Project Title:

What makes a place busy? Characterising the spatio-temporal elements of the ambient population using a range of data sources

Principal Supervisor:

Profess James Cheshire

Secondary Supervisor:

Dr Stephen Law

Department & Institution:

Department of Geography, University College London

Collaborative Organisation:

GHD - Movement Strategies

Project Description:
A +3 studentship is available in the UCL Department of Geography and Consumer Data Research Centre (**www.cdrc.ac.uk**) on the topic "What makes a place busy? Characterising the spatio-temporal elements of the ambient population using a range of data sources". The research will be carried out in association with GHD Group Movement Strategies. (https://www.ghd.com/en/about-us/ghd-movement-strategies.aspx). The proposed PhD seeks to leverage the strengths of both individual based data types (from in app mobile device location data) and place-based data (from CCTV derived footfall) to improve our ability to measure ambient populations in urban areas. This in turn facilitates a better understanding of dense urban situations such as large stadia, transport hubs and urban town centres to generate evidence that informs urban policies.

The student will develop important data science and machine learning skills in the creation of analysis ready location data from in-app mobile devices and footfall measurements using video and imagery to characterise the spatial and temporal population profiles of places at a range of scales. For example, at the local scale, data may be used to monitor movement density and to detect risks and anomalies in transport hubs and large-scale events (stadia, festivals, concerts) and/or at the national scale, characterising the health of urban retail centres (volume, retail turn-over). This is an exciting opportunity to research and link multiple mobility data sources to urban geography and urban planning issues.

Candidate Requirements:

The successful applicant will hold a First or Upper Second Class honours degree in a quantitative social science or computer science discipline and/or a similar Masters qualification. Knowledge of computational methods and programming skills (e.g. Python) are essential, and prior experience on machine learning and computer vision analysis on urban imagery/video is desirable.

Further details about the project may be obtained from:

The work will be supervised by Professor James Cheshire (james.cheshire@ucl.ac.uk) and Dr Stephen Law (stephen.law@ucl.ac.uk), to whom enquiries may be directed.

Deadlines and how to apply:

Applications for your award should be made via the Survey Monkey Apply portal by Tuesday 28th February 2023 and applicants may be invited for interview. Interviews are provisionally scheduled for the first half of March 2023.

References

[1] Trasberg, T., Soundararaj, B., & Cheshire, J. (2021). Using Wi-Fi probe requests from mobile phones to quantify the impact of pedestrian flows on retail turnover. Computers, Environment and Urban Systems, 87, 101601.

[2] Trasberg, T. & Cheshire, J. (2021). Spatial and social disparities in the decline of activities during the COVID-19 lockdown in Greater London. Urban Studies. Online first: DOI 10.1177/00420980211040409

[3] Law, S., Paige, B., & Russell, C. (2019). Take a look around: using street view and satellite images to estimate house prices. ACM Transactions on Intelligent Systems and Technology (TIST), 10(5), 1-19.