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| **First Supervisor** | Dr Daniel Hao |
| **School/Department** | School of Computing and Mathematical Sciences |
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**Section 2 – *Project Information***

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| **Project Title** | AI and Robotics for Space |
| **Project Highlights:** | 1. | Design and develop novel space robotics systems powered by AI for future space applications. |
| 2. | Prototype the robotics system and design the simulation tool and setup the experiment. |
| 3. | Test and optimise your design and algorithms. |
| **Project Summary**  |
| Future space missions, such as in-orbit services and assembly, space solar energy, planetary exploration, and deep space navigation, will be more ambitious and require greater autonomy. Leicester is one of the best places to conduct space research in the UK.The University of Leicester is renowned for its contributions to space research, developing instruments for missions like the James Webb Space Telescope and the BepiColombo mission to Mercury. With expertise in astrophysics, Earth observation, and planetary science, Leicester's work enhances our understanding of the universe and advances space sciences and technology.The candidate should explore and focus on one of the following topics:* AI and robotic systems to protect our biosphere
* AI and robotics for In-Orbit Services and Assembly (IOSA)
* AI and robotics for space solar systems
* AI and robotics for other orbital and planetary applications
* Quantum Computing for Space Autonomy

Depending on the topic selected, you will be appointing a second supervisor at Space Park Leicester (<https://www.space-park.co.uk/>). You may also have the opportunity to work with an industrial partner. Dr. Hao's lab has a track record of receiving funding from the European Space Agency and the UK Space Agency.**Requirements for Candidates:** In addition to meeting the University's PhD degree entry requirements, potential candidates should possess a relevant degree and/or experience in at least one of the fields: space engineering, robotics, or artificial intelligence. Preference will be given to applicants with publication experience and familiarity with one or more dynamics simulators.**Opportunities for the Successful Candidate:** The selected candidate may have access to facilities at Space Park Leicester, where applicable. They will join the University of Leicester's extensive space research network, benefiting from additional resources and support. The project will be jointly supervised by a potential member of staff at Space Park Leicester once appointed. The candidate will also benefit from Dr. Hao’s lab facilities, which include many robots and high-performance computers. |