 years.
- Statistically analysed nation-wide dental health survey data (hundreds of variables, thousands of participants), used age-period-cohort modelling (self-taught on the job). Learned about dentistry, liaised with domain experts.

### Morgan Stanley London, Software Engineering Intern, June - Sept 2011

- Built scheduling algorithms that achieved a **30% improvement** in the delivery rates of risk calculations to the traders' desks, and built a fully extensible computer grid simulator.
- Learned Scala from scratch. Mathematical and analytical work. Daily Scrum meetings with manager and team. Gained financial insight - online courses on derivatives and bonds, financial training sessions.
- Very successful presentation to team (Interest Rate Derivatives team) in London and Budapest. My team's MD informed me in 2012 that my work was still being used and very valuable to them.

### Physics Department, Aristotle University of Thessaloniki, Programming Intern, July 2010

Used Monte Carlo simulation to solve computational physics problems (solid-state physics) in Java.

## EDUCATION

### University of Southampton, PhD Computer Science, 2014-18

- **Awards:** *Full scholarship; Best Poster award (& full-length paper) at the Social Informatics conference 2016.*
- *Thesis: Measuring the Social Influence of Online Communications at the Individual and Collective Level: A Causal Framework.* Supervisors: Profs. Luc Moreau & Susan Halford.
- Proposed a novel causal inference framework for measuring social influence on the Web, using real-world online communications data. *Methods:* causal inference (graphical causal models and nonparametric estimation), neural networks for natural language processing (LSTM-based sentiment classification); social network analysis, graph theory, data mining. *Tools:* Python scientific stack, Unix shell.
- *Other Activities:* Teaching; member of the ACM, and member of the London Computational Social Science Initiative; presented at UK Causal Inference Meeting 2017, and at Data Natives London, 2017.

### University of Southampton, MSc Operational Research, Distinction, 2013-14

- **Awards:** *Full scholarship; thesis prize.*
- *Thesis: Projecting dental care need in England over the next 20-30 years (with the UK Department of Health).*

### University of Cambridge, St John's College, BA Hons Computer Science, 2.1 (67.2%), 2009-12

- **Awards:** *Prize for final-year thesis; first prize in group project competition.*
- *Thesis: Parallelising ant colony optimisation-based solutions to the vehicle routing problem in Scala.*

**International Baccalaureate Diploma, score: 45/45 (above the 99.81<sup>st</sup> percentile), Anatolia American College, Thessaloniki, Greece, 2007-09.**

- Only 0.19% of students globally achieved 45 out of 45, i.e. this score placed me above the **99.81<sup>st</sup> percentile**.
- *Subjects:* Mathematics, Physics, Economics, Business Management, Greek, English.

## AWARDS & HONOURS

**Best poster award at the 8th International Conference on Social Informatics, Seattle, WA, 2016**

For the poster version of a paper proposing a novel causal framework for social influence on the Web (per above).

**Sponsor prize for MSc thesis, Department of Health UK & University of Southampton, 2014**

For MSc thesis on projecting dental care need in England over the next 20-30 years (per above).

**Prize for BA thesis, University of Cambridge, 2011-12. Score: First Class (82%).**

My final-year thesis at Cambridge was highly commended as one of the best in my year. Wrote multi-agent biologically-inspired reinforcement learning AI algorithms, to solve the Vehicle Routing Problem (strongly NP-hard combinatorial optimization problem). Wrote and compared several variants of sequential and parallel code, and ran them on a 32-core machine. Was very successful; my results were comparable to those in current scientific research.

**First prize in Cambridge Group Project Competition - project manager, 6 weeks, 2010-11**

- Project manager in a team of six, plus contributing as a regular member. We built a Twitter analysis web app for the tech company Red Gate. First Prize, for "Most Impressive Professional Achievement."
- Coordinated and prioritized the team's efforts under strict deadlines, wrote extensive documents and presentations, negotiated with the client, presented and demonstrated to Lab staff and professional guests.

## TECHNICAL SKILLS

**Languages:** Python (scientific stack: pandas, numpy, statsmodels, scikit-learn, scipy, matplotlib, keras, nltk, networkx), MySQL, Java, Scala, Unix shell; some experience in: Jupyter, R, HTML, CSS, C++ and C, ML, Prolog.

**Frameworks and practices:** Git, Spring, Perforce, JIRA, Scrum, Agile.

**APIs:** RESTful APIs (HTTP-based), especially the Facebook Graph API.

**Operating Systems:** Experienced in Mac OS X, Linux, MS Windows.

**Software Packages:** MS Office (incl. VBA), SPSS, SAS, Minitab.

## PUBLICATIONS

- Liotsiou, D. and Howard, P. N. (2019). Measuring the Influence of Online Misinformation: A Hierarchy of Social Media Data. *The 5th Annual International Conference on Computational Social Science (IC2S2)*.
- Liotsiou, D., Kollanyi, B. and Howard, P.N. (2019) The Junk News Aggregator: Examining junk news posted on Facebook, starting with the 2018 US Midterm Elections. *arXiv preprint arXiv:1901.07920*.
- Howard, P. N., Ganesh, B., Liotsiou, D., Kelly, J., & François, C. (2018) The IRA, Social Media and Political Polarization in the United States, 2012-2018. *Oxford, UK: Project on Computational Propaganda. 46 pp.*
- Liotsiou, D., Moreau, L., & Halford, S. (2016). Social Influence: From Contagion to a Richer Causal Understanding. In *International Conference on Social Informatics (pp. 116-132)*. [\[Link\]](#) Springer International Publishing. (17-page full length paper in proceedings, **Best Poster Award**, short talk.)

**LANGUAGES** Modern Greek (native), French (intermediate/fluent), English (very fluent).

## EXTRACURRICULAR ACTIVITIES & STUDIES

- **Music critic, Southampton University culture magazine, 2013-15.** Award nomination
- **Model United Nations, 2007-08.** Several international conferences.
- **Music studies, at music school (conservatoire), 1998-2007.** Certificate in Theory of Music equivalent to ABRSM Music Theory Grade 7 (Advanced Harmony, Figured Bass, Solfège, Dictée, Counterpoint, History and Morphology of Music, Choir, Piano). Advanced classical guitar studies (level 6/9).
- **Other interests:** Playing guitar, ukulele, piano; drawing, painting, analog and digital photography; reading books and independent magazines especially on art and culture; swimming, squash; travelling