**Title of PhD**: PhD studentship in the Extreme Citizen Science group - identifying systematic biases in crowd-sourced geographic information

**Primary supervisor:** Professor Muki Haklay

**Application deadline**: Friday 28 July 2017

**Start Date:** October 2017

**Funding status**: Applications are invited from UK and EU citizenship holders.

**Funding Body**: EPSRC and Ordnance Survey

**Funding Details:** The scholarship covers UCL student fees at the Home/EU rate and provides a stipend of £16,553 per annum tax free. Travel expenses and research equipment will also be provided to the successful candidate.

**Project description**:

UCL Department of Geography and the Ordnance Survey are inviting applications for a PhD studentship to explore the internal systematic biases in crowd-sourced geographic information datasets (also known as Volunteered Geographic Information - VGI).

There has been a rapid increase in information gathered by people from all walks of life who are using connected devices with an ability to collect and share geographic information, such as GPS tracks, photographs with location information, or observations of the natural environment in citizen science projects. There is now a vast array of projects and activities that use this type of information, and each project has its own characteristics. Yet, it can be hypothesised that some of the characteristics of crowd-sourced geographic information will be systematically biased, and these biases with differ between projects and data sources.

Crowd-sourced dataset will have some systematic biases that repeat across crowd-sourcing platforms. For example the impact of population density, business activity, and tourism on the places where data is available, or a weekend or seasonal bias of the temporal period of data collection. Others biases are project-specific - for example, some projects manage to attract more young men, and therefore places that are of interest to this demographic will be over-represented. One of the major obstacles that limits the use of such data sources is understanding and separating systematic and project-level biases and then developing statistical methods to evaluate their impact. In order to use such datasets to identify hidden features and patterns, there is a need to identify what are the relationships between a dataset and the world.

The aim of this research project, therefore, is to create a large collection of crowd-sourced GPS tracks and pedestrian trajectories, and use conflation techniques and advanced analytics to develop methodologies to identify and estimate the biases. Once this is done, the aim will be to identify hidden characteristics to be more confident about the patterns that are being observed.

**Studentship Description**
The studentship provides an exciting opportunity for a student to work with Ordnance Survey on understanding the use of crowd-sourced geographic information, and potentially contributing to the use of such data sources by national mapping agencies. Ordnance Survey is an active partner in its sponsored research and offers students opportunities to work on-site and to contribute to workshops and innovation within the business. In addition, the student will be part of the Extreme Citizen Science group at UCL, which is one of the leading research groups in the area of crowdsourced geographic information and the study thereof.

The project will run for four years and will be supervised by Prof Muki Haklay from UCL and Jeremy Morley from Ordnance Survey. Professor Muki Haklay, who is a professor in the UCL Department of Geography and who has a track record of research and publication relating to crowdsourced data management and quality. Jeremy Morley is the Chief Geospatial Scientist at Ordnance Survey, leading the long-term business research programme, and has research experience in crowd-sourced geographic information.

**Person Specification**
Applicants should possess a strong bachelor's degree (1st Class or 2:1 minimum) or Masters degree in Computer Science, Spatial statistics, Ecology, Geomatics, Geographic Information Science or a related discipline. The skills required to build the required database of case studies and the programming and analytical skills to assess biases and develop algorithms for their identification, are highly desirable. Candidates will ideally have some relevant previous research experience and should also have excellent communication and presentation skills.

The funding is provided for 4 years, and will involve spending time at the Ordnance Survey in Southampton.

Eligibility
Applications are invited from UK and EU citizens residing in UK. In particular, applicants must meet EPSRC eligibility and residency requirements found here: http://www.epsrc.ac.uk/skills/studentships/help/eligibility/

**Application Procedure**
Applicants should send the following by e-mail to Judy Barrett (judy.barrett@ucl.ac.uk) and Prof Haklay (m.haklay@ucl.ac.uk):
1.   Cover letter, including a personal statement explaining your interest in the project.
2.   Examples of academic writing and outputs from past work (e.g. a dissertation or assignment)
3.   Academic transcripts
4.   A CV

Shortlisted applicants will be invited to interview on the August 2017. Any incomplete applications will not be considered.