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| **Company / Organisation Name:** | CACI Ltd |
| **Team / Department**: | Location Intelligence |
| **Address:** | Kensington Village, CACI House, Avonmore Rd, London W14 8TS |

**Provisional title for project:**

Towards a Multi-modal Urban Function Region Classification and Area of Interest Delineation

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

**Problem Statement**  
Accurately identifying and delineating urban functional regions is crucial for socioeconomic analysis and urban planning. Traditional methods relying on surveys or census data which are time-intensive, static, and insufficient for rapidly evolving urban landscapes. Current approaches using either remote sensing or big geo-data lack the integration needed to fully capture the complexity of urban environments.

**Proposed Solution**  
This research would focus on the development of a novel multimodal methodology combining Point of Interest (POI) data and other sources (e.g. Street View imagery) to create an urban functional region classification. The method should utilise data sources and methods which can be easily applied to delineate urban models internationally.

**Example Research Questions**

1. How can combining POI data and other sources (e.g. Street View imagery) improve the precision and delineation of urban functional region classification?
2. What are the methodological challenges in integrating spatial and visual data for urban analysis?
3. How does the multimodal approach perform across different urban contexts and geographic scales?
4. What are the implications of improved urban function delineation for socioeconomic and urban planning applications?

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

Overture POI data and Mapillary Streetview Image data.

CACI applications examples.

**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**

No

**Essential skills**

Machine Learning, Spatial Analysis

**Desirable skills**

Computer Vision, An understanding of Multimodal models such as CLIP, BLIP, SigLIP

**Preferred degree programmes (if any)**

Spatial Data Science or similar

**Preferred selection method**

Short interview

**Support and training offered by the company**

Data Analysis and Data Science support can be provided at our London offices.

**Financial assistance offered by the company**

£500 stipend plus travel costs if needed

**Any other comments**

If there are any questions about the 2025 programme, please contact Richard Arnold at [richard.arnold@ucl.ac.uk](mailto:richard.arnold@ucl.ac.uk). The completed form should also be returned to this address.