Masters Dissertation Scheme
Project form

Company / Organisation Name:	GHD / VirginMediaO2
Team / Department:	Insights and Analytics
Address:	10th Floor 25 Farringdon Street, London, EC4A 4AB

Provisional title for project:

Estimating Dwells using Mobile Phone Network Data

Short description of the problem that would be addressed by the project:

This project aims to develop a scalable methodology for estimating the duration of dwells (times and locations) of individuals using mobile phone network data. The goal is to create a robust, scalable solution capable of handling the complexity and volume of the data, providing accurate estimates of dwell times, locations, and the journeys in between.

Objectives:
1. Understand Dwell Concept: The project will delve into the concept of a "dwell" and explore various methods to derive it at different levels of accuracy.
2. Review Existing Methodologies: An examination and critique of existing dwell methodologies will be conducted. This involves assessing their strengths, weaknesses, and suitability for our specific data and objectives, to identify gaps and limitations in current approaches, to inform the development of our own methodology.
3. Methodology Proposal and Testing: Building upon insights gained from understanding dwells and critiquing existing methods, the project will propose one or more novel methodologies. These methodologies will be rigorously tested and validated to confirm their effectiveness and optimize their performance. Outputs will undergo thorough validation to ensure the selected methodology achieves optimal accuracy and reliability.

Short description of the data sources that would be used in the project, and how they would be used

Mobile phone network data refers to the information generated by the interactions between mobile devices and cellular networks. It includes various types of data such as call records, text messages (SMS), internet usage, and location data.

For this project, the relevant information is the anonymized user ID, timestamp of the event, and ID of the cell for each event. Hence, the candidate will need to know how to work with spatio-temporal data.

Would any work by the student need to be carried out on site at the Company (with the exception of supervisory Meetings)?

No

Any issues of data confidentiality and IPR that would need to be resolved

To be discussed with the candidate

Essential skills

SQL, Data Science, Python, Git

Desirable skills

Spatial Data Science, PySpark, Big Data

Preferred degree programmes (if any)

Data Science, Geographic Data Science

Preferred selection method

Online/presential Interview

Support and training offered by the company

Weekly Meetings

Financial assistance offered by the company

£500

Any other comments

If there are any questions about the 2024 programme, please contact Richard Arnold at richard.arnold@ucl.ac.uk. The completed form should also be returned to this address.