



## Argument Mining in Phishing and Social Engineering

EPSRC funded PhD studentship with full fee waiver and £21,805 pa stipend (2026/27 rate)

**Project Code:** DLA\_DTP\_2026\_21  
**Main Supervisor:** [Dr Quratul-ain Mahesar](#)  
**Co-Supervisor:** [Professor Simon Parkinson](#)

### Project Introduction

Phishing and social engineering exploit human reasoning rather than technical vulnerabilities. Existing phishing detection methods focus on superficial textual or statistical features, limiting robustness and providing little insight into why attacks succeed. Social engineering can be understood as manipulative, defeasible argumentation, using implicit premises and fallacies like authority, urgency, and fear. This project combines argumentation theory and symbolic AI with neural argument mining to analyse these attacks. By integrating structured argumentation-based reasoning with data-driven models, it aims to develop explainable, cognitively aligned defences that improve transparency and robustness. The research will advance trustworthy, human-centred AI for detecting and mitigating social engineering threats.

### Project Details

This project will investigate phishing and social engineering attacks as manipulative, reasoning-based threats rather than purely technical problems. Grounded in argumentation theory and symbolic AI, the research will analyse the underlying argumentative structures of these attacks, including claims, premises, implicit warrants (enthymemes), and fallacious reasoning patterns such as appeals to authority, urgency, and fear. The research will develop annotated datasets linking phishing messages to formal argumentation schemes and explore hybrid symbolic-neural models that combine argument mining with formal reasoning frameworks. These models will aim to support explainable phishing detection and the

generation of counter arguments, advancing both computational argumentation and human-centred approaches to cybersecurity.

The work plan for the project with specific objectives is given below:

- 1. Analysis of Phishing and Social Engineering Attacks:** Investigate phishing and social engineering messages as reasoning-based manipulative threats. Identify and extract their argumentative structures, including claims and premises, implicit warrants (enthymemes), common fallacies (appeals to authority, urgency, fear).
- 2. Dataset Development:** Create a novel annotated dataset linking phishing messages and social engineering content to formal argumentation schemes. Annotation will capture claim structures, argument types and fallacies, evidence supporting manipulative tactics. This dataset will support training and evaluation of hybrid symbolic-neural models.
- 3. Hybrid Model Development:** Develop hybrid symbolic-neural models that integrate argument mining from unstructured text, and formal reasoning frameworks (symbolic AI). The models will aim to detect phishing attacks in an explainable manner and generate structured counterarguments, enhancing human-centred cybersecurity.
- 4. Prototype Implementation and Evaluation:** Implement a prototype system combining argument extraction, phishing detection, and counterargument generation. Evaluate using detection accuracy and robustness against adversarial messages, explainability and interpretability of reasoning chains, feedback from cybersecurity practitioners to assess usability and trust.



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### Project-specific entry requirements

- Strong knowledge and background of Computer Science.
- Experience of fundamental Natural Language Processing (NLP), Machine Learning (ML) techniques and Large Language Models (LLMs).
- Knowledge of argumentation theory and defeasible reasoning would be advantageous.
- Good written and communication skills.
- Strong motivation, with evidence of independent research skills relevant to project.

### Further Information

This call is open to **UK Applicants only**.

Applicants should be of outstanding quality and exceptionally motivated.

The studentships are funded for 3 years (subject to satisfactory annual performance and progression review) and will provide for tuition fees and a tax-free stipend paid monthly.

Please note that there are more projects than funded studentships available and therefore this is a competitive application process which will include an interview. Shortlisted candidates will be contacted for an interview in person or via Teams. After interview the most outstanding applicants will be offered a studentship.

Queries about the application process are welcome and should be emailed to [pgrscholarships@hud.ac.uk](mailto:pgrscholarships@hud.ac.uk).

Informal enquiries about this project should be directed to [Dr Quratul-ain Mahesar](mailto:Dr.Quratul-ain.Mahesar).

**Type of Award:** Doctor of Philosophy (PhD).

**Eligibility:** UK applicants only. First Class or Upper Second-Class Honours degree or equivalent in a relevant subject area, please refer to the entry

requirements on the specific projects being advertised.

**Location:** Huddersfield.

**Funding:** 3 years full time research covering tuition fees and a tax-free bursary (stipend) starting at £21,805 for 2026/27 and increasing in line with the EPSRC guidelines for the subsequent years. Funded via the Engineering and Physical Sciences Research Council Doctoral Training Programme.

**Duration:** 3 years full-time plus 12 months writing up (please note no funding available for writing up period).

**Closing date:** 28<sup>th</sup> April 2026

**Start date:** 1<sup>st</sup> October 2026

### Application details

- Go to the EPSRC webpage and download the [Expression of Interest Form 2026](#).
- Provide copies of transcripts & certificates of all relevant academic and professional qualifications.
- Provide references from two individuals – please contact your referees and ask them to send them directly to [pgrscholarships@hud.ac.uk](mailto:pgrscholarships@hud.ac.uk) from their email address.
- Proof of eligibility – e.g. scan of passport photo page.
- Completed forms, including all relevant documents should be submitted via-email to [pgrscholarships@hud.ac.uk](mailto:pgrscholarships@hud.ac.uk).

**Please note:** if you do not attach all the relevant documentation prior to the closing date your application will not be considered.