Artificial Intelligence for Life Detection at Europa

Supervisors: Prof Mark Sephton (ESE), Dr Jonathan Watson (ESE), Prof Jonathan Carter, Prof Hunter Waite (Alabama)

The NASA Europa Clipper Mission (https://europa.nasa.gov/) will orbit Jupiter, taking repeated measurements as it passes through the Europan plumes. For the Europa mission, NASA has selected a high-resolution and high sensitivity mass spectrometer capable of measuring gases, ices, and organic molecules. One exciting objective is to discover whether the subsurface oceans of Europa are habitable for life.

The PhD project will develop Artificial Intelligence methods to process data quickly, using the limited computational resources on the spacecraft, as it is acquired at high rates when the spacecraft is travelling through space. The data sets used to prepare for our encounters at Europa already exist in the Imperial College Organic Geochemistry laboratories, but some new bespoke data sets will be generated as needed. In addition to preparing methods for organic detection at Europa, the project will also train a research scientist in the skills required to take part in data processing projects when the mission arrives at Europa in the 2030s.

Full training will be provided. The project would suit a candidate with a background in mathematics with an enthusiasm for geochemistry, astrobiology and space.

- For more information contact: Professor Mark Sephton (m.a.sephton@imperial.ac.uk) or Professor Jonathan Carter (Jonathan.Carter@coventry.ac.uk).
- Details of how to apply are at: https://www.imperial.ac.uk/earth-science/prosp-students/phd-opportunities/apply/
- Funding details can be found at: https://www.imperial.ac.uk/earth-science/prosp-students/phd-opportunities/funding/