**MAT099 - MSc Dissertation Brief**

|  |  |
| --- | --- |
| **Dissertation title:** | AI-based Urban Analytics and Planning (multiple projects available) |
| **Sponsor organisation:** | N/A |
| **Sponsor Supervisor:** | N/A |

|  |  |
| --- | --- |
| **The Organisation** | N/A |
| **Background**  **Dissertation Summary** | “Cities are now home to the majority of the world’s population, and are drivers of economic growth, wealth creation, social interaction and well-being. They also present huge inequalities in health, affluence, education and lifestyle with persistent challenges for management, administration and policy. For example, alongside an existing global market of £400 billion for smart city technology, the UN estimates that $350 trillion or five times global GDP needs to be spent on urban infrastructure to address urgent needs.” Quoted from <https://www.turing.ac.uk/research/research-programmes/urban-analytics>  This dissertation will employ the methodology of Data Science, Machine Learning and AI to tackle real world urban analytics problems, e.g. electricity supply, water supply, transport management, housing, etc. This is an umbrella area. Specific dissertation topics will need to be determined after discussion with the student. |
| **Objectives** | Develop novel algorithms/solutions to important urban analytics problems. Specific ones to be determined by the student. |
| Approach | Data science and machine learning. |
| **Deliverables** | Dissertation and accompanying software. Excellent results may yield academic publications. |
| **Location of the project** | Cardiff University. |
| **Key computing skills** | Data science and machine learning. |
| **Other key student competencies** | Familiar with deep learning theory and practical skills (e.g. pytorch, tensorflow). |
|  |  |
| **Data availability** | To be decided with the student. Usually public ones that are available online (e.g. from government websites). |
| **Collaboration Agreement Required**  **Ability to take more than one student**  **Any other comments** | N/A  This project can take multiple students.  N/A |