



# Fachgruppe Geoinformatik

## Indicative Data Science

Extracting 3D Models of Cities from Unavailability and Degradation of Global Navigation Satellite Systems (GNSS)

### Dr. Ana Basiri

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Ana Basiri will discuss the preliminaries, and implications of 'indicative data science'. Indicative data science is a set of tools, techniques and the mindset that considers gaps, unavailability, biases, and the uncertainty of data as a useful source of data. In the era of big data, open data, social media and crowdsourced data when "we are drowning in data", gaps and unavailability may indicate some hidden problems or reasons. Also, the datasets may have some quality, uncertainty, representativeness and bias issues associated with them. In this regard, the indicative data science can provide a set of (theoretical and applied) techniques and tools to understand the data better.

She will explain the importance of looking at the gap and missing data, study the impacts of biases in data with an overview of methodologies and applications of this. An application of this can be extracting the 3D map of cities based on the blockage of signals coming from GPS (or other similar Global Navigation Satellite Systems (GNSS), e.g. EU's Galileo). Patterns of blockage, reflection, and attenuation of the GNSS signals can be extracted using spatio-temporal statistical, machine learning, and AI techniques from crowd-sourced GNSS raw data, contributed by the volunteers through the crowdsourcing framework of the project. This provides a ubiquitous and free of charge 3D mapping service for a wide range of applications including emergency services, positioning and navigation in urban canyons and indoors, energy consumption modelling, and drone and autonomous vehicles navigation.

Ana Basiri is a Lecturer in Spatial Data Science and Visualisation at CASA (UCL). Ana has been recently awarded the [UK research and Innovation Future Leaders Fellowship](#), in collaboration with IOER and several other industrial and academic partners including Uber, Ordnance Survey GB, Alan Turing Institute. Ana's research focuses on developing novel solutions based on the idea of 'indicative data science'. Indicative data science is a set of tools, techniques and the mindset that considers gaps, unavailability, biases, and the uncertainty of data as a useful source of data. She works on several crowdsourcing projects and studies the underlying reasons and also implications of having biases, gaps and low quality of data.

**Mittwoch**  
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**15:00 Uhr**

Veranstaltungsort:

Leibniz-Institut  
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