

# KURTIS J. GARBUTT

## RESEARCH ENGINEER

kurtis.garbutt@gmail.com

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I am currently a Research Assistant working with Prof. Masooda Bano on a social network analysis project in the *Department of International Development* at *Oxford University*. I am also a research engineer working on an EngD in the *Urban Sustainability & Resilience Centre* (USAR), which is part of the *Department of Civil, Environmental and Geomatic Engineering* (CEGE) at *University College London* (UCL). My research with Prof. Bano aims to explore the social media networks and interactions of Islamic scholars and their followers. Through the use of data scraping in R and Python, we intend to measure the influence of Islamic authority online, building up a global profile of scholars and their followers. My EngD research, co-sponsored by the *British Red Cross*, utilises open data, GIS and agent-based modelling to examine the geography of vulnerability across Britain, and model humanitarian response efforts following floods. I work with a number of NGOs to facilitate NGO/academic collaboration and research. I have a keen interest in mapping, open source and 'non-traditional' data and the use of the Internet to examine geodemographics and digital access and representation and aid development work.

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## CORE SKILLS

Quantitative Research • Spatial Data Analysis • Data Management • Social Simulation & Modelling • Literature Reviews • Report Writing • Statistical Data Analysis • Problem Solving • Teamwork & Planning

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## EDUCATION

University College London • September 2012 to present

Durham University (Collingwood College) • October 2005 to June 2010

Qualification	Year	Subject	Grade
Engineering Doctorate, EngD	2017 (exp.)	Assessing vulnerability and modelling assistance: using demographic indicators of vulnerability and agent-based modelling to explore emergency management capacity	
Research Masters, MRes	2013	Creation of an open source GIS index to examine UK flood vulnerability and support the BRC's emergency response and preparation work.	Distinction
Masters of Science (Research), MSc	2010	Media, Representation, Persistence & Relief: Media Monitoring of Natural Hazards & Subsequent International Relief Efforts.	Pass
Degree, BSc	2008	Geography BSc (Hons) – Focus on geographical hazards and risks and their social impacts; environmental hazards; political geography.	2:1 (Hons)

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## EXPERIENCE

**Oxford University Department of International Development • Research Assistant • May 2017 to present**

- Research Assistant on a project examining social media networks of isolation and integration amongst Muslims. The project aims to examine the influence of Islamic authority online through the analysis of pro-isolation and pro-integration Islamic scholars and their followers on Twitter.
- Social network analysis and geospatial trend analysis used to examine the geographical relationship between proximity, distribution, sentiment and Islamic authority amongst scholars and followers.
- Twitter data (users, followers, tweets, location) scraped using the Twitter API and analysed, geolocated, mapped and visualised using R and Python.
- This work will be combined with survey data and in-depth interviews undertaken by Prof. Bano to understand why followers gravitate towards one particular reading of Islam than another.

**University College London • Research Engineer • September 2012 to present**

- Postgraduate research engineer working on a four-year project aimed at developing a geospatial agent-based model and geographical information system (GIS) tool to support the British Red Cross' (BRC) strategic and operational understanding of relief distribution during flood emergencies in the UK.
- Received a full EngD studentship from the Urban Sustainability & Resilience Centre (USAR) and the Engineering and Physical Sciences Research Council (EPSRC) totalling £80,860.
- Work involved analysing and utilising gigabyte-sized country-wide demographics datasets and multi-layered mapping data, geodemographics analysis using SPSS, Python-based automation of geoprocessing tasks, and programming a Java-based model from scratch.
- Lead researcher on a supplementary project with the BRC to create an open source GIS index to examine UK flood vulnerability and support the BRCs emergency response and preparation work through the identification of vulnerable communities throughout the UK who may be at increased risk of flooding based upon open source demographic and socio-economic data.
- Received a six-month Knowledge Exchange Secondment totalling £9,608 to consult with BRC staff to develop further the model and examine the potential of producing a commercially viable product.
- Lectured on GIS and ABM as part of the UCL Transport Studies MSc, 2016
- Supervised 3 MSc students working on HXL, INSPIRE, and geo-analysis of Thames flooding.
- Outputs: 3 full length publications, 3 published conference abstracts, 5 conference presentations, 2 BRC workshops on vulnerability mapping and the use of social simulation & modelling.

**British Red Cross/Médecins Sans Frontières/MissingMaps • Digital Support Officer • September 2012 to present**

- Provided assistance to the BRC Maps Team during emergency appeals, including Typhoon Haiyan, the Nepal Earthquake and Ebola and Zika outbreaks.
- Helped produce static and web-based maps to assist responders and raise awareness.
- Sourced, analysed, organised and standardised constantly updating field data to disseminate across multiple organizations and countries.

**Oxford University Press • Production Controller • April 2012 to September 2012**

- Responsibilities included managing Music stock in the UK, New York and China OUP warehouses, the demand printing of music, the management of reprinting and managing the costs and schedules on a busy print list.
- Managed the full book production process for a number of top sellers, including liaising with designers and proofreaders, tracking design changes, managing and monitoring printing and shipping using international producers, and controlling the distribution and storage of thousands of books.

**British Red Cross • Researcher • October 2010 to January 2012**

- Lead researcher on a national floods study aimed at enhancing the voluntary sector's collective understanding of the needs of flood-affected individuals and communities.
- Responsibilities included liaising, and forming partnerships, with internal and external parties; engagement with communities and local authorities; coordination of community meetings, focus groups and interviews; quantitative and qualitative community-based participatory research; survey and interview design and data analysis; external policy review, project evaluation and meta-evaluations; production of comprehensive literature reviews, summary documents and annotated bibliographies; production of internal and external reports, articles and press releases; online and offline research techniques; contact administration and database production and management; the provision of recommendations for future British Red Cross research; and administrative work and general office duties.
- Also produced a UK-wide risk database as part of a project examining UK emergency planning capacity, a detailed literature review on UK extreme weather to guide future British Red Cross work, and a report examining methods of Third Sector project evaluation and outcomes measurement.

**International Volcanic Health Hazards Network • Administrator • January to September 2009**

- Liaising with experts and members on a global scale to keep details and records up-to-date, production and translation of volcanic hazard pamphlets and guidelines for public and emergency managers around the world, overhaul and design of IVHHN website.

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## PUBLICATIONS, PRESENTATIONS, POSTERS & AWARDS

- Garbutt, K., Ellul, C. & Fujiyama, T. (2017) *Agentising Vulnerability: Modelling the impact of NGO Response on Vulnerability during Flood events*. Abstract and presentation at American Association of Geographers 2017, Boston, MA. April 5, 2017.
- Received a UCL Enterprise Secondment Award to cover a six month Knowledge Exchange secondment at the British Red Cross totalling £9,608.
- Garbutt, K., Ellul, C. & Fujiyama, T. (2016) *Developing a geo-spatial agent-based model to support the strategic and operational understanding of relief distribution during flood emergencies in the UK*. Abstract and presentation at American Association of Geographers 2016, San Francisco, CA. March 31, 2016.
- Garbutt, K. (2015) *Developing a geo-spatial agent-based model to understand relief distribution during flood emergencies in the UK*. Winner best abstract at Urban Sustainability & Resilience Showcase 2015, University College London, London. November 10, 2015.
- Garbutt, K., Ellul, C. & Fujiyama, T. (2015) *Assessment of social vulnerability under three flood scenarios using an open source vulnerability index*. Abstract and presentation at GISRUUK 2015, University of Leeds, Leeds. April 15, 2015.
- Garbutt, K., Ellul, C. & Fujiyama, T. (2015) *Mapping social vulnerability to flood hazard in Norfolk, England*, *Environmental Hazards*, 14:2, pp. 156-186.
- Garbutt, K. (2013) *Using GIS and an Indicator-based Approach to Identify and Map Social Vulnerability: A Case Study of Norfolk, England*. Poster and MRes thesis presented at Urban Sustainability and Resilience Showcase 2013. University College London, London. November 19, 2013.
- Garbutt, K. (2013) *Media, Representation, Persistence, and Relief: The Role of the Internet in Understanding the Physical and Social Dynamics of Catastrophic Natural Hazards*. Abstract and poster presented at Institute of Risk and Disaster Reduction (IRDR) 3rd Annual Conference 2013, University College London, London. June 14, 2013.
- Received a full Engineering and Physical Sciences Research Council (EPSRC) studentship from the Urban Sustainability & Resilience Centre (USAR) at UCL totalling £80,860.
- Garbutt, K. (2010) *Media, Representation, Persistence and Relief: the Role of the Internet in Understanding the Physical and Social Dynamics of Catastrophic Natural Hazards*. Masters thesis, Durham University.

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## TEACHING & VOLUNTARY WORK

### University College London

- Lecturer – Transport Studies MSc, 2016
- Supervisor – 3 GIS MSc students (HXL, INSPIRE, geo-analysis of Thames flooding)

### Médecins Sans Frontières (MSF)

- GIS Volunteer/Emergency Appeal Mapper – 2014 to present
- Helped develop an Ebola propagation model to project disease-spread trajectories within Ebola-affected urban areas in marginal or conflict zones – October 2014

### MissingMaps/Humanitarian OpenStreetMap Team (HOT)

- GIS Volunteer/Emergency Appeal Mapper – 2014 to present

### British Red Cross

- Digital Support Officer & Fundraiser – 2010 to present

### 29th Urban Data Management Symposium, University College London, May 2013

- Assistant: Symposium preparation, logistics, organisation, photography, reception

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## TECHNICAL SKILLS

**Programming** – Experience using Java, Python, R, PHP, HTML. Knowledge of Android app development.

**GIS** – Experience using QGIS and ArcGIS for spatial data modeling, spatial data transformation and network analysis. Knowledge ArcPy for automation of geoprocessing, and PostGIS and PostgreSQL for GIS database design, storage, and systems analysis.

**ABM** – Experience using MASON. Knowledge of NetLogo and AnyLogic.

**Data Collection & Management** – Experience collecting, organising and managing large structured and unstructured datasets e.g: UK-wide demographics and mapping data, worldwide Google News data, Twitter data, and humanitarian response data. Experience sourcing and querying databases, API integration, management and querying, and web scraping.

**General Computing** – Experience using Windows, MacOS and UNIX, as well as various database, statistics and design programs, including Excel and Access, STATA and SPSS and Photoshop and Illustrator.

**Report Writing & Presentation** – Extensive experience producing reports and presentations for a range of audiences, including the general public, potential funders, and academic scholars.

**Teamwork & Problem Solving** – Extensive experience working with and managing teams, balancing research partner and beneficiary needs with research goals. Experience evaluating & managing problems, decision-making and outcome monitoring.

**Time Management, Planning & Organisation** – Extensive experience balancing multiple and competing deadlines and managing and monitoring diverse projects. Experience organising data collection, outreach events, and conferences.

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## MRES/ENGD RESULTS & AWARDS SUMMARY

- Advanced Research Practice – 88% • Distinction • Highest mark in the year
  - Representation, Structures and Algorithms – 85% • Distinction • Highest mark in the year
  - GIS Principles and Technology – 76% • Distinction
  - MRes Urban Sustainability & Resilience Research Thesis – 76% • Distinction
  - Interdisciplinary Thinking in Urban Sustainability and Resilience – 75% • Distinction
  - Disaster Risk Reduction in Cities – 70% • Distinction
  - The Management of Large Projects & Programmes – 77% • Distinction
  - Geodemographics & Population Geography – 68%
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## RESEARCH INTERESTS

Social simulation & modelling • Geodemographics • Vulnerability, resilience mapping/modelling • Hazards & emergencies • Computational social science • Participatory mapping/modelling • Digital inequality, marginalisation and exclusion • Digital access, control & representation • NGOs • Open source data & software • Data visualisation • Spatial data analysis • Interdisciplinary research

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## ADDITIONAL SKILLS & INTERESTS

**Languages** – English (fluent); German (intermediate).

**Photography** – I am an avid photographer and have had photographs published by the Guardian, Financial Times, Lonely Planet, WIRED, The Verge, Oxfam, Fast Company, VICE, Foreign Affairs, BuzzFeed, Epoch Times, National Geographic, The Conversation, Popular Mechanics and several published books as well as incorporated into corporate work for national and international companies through GettyImages. I also have a working knowledge of photo editing, graphic design and the Adobe Photoshop and Illustrator suites.

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