Research Centre	ADAPT
Post Title	Postdoctoral Researcher: Personalised Information Retrieval
Level on Framework:	Level 1
Post Duration	Fixed Term Contract up to 24 months

Dublin City University

Dublin City University www.DCU.ie is a young, ambitious and vibrant University, with a mission 'to transform lives and societies through education, research, innovation and engagement'. Known as Ireland's 'University of Enterprise and Transformation', it is committed to the development of talent, and the discovery and translation of knowledge that advances society and the economy. DCU is the Sunday Times Irish University of the Year 2021.

The University is based on three academic campuses in the Glasnevin-Drumcondra region of north Dublin. It currently has more than 18,000 students enrolled across five faculties – Science and Health, DCU Business School, Computing and Engineering, Humanities and Social Sciences and DCU Institute of Education. DCU is committed to excellence across all its activities. This is demonstrated by its world-class research initiatives, its cutting-edge approach to teaching and learning, its focus on creating a transformative student experience, and its positive social and economic impact. This exceptional commitment on the part of its staff and students has led to DCU's ranking among the top 2% of universities globally. It also consistently features in the world's Top 100 Young Universities (currently in QS Top 70 Under 50, Times Higher Top 150 Under 100).

DCU is placed 84th in the world, in the Times Higher Education University Impact Rankings – measuring higher education institutions' contributions towards the UN Sustainable Development Goals. Over the past decade, DCU has also been the leading Irish university in the area of technology transfer, as reflected by licensing of intellectual property.

About the ADAPT Centre

ADAPT is the world-leading SFI research centre for AI Driven Digital Content Technology, coordinated by Trinity College Dublin and based within Dublin City University, University College Dublin, Technological University Dublin, Maynooth University, Munster Technological University, Athlone Institute of Technology, and the National University of Ireland Galway. ADAPT's research vision is to pioneer new forms of proactive, scalable, and integrated AI-driven Digital Content Technology that empower individuals and society to engage in digital experiences with control, inclusion, and accountability with the long term goal of a balanced digital society by 2030. ADAPT is pioneering new

Human Centric AI techniques and technologies including personalisation, natural language processing, data analytics, intelligent machine translation human-computer interaction, as well as setting the standards for data governance, privacy and ethics for digital content.

Our Research Vision

Governments and civil society are starting to recognise the need for urgent and concerted action to address the societal impact of the accelerating pace of digital content technologies and the AI techniques that underpin them. ADAPT provides an ambitious, ground-breaking, integrated research programme that assembles three interlocking Strands that together are capable of addressing this challenge. Each of these complementary and reinforcing research Strands takes one of the different perspectives on the provision of personalised, immersive, multimodal digital engagement, i.e. the individual's experience and control of the engagement, the algorithms underlying digital content processing, and the balanced governance by enterprise and societal stakeholders.

Digitally Enhanced Engagement Strand

From the individual perspective, research within this Strand will deliver proactive agency techniques that sense, understand and proactively serve the needs of individual users to deliver relevant, contextualised and immersive multimodal experiences which also offer them meaningful control over the machine agency delivering those experiences.

Digital Content Transformation Strand

From the algorithmic perspective, new machine learning techniques will both enable more users to engage meaningfully with the increasing volumes of content globally in a more measurably effective manner, while ensuring the widest linguistic and cultural inclusion. It will enhance effective, robust integrated machine learning algorithms needed to provide multimodal content experiences with new levels of accuracy, multilingualism and explainability.

Transparent Digital Governance Strand

From the enterprise and societal perspective, new structured knowledge frameworks and associated practices for AI data governance will be required to balance the needs and values of individuals, organisations and society when it comes to rich digital experiences. This requires the advancement of research in the areas of data ethics, data quality, data protection, data value, data integration, and multi-stakeholder governance models.

Background

The ADAPT Centre, SFI research centre for AI Driven Digital Content Technology seeks to appoint a Postdoctoral Researcher in Personalised Information Retrieval. The researcher will be responsible for progressing the research agenda in the area of Personalised IR. This will involve the investigation of models of the continuous and evolving needs of searchers and the development and evaluation of new approaches to modelling heterogeneous user profiles for proactive retrieval and recommendation.

Why ADAPT?

- Contribute to the ADAPT research agenda that pioneers and combines research in AI driven technologies: Natural Language Processing, Video/Text/Image/Speech processing, digital engagement & HCI, semantic modeling, personalisation, privacy & data governance.
- Work with our interdisciplinary team of leading experts from the complementary fields of, Social Sciences, Communications, Commerce/Fintech, Ethics, Law, Health, Environment and Sustainability.
- Leverage our success. ADAPT's researchers have signed 43 collaborative research projects, 52 licence agreements and oversee 16 active commercialisation funds and 52 commercialisation awards. ADAPT has won 40 competitive EU research projects and obtained €18.5 million in non-exchequer non-commercial funding. Additionally, six spinout companies have been formed. ADAPT's researchers have produced over 1,500 journal and conference publications and nearly 100 PhD students have been trained.

As an ADAPT researcher you will have access to a network of 85 global experts and over 250 staff as well as a wide multi-disciplinary ecosystem across 8 leading Irish universities. We can influence and inform your work, share our networks and collaborate with you to increase your impact, and accelerate your career opportunities. Specifically, we offer:

- Exposure and free access within a multi-disciplinary ecosystem across 8 leading Irish universities
- Opportunity to build your profile at international conferences and global events
- Fast-track your career through formalised training & development, expert one-on-one supervision and exposure to top AI specialists

Research Career Framework

As part of this role the researcher will be required to participate in the DCU Research Career Framework (http://dcu.ie/hr/ResearchersFramework/index.shtml). This framework is designed to provide significant professional development opportunities to researchers and offer the best opportunities in terms of a wider career path.

DCU has a strong track record in attracting both Irish and European Union research funding under Horizon 2020 (and all previous Framework programmes), Marie Curie Actions and Erasmus. We offer a dynamic and internationally-focused environment in which you can advance your academic career.

The Project

The project has the goal of defining a new class of user models and algorithms which address the inherent complexity of human interests and behaviour. These will impact the way we access information by providing systems with more responsive and accurate means to answer the real needs of the users.

The project has a twofold aim. First, the definition of a new theoretical framework for representing this complex, heterogeneous, temporal user behaviour. When working with this variety of data, being able to define beforehand which features better characterise the user preferences is not trivial. Therefore, representation learning plays a key role in the project, since it provides machine learning algorithms with the capability of learning the best discriminative features directly from the task at

hand. Second, the project aims to design a new class of user modelling algorithms for recommendation and retrieval. Due to the mutable nature of the user preferences, this class of algorithms will learn on the go, in order to adapt to new content as this is made available or to apply to unknown problems what was learnt in other domains.

The Post

The post-doctoral researcher will be involved with other researchers in the design of novel algorithms for the personalisation of search within the 'Digital Enhanced Engagement' strand of the ADAPT Centre.

Reporting to a Principal Investigator, the successful candidate will work within a large group of Researchers, PhD students and Software Developers. The post-holder will work closely with academics and key research staff to research a range of advanced applications that showcase cutting edge Information Retrieval technologies.

The successful candidate will also work closely with the Principal Investigator in the supervision of PhD students throughout the PhD process.

Standard duties and responsibilities of the post

- Leading research in the specialist area of Personalised Information Retrieval and Recommendation.
- Applying novel algorithms to the proactive personalisation of search and recommendation.
- Developing innovative approaches to continuous user modelling over multiple search sessions.
- Contributing to journal and conference publications.
- Evaluating and deploying new retrieval and recommendation approaches in authentic scenarios.
- Working closely with the Principal Investigator to provide support and advice to PhD and Master students

Minimum Criteria
The candidate must have a Ph.D., ideally in the area of Computer Science, or a related discipline.

In addition, it is desirable that the individual has a subset of the following skills and experience:

- Strong expertise in foundational approaches to Information Retrieval (IR), Recommender Systems and Machine Learning.
- High Level of competence in programming skills and experience with state-of-the-art IR and Machine Learning systems.
- An excellent track record of publications in the area of IR.
- Strong Knowledge of experimental design and statistics.
- Excellent communication, interpersonal and collaboration skills.
- Proven track record of publication in high-quality venues.
- Evidence of leadership skills and capability to take on project leads under the guidance of the project PI.
- Proven ability to prioritise workload and work to exacting deadlines.
- Flexible and adaptable in responding to stakeholder needs.
- Experience in releasing code to live production environments.
- Strong team player who is able to take responsibility to contribute to the overall success of the team.
- Energetic and structured approach to research and development.

- Excellent problem solving abilities.
- Desire to learn about new technologies and keep abreast of new product and technical and research developments.

Mandatory Training:

The post holder will be required to undertake the following mandatory compliance training: Orientation, Health and Safety and Intellectual Property and Data Protection training. Other training may need to be undertaken when required.

Candidates will be assessed on the following competencies:

Discipline knowledge and Research skills – Demonstrates knowledge of a research discipline and the ability to conduct a specific programme of research within that discipline

Understanding the Research Environment – Demonstrates an awareness of the research environment (for example funding bodies) and the ability to contribute to grant applications

Communicating Research – Demonstrates the ability to communicate their research with their peers and the wider research community (for example presenting at conferences and publishing research in relevant journals) and the potential to teach and tutor students

Managing & Leadership skills - Demonstrates the potential to manage a research project including the supervision of undergraduate students