



Centre for Argument Technology  
Vacancy for

# PhD Studentship (Stipend plus Fees for UK, EU or International Students)

Tax free stipend of £18,622 (plus payment of fees)

36-42 months fixed term

Closing date 25 September 2023



[www.dundee.ac.uk/scienceengineering/](http://www.dundee.ac.uk/scienceengineering/)

[www.arg.tech](http://www.arg.tech)

# Further Particulars

## 1 Background

### Centre for Argument Technology

ARG-tech is one of the world's leading research groups in the computational application of theories of argument. As an interdisciplinary team, we focus on developing foundational theory in philosophy, linguistics and cognitive science that facilitates the development of practical AI applications. The goal is to help improve, teach, track and navigate the discussions and debates that run our governments, structure scientific research, drive intelligence analysis, underpin the corporate boardroom, drive legal process and frame religious beliefs.

Our work is at the forefront of neurosymbolic techniques for the identification, recognition, generation and management of argumentation and debate. Our research has attracted funding of over £10m, and we have over 200 refereed papers in print. Our freely available software tools such as OVA (for performing argument analysis) have tens of thousands of users, we have pioneered robust new standards such as the AIF and we have the largest freely accessible corpus of analysed argumentation anywhere in the world in AIFdb. The group also hosted the editorial office for the journal *Argument and Computation* from its inception in 2010 until 2016.

Our collaborations and consultancy with commercial and government organisations including IBM, Dstl and the BBC have driven our focus on end-user impact, and our public communication in print and broadcast media has reached over 30 million people.

### Computing

Computing research at the University of Dundee has a distinctive focus. Our research benefits society and helps to enhance the lives of many individuals. The 2021 Research Excellence Framework (REF) rated **all** of our computing research as “world-leading” or “internationally excellent”, placing us on this metric first in Scotland, and first equal (with four other institutions) in the UK as a whole.

Computing is home to four distinct research groups: Computer Vision & Image Processing (CVIP), The Centre for Argument Technology (ARG-tech), and Human-Centred Computing (HCC). These groups contribute to wider Research Clusters within the School of Science and Engineering.

## School of Science & Engineering

The School of Science and Engineering comprises the disciplines of: Biomedical, Civil, Electronic, and Mechanical Engineering; Computing; Mathematics; Physics; the Graduate Apprenticeship Programme and the Centre for Anatomy and Human Identification (CAHID). We host the Leverhulme Research Centre for Forensic Science, which has been designed to disrupt positively the forensic science ecosystem.

The School offers undergraduate, postgraduate, research degrees and international exchange opportunities. The School has approximately 1,500 students, with a spread across Research, Taught Postgraduate, and Undergraduate students. To mirror the diverse range of offerings for students, the School has approximately 300 members of staff (including academics, research, technicians and support staff). The School is frequented by members of the public, visiting academics, guest lecturers and external examiners.

## University of Dundee

The University of Dundee aims to transform lives locally and globally through the creation, sharing and application of knowledge. We reflect this aim by excelling in teaching and research; contributing to social, economic and cultural development; and shaping the future by solving important, real-world problems.

We aim to become Scotland's leading University in all we choose to do, and to be recognised internationally for the quality of our graduates and the impact of our research. These research and teaching strengths have led to Dundee being ranked 4th in the UK (2nd in Scotland) for student satisfaction in 2019, 20th in the World (4th in the UK) in the 2019 Times Higher Education University Impact Rankings, 14th in the World for the highest proportion of highly cited publications in the 2019 CWTS Leiden Rankings, and 84<sup>th</sup> in the World for research quality in the Nature Index 2019.

The University is structured as ten academic schools and emphasises work that takes place across school and subject boundaries, bringing different expertise and viewpoints to approach issues in new, challenging and productive ways.

The University is a diverse community and is committed to equality of opportunity for all by providing a supportive, flexible and inclusive working environment. We have family-friendly policies (including flexible working and childcare vouchers), staff groups for LGBT+ and BME, and prayer room facilities. The University and the School of Science and Engineering hold Athena SWAN Bronze Awards, which recognise the promotion of gender equality, and have made further commitments to advancing an inclusive culture that supports and encourages all under-represented groups.

## City of Dundee

Dundee is a post-industrial city that has worked hard to reinvent itself. With a population of 150,000, it is small enough to walk around but has all the cultural and leisure activities you would expect in a much larger city. Excellent shopping sits side-by-side with a vibrant cultural quarter, home to Scotland's award-winning Dundee Rep Theatre and the highly acclaimed Dundee Contemporary Arts, which has become a lively social hub and film house as well as a champion of leading-edge arts.

Dundee is the UK's only UNESCO City of Design and, with the opening of the new V&A Museum of Design – an iconic building designed by renowned architect Kengo Kuma, it has a growing reputation as a creative centre. Dundee was placed by the Wall Street Journal among their top ten places to visit in 2018, and 1st in Scotland in the Sunday Times 2019 Best Place to Live Guide.

Salaries in Dundee currently go further on the property ladder than almost any other city in the UK. The range of properties within commuting distance of the University covers the widest spectrum – from country houses and seaside cottages to handsome town villas and sleek city- quay apartments.

## 2 Role Information

**Role Title:** PhD studentship in Argument Technology

**School:** Science & Engineering

**Discipline:** Science & Engineering Office

**Grade of post:** PhD UKRI-equivalent stipend (<https://www.ukri.org/our-work/developing-people-and-skills/find-studentships-and-doctoral-training/get-a-studentship-to-fund-your-doctorate/>) plus payment of fees at either UK or International rates

**Job category:** Research Studentship

**PLEASE NOTE THAT THESE POSITIONS ARE OPEN TO ALL STUDENTS REGARDLESS OF NATIONALITY OR FEE STATUS.**

For details of fee status conditions see: <https://www.dundee.ac.uk/guides/fee-status-assessment>

For PhD fee rates, see: <https://www.dundee.ac.uk/corporate-information/phd-fees> (Computing)

The Centre for Argument Technology is a highly interdisciplinary environment, and candidates should be willing to work across traditional disciplinary boundaries.

The Centre's theoretical research focuses on developing an understanding of phenomena of argumentation that present challenges when trying to unpick the complexities of what happens in

real, situated examples of debate, dissensus, and argumentative discourse. Recent themes have included the role of questions, dynamics of conversational implicatures, reconciling argumentative and rhetorical structure, and the adequacy of argumentation expressing reasoning for forecasting and analysis.

The group also put these theories to the test in building and curating the largest datasets of analysed argumentation anywhere in the world. In addition to recently releasing QT30, the largest of these corpora to date, the group's recent corpus linguistics research has explored themes of annotator disagreement, improving annotation of argumentation schemes, and analytical expressivity.

ARG-tech also designs and builds innovative computational solutions that exploit, navigate and provide insight into these datasets. We have developed tools that use Analysis of Competing Hypotheses, a common technique from the intelligence analysis community, tools that use network structure properties to summarise debate activity, and tools that use argumentation semantics to identify key steps in chains of reasoning.

Finally, the Centre also works in building tools for harvesting and engaging in human argumentation, and is a pioneer in the fields of argument mining and mixed initiative argumentation. The Centre built the world's first public deployment of argument mining technology in partnership with the BBC, and has built mixed initiative argumentation systems for both the WHO and Dstl. The new open argument mining framework and dialogue-as-a-service infrastructures are allowing ARG-tech to develop new applications for new partners rapidly and efficiently,

ARG-tech's software stack provides an environment for academic tools (such as one of the most popular analysis tools for argumentation, OVA [ova.arg.tech](http://ova.arg.tech), and the only automated system for grading argument analysis, [arggrader.com](http://arggrader.com)) as well as public-facing systems such as the Evidence Toolkit ([arg.tech/evtk](http://arg.tech/evtk)) which was deployed into thousands of secondary schools in partnership with the BBC. We provide open infrastructure for datasets of argument and debate ([aifdb.org](http://aifdb.org)) based on the AIF standard for argument representation and knowledge engineering.

We currently run a portfolio of research projects for government, charity and commercial funders in the UK, US, EU, Germany, Portugal and Switzerland worth over £1m per year and with many dependencies between these projects, we need someone to help drive forward the research of the Centre. This is a unique opportunity for someone with interest and expertise in working with argumentation to join a world-leading research group – regardless of their disciplinary background. If you think you would be a good fit, we would be keen to hear from you regardless of whether you have a degree in philosophy, linguistics, literature, communication, cognitive science, AI,

mathematics, engineering, economics, international relations, law, or any other cognate disciplines.

The studentship can be taken up in any of the areas in which ARG-tech works, but in this round we are prioritising three themes in particular: (i) deep learning for argument mining; (ii) linguistic modelling of argumentation; (iii) mixed initiative argument and human-machine dialogue.

### 3 Key responsibilities

In the deep learning theme,

- To explore core theory, algorithms and techniques in argument mining
- To develop new applications of argument mining in various domains
- To learn about deep learning in argument mining

In the linguistic modelling theme,

- To contribute to the management and growth of our open data infrastructure, including development of new corpora for argument mining
- To extend theories of argument understanding that are suitable for computational modelling
- To learn about linguistic challenges in argument analysis

In the dialogue theme,

- To contribute to the tools and languages for building machine-human dialogue systems
- To extend theories of dialogue that are suitable for computational modelling
- To learn about mixed-initiative argument and debate

**Note:** The duties of the post outlined above are not exhaustive and the role holder will be expected to be co-operative and flexible, undertaking such other duties as may reasonably be required .

## 4 Person specification

### Essential knowledge, skills and experience

- Either a Masters degree or a Bachelors degree at 2i or above (or equivalent) in an appropriate subject
- Exposure to machine learning and natural language processing techniques (for the deep learning theme) or linguistic analysis techniques (for the linguistic modelling theme) or dialogue modelling techniques (for the dialogue theme)

### Desirable knowledge, skills and experience

- Broad knowledge of current approaches in computational linguistics
- Interest in or experience with argument and debate
- Good analytical skills, with the ability to process and collate complex information and manage data in a structured manner and with a high level of accuracy

## 5 Application Requirements

Applicants must include with their application:

- Cover letter outlining the candidate's suitability for the role
- CV
- Names and contact details of at least three references

in an email to **jobs@arg.tech**

## 6 Contacts

To further discuss the details of this post, informal inquires may be made to Prof. Chris Reed, Director of the Centre for Argument Technology (chris@arg.tech)