

# KIRA KEMPINSKA

kira.kowalska.13@ucl.ac.uk, <http://kirakempinska.com>  
University College London, London, WC1E 6BT

## Research Interests

- Reasoning about human activities and interactions in real time
- Probabilistic modelling of sequential human behaviour
- Generative models and approximate inference
- Reinforcement learning
- Network theory

## Education

**University College London** London, UK  
PhD in Machine Learning 2014–present  
Thesis: Reasoning about individuals by modelling their sequential behaviour  
Advisors: John Shawe-Taylor, Paul Longley

**University College London** London, UK  
MRes in Security and Crime Science, **1<sup>st</sup> class honours** 2013-2014  
Dissertation: Modelling police patrol behaviour

**University of Bristol** Bristol, UK  
MEng in Engineering Mathematics with Study Abroad, **1<sup>st</sup> class honours** 2008-2013  
Dissertation: Patterns of people and places  
Spent one year at Universidad de Sevilla (Spain) as an Erasmus Exchange Student.

**Coursera courses:** Introduction to Artificial Intelligence (completed in the top 5% of the class), Machine Learning, Probabilistic Graphical Models

## Grants and Awards

- **Entrepreneur First Investment Entrepreneur-in-Residence Scholarship** 2016  
Selected on the basis of technical talent. Europe's top business accelerator programme.
- **SECReT Award** 2014  
Departmental award for achieving highest end of year exam results.
- **GISRUK Conference Early Career Bursary** 2014  
Travel and accommodation bursary for a few selected early career researchers.
- **Security and Crime Science Doctoral Training Centre Scholarship** 2013-2018  
Scholarship for the duration of my MRes and PhD degrees at University College London.
- **Institute of Mathematics and Its Applications Prize** 2013  
Awarded annually to two exceptional students at the University of Bristol.
- **Best Student Award & Best Final Year Project Poster Award** 2013  
Two departmental awards received for highest final results and best final year project poster.
- **EADS UK TechMasters Award** 2012  
Awarded annually to six top quality students to support their graduate education in an aerospace or defence field.

## Teaching and Academic Experience

### **University College London, London, UK**

**Teaching Assistant** – undergraduate and graduate modules on spatial data analysis and interactive visualisation, geographic information systems and professional standards in engineering.

September 2013 – present.

### **University College London, London, UK**

**Research Assistant** – applying machine learning and network science techniques to naming records from over 20 countries across the world in order to predict ethnicity of individuals based on their names only.

September 2013 – February 2016.

## Professional Experience

### **Brolly Insurance, London, UK**

**Machine Learning Engineer** – redesigning insurance with artificial intelligence.

September 2016 – present.

### **Juliet Analytics, London, UK**

**Cofounder & CTO** – using latest advances in machine learning to surface employees who are likely to leave, in time for managers to act. Entrepreneur First backed company.

April 2016 – present.

### **BAE Systems Advanced Technology Centre, Filton, UK**

**Research Associate** – developing probabilistic approaches to maritime anomaly detection and entity extraction. My maritime anomaly research was published and qualified as potentially patentable.

July 2011 – July 2012.

## Professional Associations

Association for the Advancement of Artificial Intelligence

Institute of Mathematics and Its Applications

## Volunteering

### **Polonium Foundation**

**Founder & Advisory Board Member** – ensuring the foundation functions in accordance with its objectives and budget, representing and supporting its activities. Polonium Foundation aims to network Polish scientists abroad, popularise science and bridge the gap between science and business.

April 2016 – present.

### **Bristol Community Radio**

**Desk Driver & Programme Author** – creating “Radiowski” show for the Polish community in Bristol.

January 2009 – June 2013

## Publications

### ***Published***

**K. Kempinska** and J. Shawe-Taylor, “Improved particle filters for vehicle localisation”. Presented at NIPS 2016 Advanced in Approximate Bayesian Inference workshop. Barcelona, Spain. December 2016.

**K. Kempinska**, T. Davies and J. Shawe-Taylor, “Probabilistic map-matching using particle filters”, Proceedings of the 24th GIS Research UK conference (GISRUK 2016). Greenwich, United Kingdom. March 2016.

**K. Kowalska**, J. Shawe-Taylor and P. Longley, “Data-driven modelling of police route choice”, Proceedings of the 23rd GIS Research UK conference (GISRUK 2015). Leeds, United Kingdom. April 2015.

**K. Kowalska**, P. Longley and M. Musolesi, “Ethnic structure in global naming networks”, Proceedings of the 8th International Conference on Geographic Information Science (GIScience 2014) - Extended Abstracts. Vienna, Austria. September 2014.

**K. Kowalska** and L. Peel, “Maritime anomaly detection using Gaussian process active learning”, Proceedings of the 15th International Conference on Information Fusion (FUSION 2012). Singapore. July 2012.

T.E. Gorochowski, A. Matyjaszkiewicz, T. Todd, N. Oak, **K. Kowalska**, S. Reid, N.J. Savery, C.S. Grierson, and M. di Bernardo, “BSim: an agent-based tool for modelling bacterial populations in systems and synthetic biology”, PLoS ONE 7, e42790, 2012.

### ***Papers in Preparation***

**K. Kempinska**, T. Davies and J. Shawe-Taylor, “Probabilistic map-matching for low-frequency GPS trajectories”. To be announced.

## Press Coverage

- **Business Insider Poland** on *Startups in the UK after Brexit*, October 2016.
- **Entrepreneur First Blog** on *Meet the 15 women building Europe's next set of tech startups to watch*, April 2016.
- **TVN24 Polish National Television** on *Predictive Policing: can we use Big Data to prevent crime?*, November 2015.
- **Institute of Mathematics: Mathematics Today** on *Interview with Kira Kowalska, IMA Prize Winner*, November 2013.