# Computer Science GTA Project

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| **First Supervisor** | Artur Boronat, PhD | | |
| **School/Department** | School of Computing and Mathematical Sciences | | |
| **Email** | ab373@le.ac.uk |  |  |

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| **Second Supervisor** | Prof Zhou Huiyu, PhD | | |
| **School/Department** | School of Computing and Mathematical Sciences | | |
| **Email** | hz143@le.ac.uk |  |  |

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| **Additional Supervisor** | Hui Sun Leong, PhD [huisun.leong@astrazeneca.com](mailto:huisun.leong@astrazeneca.com)  AstraZeneca Cambridge, UK |

**Section 2 – *Project Information***

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| **Project Title** | Robust Multimodal Organoid Analysis for Scalable Predictive Drug Discovery | | |
| **Project Highlights:** | 1. | Real-World Impact:  The project tackles major barriers in drug discovery by building robust, reproducible data platforms. Results will help AstraZeneca and partners use AI to predict drug responses more accurately. | |
| 2. | Exceptional Training:  The student will gain hands-on experience in biomedical data integration, AI, and industry-led research. Supervision comes from both academic and industry experts. | |
| 3. | Open and Scalable Science:  All tools, workflows, and data standards will be open-source and reusable. This ensures wide adoption and long-term benefit for science and healthcare. | |
| **Project Summary** | | | |
| Organoid models are revolutionising drug discovery by enabling researchers to test therapies on patient-like mini-organs that reflect real human complexity. Yet, unlocking their full potential for precision medicine requires solving some of the biggest challenges in biomedical data science: overcoming biological variability, linking vast imaging and omics datasets, and building trustworthy AI tools that scientists can rely on.  This PhD project, co-developed with AstraZeneca and AIDAM, will empower the next generation of drug discovery through intelligent data integration and explainable AI. The student will pioneer open, interoperable platforms to seamlessly combine imaging, multi-omics, and treatment data, making organoid experiments “AI-ready” for the first time. By deploying and evaluating powerful multimodal foundation models, the project aims to predict which drugs will work best for which organoid types, reveal how therapies affect organoid biology at multiple levels, and offer new insights into mechanisms of action.  Working closely with AstraZeneca’s translational scientists and AIDAM’s AI experts, the student will drive innovations with immediate relevance to pharma: scalable workflows, robust predictions across batches and sites, and transparent, reproducible models ready for industry adoption. This is a unique opportunity to lead advances at the frontier of AI, data engineering, and biomedical science—shaping how tomorrow’s medicines are discovered. | | | |
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