UCL Project Description

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| Organisation Full Legal Name | Nokia Bell Labs |
| Project Title | Not sure yet |
| Project Description | This master project aims to advance the public health outcomes predictive modeling by integrating satellite image and other types of features and geographically explicit models such as Graph Neural Networks (GNNs). By constructing a graph for the Lower Layer Super Output Area (LSOA) network, incorporating connections between LSOAs and considering streets as weights in MedSat, the project explores the potential of GNNs to improve prediction accuracy compared to the models reported in the MedSat paper, such as SLM and LightGBM.  The novelty of the project lies not only in the application of a novel model to satellite imagery but also in its exploration of underutilized multispectral imagery in public health. By varying the setup from point features to satellite imagery across several different models, the project aims to evaluate the effectiveness of these diverse data inputs in predictive modeling. Additionally, the incorporation of a GNN Explainer offers a mechanism to dissect basic features and model associations. Using a recently proposed Large Language Model (LLM) prompt for causality [1] would allow the exploration of potential causal relationships. To further ground the project's findings, a small study involving experts is proposed to help identify which associations might be causally significant. |
| University | University College London |
| Module | GEOG0105: Research Project and Dissertation 23/24 |
| University Programme | MSc Remote Sensing and Environmental Mapping |
| University Reference | Not sure yet |
| Student | The following Student, who is registered on a university degree programme, will undertake the Project: Minwei Zhao |
| Project Location | . None |
| Project Period | The Project will start on Not sure yet and end on Not sure yet. The maximum number of hours the Student will devote to the Project during the Project Period will be 35 hours per week (or the lower amount if required by the Student’s visa). |
| University Supervisor | The University Supervisor will be the point of contact at the University for the Project and will be the following (or their representative or a successor if appointed by the University giving notice):  Name: Stephen Law  Position: Not sure yet  Email: stephen.law@ucl.ac.uk |
| Organisation Supervisor | The Organisation Supervisor will be the following (or a successor if appointed by the Organisation giving notice):  Name: Sanja Scepanovic  Position: Senior Research Scientist  Email: sanja.scepanovic@nokia-bell-labs.com  The Organisation Supervisor will be the point of contact at the Organisation for the Project and shall: (a) ensure that relevant health and safety procedures are followed, (b) provide an induction to the Organisation (including providing an overview of the Organisation’s activities), (c) provide appropriate supervision of the Student and assist with overcoming challenges with the Project, and (d) report to the University on the Student’s performance as agreed with the University Supervisor. |
| Student IPR | Assigned to Organisation |
| Costs | £500 stipend to be paid on successful completion of project. |
| Reviews | The Organisation and representatives of the University, including the University Supervisor, shall meet (in person or electronically) at least once during the Project Period to discuss progress or the Project, and otherwise as reasonably requested by either party. |
| Notices | Organisation: Nokia Bell Labs  University: University College London |

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Project Terms

# Project

## These terms together with the associated Project Description (this “**agreement**”) are for the Project to be carried out by the Student with the Organisation.

## The University shall instruct the Student to use reasonable efforts to carry out the Project. The Organisation shall adequately supervise the Student and be responsible for the acts and omissions of the Student and the outcomes of the Project. The University is not responsible for the success or any findings or outputs of the Project.

## The Student will not be an employee of the Organisation during the Project and the Organisation shall not require the Student to enter into an employment or similar agreement in respect of the Project.

## The Student will continue to have a full-time status at the University during the Project and will be subject to relevant University regulations, policies and processes. The Project is an assessed part of the Student’s degree programme that may form the basis of a thesis or assessed course and will not exceed 50% of the length of the programme.

## Each party shall pay its own costs relating to this agreement and the Project, other than as set out in the Costs section of the Project Description.

# Organisation’s Responsibilities

## The Organisation shall:

### provide the Project so that the Student gains information and experience directly relevant to their course;

### provide the University in advance with the Organisation’s rules and policies that apply to the Student (and the University shall instruct the Student to comply);

### provide appropriate facilities and resources for the Student to undertake their work;

### maintain appropriate public liability insurance or the like in relation to the Project;

### promptly notify the University of:

#### any required changes to the Project, including change in the Student’s role or location (which will be subject to the University’s agreement);

#### any issue with the Student’s conduct or performance;

#### any breach by the Student of their visa terms (where relevant and known by the Organisation); and

#### any expected absence approved by the Organisation, unauthorised absence of the Student or withdrawal of the Student from the Project;

### comply with laws, regulations and codes, any regulatory guidance (including from the Department of Health or Monitor) and any provided University policies applicable to the Project;

### promptly provide reasonable assistance and information requested by the University in relation to the Project, including for case studies for publicity purposes and as necessary for the University to comply with applicable laws, its quality assurance requirements and any visa sponsorship (where information will be provided within at least ten days); and

### ensure the Student does not perform any clinical activities as part of the Project.

## The Organisation hereby confirms that the information it has previously provided in relation to the Project, including any completed health and safety checklist, is correct.

# Confidentiality

## “**Confidential Information**” means know-how and other technical, scientific or business information disclosed in relation to the Project that is marked or stated at the time of disclosure to be confidential by the disclosing party but excludes the Project title and description in the Project Description. Each party shall, for the period up to five years after the Project, keep confidential any Confidential Information disclosed by the other party and only use the Confidential Information in relation to this agreement and the Project; unless the Confidential Information has become public knowledge other than in breach of this clause, was already known by the recipient, is separately provided to the recipient without an obligation of confidentiality, is independently developed by the recipient or is required to be disclosed by law, a regulatory body or a stock market. The recipient may disclose Confidential Information in confidence to relevant employees, professional advisors and contractors and by the University to the Student. The University shall enter into confidentiality undertakings with the Student to protect the Organisation’s Confidential Information.

## Confidential Information shall be deleted or returned by the recipient upon request, except for copies needed for regulatory compliance, educational and research purposes or in connection with the Students’ studies at the University and involvement in the Project.

# Publications

## The University may:

### subject to clause 4.2, allow the publication by the Student or otherwise of the data collected as part of the Project and the methods and results of the Project, including in a thesis made available publicly, presentations at conferences and meetings and publication in books and journals (a “**Publication**”); and

### allow the Student to submit a course assignment that contains the collected data, methods and results of the Project to external examiners in accordance with the regulations of the University, subject to the examiners being bound by appropriate confidentiality obligations.

## The University shall submit copies of proposed Publications to the Organisation at least four weeks in advance of submission to a journal or other third party. Within two weeks of receipt (and after this time it will be deemed approved), the Organisation may object to publication based on the publication including the Organisation’s Confidential Information or patentable material that requires protection, in which case:

### the University shall delete any identified Confidential Information from the Publication; and

### in the case of patentable material, delay publication for no more than three months to enable patent applications to be filed by the Organisation.

## The University shall include an appropriate acknowledgement of the Organisation’s contribution to the Project in Publications.

# IP and Data protection

## The intellectual property rights (including patent, copyright, database, registered or unregistered design rights or trade marks) (“**IPR**”) created by the Student in performing the Project (the “**Student IPR**”) shall be assigned to the Organisation. Accordingly, to the extent the Student IPR vests in the University, the University hereby assigns the Student IPR to the Organisation with full title guarantee and free of encumbrances as a present assignment of future rights. Subject to the foregoing nothing in this agreement will be deemed to transfer any other IPR between the parties and the University shall have no liability to the Organisation for the use of the Student IPR infringing any third party’s rights.

## The Organisation hereby grants the University a non-exclusive, royalty-free, perpetual, irrevocable and sub-licensable right to use the Student IPR assigned to the Organisation and any pre-existing rights necessary to use such Student IPR (to the extent the same are owned or licensable by the Organisation), solely for the purpose of: (a) carrying out the Project in accordance with the provisions of this agreement (b) for educational and research purposes, and (c) in connection with the Student’s studies at the University and involvement in the Project.

## If the Organisation processes any personal data (as defined in the General Data Protection Regulations EU 2016/679 ("**GDPR**") on behalf of the University, then the nature of the processing shall be determined by the University and the Organisation shall:

### not transmit the personal data outside the UK or EEA without the University’s prior written consent; and

### comply as a processor with the obligations required to be imposed by the University as the controller of the personal data under Article 28(3) of the GDPR.

## The Organisation acknowledges that the University is subject to the requirements of the Freedom of Information Act 2000 (“**FOIA**”) (as may be amended from time to time). The University will be solely responsible for determining whether any information (including Confidential Information) is exempt from disclosure in accordance with the provisions of FOIA or is to be disclosed in response to a request for information (notwithstanding clause 3).

# Liability

## Subject to clause 6.3:

### the total liability of each party to the other shall not exceed £1,000; and

### neither party shall be liable to the other for (a) any indirect or consequential loss or (b) any loss of profits, revenue, business opportunity or goodwill,

arising out of or in relation to this agreement or the Project, whether in contract, tort (including negligence), breach of statutory duty or otherwise.

## Any terms implied by law are excluded from this agreement to the extent permitted by law.

## Nothing in this agreement excludes or limits a party’s liability to the extent that it may not be so excluded or limited under applicable law, including for death or personal injury caused by negligence or liability for fraud.

# Term and termination

## This agreement comes into effect on the start date of the Project specified in the Project Description and, unless terminated earlier, will continue until the specified end date, or such extended date agreed by the parties in writing.

## Either party may terminate this agreement by giving notice if: (a) the party reasonably believes that no further purpose is served by continuing with the Project (having discussed the situation with the other party and after at least three weeks into the Project), (b) the Student ceases to be enrolled as a student at the University or withdraws from the Project (and the University will notify the Organisation if this happens), (c) the University determines in accordance with its processes that the Student should not continue on the Project, or (d) the Organisation reasonably considers the Student has committed gross misconduct.

## Either party may immediately terminate this agreement (or any of the Services) by giving notice if (a) the other party materially breaches this agreement, which is irremediable or (if the breach is remediable) fails to remedy that breach within 15 days after being notified in writing to do so, or cannot pay its debts when due or becomes or is declared insolvent, or (b) the circumstances in clause 8.8 continue for 30 days. Notwithstanding termination in such cases, the parties shall use reasonable efforts to put in place arrangements for the Student to complete their Project.

## Termination or expiration of this agreement will not affect the accrued rights of the parties. Clauses 3, 4, 5, 6, 7.4 and 8 will survive termination or expiration of this agreement.

# General

## This agreement may only be amended by written agreement of the parties, signed by their authorised representatives.

## Neither party may assign, transfer or subcontract any rights or obligations under this agreement without the approval of the other party (not to be unreasonably withheld or delayed).

## Notices shall be sent in writing to the email addresses specified in the Project Description, or such other email address notified by the recipient party.

## This agreement does not create any rights enforceable by a third party.

## If any term is held illegal or unenforceable, it shall be deemed not to form part of this agreement and the remainder of this agreement will not be affected.

## This agreement contains the whole agreement between the parties and supersedes any prior agreement between them relating to the Project. The parties confirm that they have not entered into this agreement because of any representations not expressly included or referred to in this agreement.

## Other than as set out in clause 4.3, neither party shall use the names, marks, crests or logos of the other party without their prior written consent.

## Neither party shall be liable for any failure or delay which is caused by circumstances beyond its reasonable control or by a failure or delay by the other party.

## Nothing in this agreement shall create any agency, partnership, or joint venture between the parties and neither party may make commitments on the other party’s behalf.

## The validity, construction and performance of this agreement shall be governed by English law and shall be subject to the exclusive jurisdiction of the English courts.