# University of Leicester

# Computer Science GTA Project

|  |  |
| --- | --- |
| **First Supervisor** | Dr Fuxiang Chen |
| **School/Department** | School of Computing and Mathematical Sciences |
| **Email** | [fc181@leicester.ac.uk](mailto:fc181@leicester.ac.uk) |

**Section 2 – *Project Information***

|  |  |  |
| --- | --- | --- |
| **Project Title** | Artificial Intelligence (AI) for Software Engineering | |
| **Project Highlights:** | 1. | Light-weight AI Models |
| 2. | AI for Software Test Case Generation |
| 3. | Impact Case Studies with Software Practitioners |
| **Project Summary** | | |
| Important and recent advances in Artificial Intelligence (AI) such as Deep Learning (DL), Large Language Models (LLMs) and Natural Language Processing (NLP) have caused a great increase of interests in both software practitioners and researchers. These advances in AI techniques are used to provide better solutions to problems which researchers have been struggling with for a long time. These include fault localization, program repair, and test case generation. Automated solutions such as automated bug reproduction, automated code review, or the generation of non-trivial program artifacts are also made possible with AI recently.  However, existing works focus too narrowly on a single Software Engineering (SE) scope such as the application of LLMs in natural-language-to-code (NL2Code) tasks, overlooking other issues such as model size and deployment, multi-data modality, data dependency, model interpretability, and model trustworthiness. This PhD project will explore these areas and create novel AI models to tackle these important areas, ultimately contributing to the emerging fields of AI for SE and NLP.  Supervisor’s homepage: <https://le.ac.uk/people/fuxiang-chen> | | |