Post Title: Research Engineer in Visual Data Analytics

Post Status: Specific Purpose Contract – 18 months Full-time

Department/Faculty: ADAPT, School of Computer Science and Statistics, Trinity College Dublin, the University of Dublin

Location: Stack B, IFSC, Custom House Quay

Reports to: Prof. Rozenn Dahyot

Salary: Appointment will be made on the IUA Researchers Salary Scales at a point in line with Government Pay Policy (€28,008 - €32,698), appointment will be made no higher than point 14 (€32,698 per annum).

Hours of Work: 40

Closing Date: 12 Noon (Irish Standard Time), 27th Jan 2020 (or until filled)

The successful candidate will be expected to take up post as soon as possible.

Post Summary

The Science Foundation Ireland ADAPT Research Centre (adaptcentre.ie) seeks to appoint a Research Engineer to support research and development in the areas of image processing, machine learning and Geographic Information Systems (GIS). This is an exciting opportunity for a Research Engineer to work on the Enterprise Ireland funded project ‘AIMapIT’ whose aim is to commercialise research that addresses object detection and mapping in various imaging modalities: street level optical, satellite and Lidar. It is anticipated that this project will result in a start-up company that will spin out from the university with potential to extend beyond the initial 18 months funding horizon. More information about AIMapIT here: https://www.adaptcentre.ie/case-studies/aimapit.

The successful candidate will join a team under the supervision of Prof. Rozenn Dahyot (www.scss.tcd.ie/Rozenn.Dahyot) and will work alongside the best and brightest talent in language technologies, content analytics, data analytics, adaptivity, personalisation, interoperability, translation, localisation and information retrieval in the wider ADAPT Centre. As a university-based research centre, ADAPT also strongly supports continuous professional development and education. In ADAPT you will develop as an engineer, technically and scientifically. In addition, ADAPT will support you to enhance your confidence, leadership skills and communication abilities.

The successful candidate will be required to implement algorithms for multi-modal data management in a system designed to automatically detect and map objects of interest in street level imagery.
The goal of this project is to develop a minimum viable product that can be licensed to a commercial entity. There is significant market interest in the current technology thus the platform being developed will be highly influenced by end users. The candidate should have experience in a relevant area of image processing that complements the overall research goals of the Principal Investigator, Prof. Rozenn Dahyot.

Informal enquiries about this post should be made to by e-mail to: Ms Monica Lechea, Office Manager (monica.lechea@adaptcentre.ie)

Standard Duties and Responsibilities of the Post

- Implement data preparation, annotation and visualisation algorithms
- Integrate research prototypes in application frameworks via APIs and web services
- Create data processing pipelines for large volume image data experiments
- Create Virtual Machines/Containers loaded with the necessary software and application dependencies
- Work closely with researchers
- Implement and develop unit tests of individual software components to ensure functionality and robustness of software applications
- Ensure team members are kept up to date with the work that is done
- Document all work to ensure code is easily understood by peers
- Maintain clean code bases
- Raise Technology Readiness Level of research prototypes to prepare for experimental industrial application
- Work with ADAPT industry partners to define requirements, troubleshoot issues and conduct demonstrations
- Report on and present demos of code to relevant stakeholders within ADAPT, Enterprise Ireland and to trial users.

Funding Information

The position is funded through Enterprise Ireland Commercialisation Fund Award hosted by the Science Foundation Ireland (SFI) ADAPT Research Centre.

Person Specification

The successful candidate will have broad experience in every aspect of the application development lifecycle. We are looking for someone who codes in multiple languages fluently and takes pride in the quality of their work, someone who ensures their work - and that of their teammates - adheres to good standard practices and proven design patterns. The successful candidate is expected to

- Have experience with visual data processing techniques
- Have expert knowledge of Machine Learning
- Understand all aspects of industrial standard software development
- Have a thorough understanding of, and experience developing web-based applications
- Have extensive experience with Code Repositories
- Be a strong team player
Qualifications

Candidates appointed to this role must have a Bachelor or Master degree in Computer Science or equivalent field with minimum three years industry experience.

Knowledge & Experience (Essential & Desirable)

The ideal engineer will have specific expertise in machine learning/deep learning for image processing, and be able to identify how they can contribute to wider research in visual data analytic systems.

Essential

- Excellent written and oral proficiency in English
- Knowledge of web application development and security
- Expertise in containerisation and cloud platforms
- Knowledge of, and experience with, GIS platforms (QGIS, ArcGIS)
- Fluency in a deep learning platform (e.g. TensorFlow, PyTorch)
- Excellent knowledge of scripting languages: Python, Bash
- Experience with data annotation and general knowledge in ML, data analysis
- Extensive experience with UNIX/Linux and Windows operating systems
- Good command of markup languages and data formats (e.g. XML, JSON)

Desirable

- Knowledge of scripting languages: Perl, JavaScript, d3.js
- Knowledge of one or more of: Java, C/C++, node.js
- Knowledge of mathematical/data analysis languages: Matlab/Octave, R
- Database management skills (SQL/No-SQL): MySQL, MongoDB, CouchDB, Neo4j, SQL
- Understanding of Unit and Regression Testing Frameworks
- Command of Version Control Systems
- Experience of high-performance computing facilities
- Exposure to commercialisation of research

Skills & Competencies

- Good communication and interpersonal skills both written and verbal.
- Proven aptitude for Programming, System Analysis and Design.
- 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.
- Enthusiastic and structured approach to research and development.
- Excellent problem solving abilities.
- Desire to learn about new products, technologies and keep abreast of new product, technical and research developments.

Further Information for Applicant

ADAPT is Ireland’s global centre of excellence for digital media technology. Led by TCD, it combines the expertise of researchers at four universities (Trinity College Dublin, Dublin City
University, University College Dublin, TU Dublin, Maynooth University, Athlone Institute of Technology and Cork Institute of Technology) with that of its industry partners to produce ground-breaking digital content innovations. ADAPT brings together more than 220 researchers who collectively have won more than €100m in funding and have a strong track record of transferring world-leading research and innovations to more than 140 companies. With €50M in new research funding from Science Foundation Ireland and industry, ADAPT is seeking talented individuals to join its growing team. Our research and technologies will continue to help businesses in all sectors and drive back the frontiers of future Web engagement.

Trinity College Dublin, the University of Dublin

Trinity is Ireland’s premier university, with a proud tradition of excellence stretching back to its foundation in 1592. The oldest university in Ireland, and one of the oldest in Europe, today Trinity sits at the intersection of the past and the future, and is ideally positioned as a major university in the European Union. Our 47-acre campus is located in the heart of Dublin city centre and is home to historic buildings dating from the University’s establishment, as well as some of the most cutting-edge teaching and research facilities in Ireland. Students at Trinity benefit from a unique educational experience across a range of disciplines in our three faculties – Arts, Humanities, and Social Sciences; Engineering, Mathematics and Science; and Health Sciences. The pursuit of excellence through research and scholarship is at the heart of a Trinity education, and our researchers have an outstanding publication record and strong record of grant success.

Trinity has developed 18 broad-based multidisciplinary research themes that cut across disciplines and facilitate world-leading research and collaboration within the University and with colleagues around the world. These internationally recognised themes include such diverse areas as Cancer, Immunology, Telecoms, Identities in Transformation, Nanoscience, Neuroscience, and Making Ireland. Researchers from across the University work together in innovative ways to develop new and exciting approaches to their research and explore the frontiers of knowledge in the 21st century. In creating these dedicated research themes, Trinity’s researchers are able to become a more powerful force on the global stage, successfully competing for large-scale grants and attracting top students and faculty to the University. Trinity is home to Ireland’s first purpose-built Nanoscience research institute, CRANN, which opened in January 2008. This state-of-the-art facility houses 150 scientists, technicians, and graduate students in specialised laboratories, fostering creative innovations that have seen Trinity’s researchers make significant breakthroughs.

The Trinity Long Room Hub for Arts and Humanities Research Institute is the University’s flagship institute
for research in the Arts and Humanities, providing a world-class environment for cross-disciplinary collaborative projects. The Long Room Hub provides a central location through which the University’s internationally respected Arts and Humanities research can become more visible, demonstrating its relevance for contemporary and future societies. Researchers from across the University regularly participate in debates on topical issues facing the world today. As well as operating an International Visiting Research Fellowship programme, the Long Room Hub also hosts major EU-funded Digital Humanities projects.

One of the most instantly recognised parts of Trinity’s campus is the famous Old Library, home to the historic Book of Kells as well as other internationally significant holdings in manuscripts, maps, and early printed material. Trinity’s Library is the largest research library in Ireland and is an invaluable resource to Trinity’s students and research community. Built up over the four centuries of the University’s existence, the Library’s collections have benefitted from its status as a Legal Deposit library for the past 200 years, granting Trinity the right to claim a copy of every book published in Ireland and the UK. At present, the Library’s holdings span approximately 4.25 million books, 22,000 printed periodical titles, and access to 60,000 e-journals and 250,000 e-books.

Trinity attracts top students from Ireland and abroad and prides itself on the consistently high standard of student admitted to the University every year. These students are drawn to Trinity for the excellence of our research-led teaching and for the quality and prestige a degree from this University confers. Trinity has also pioneered accessibility to education in Ireland, becoming the first university in the country to reserve 15% of its undergraduate places for students from non-traditional learning groups. Trinity is the top-ranked European university for student entrepreneurship and Europe’s only representative in the world’s top-50 universities.

Our alumni have gone on to shape the history of Ireland and of Western Europe in a wide range of fields. These include such notable figures as Jonathan Swift, Oscar Wilde, William Rowan Hamilton, Edmund Burke, William Stokes, Denis Burkitt, Louise Richardson, Lenny Abrahamson, and Anne Enright. Three of Trinity’s graduates have been awarded Nobel prizes: Ernest Walton for Physics in 1951; Samuel Beckett for Literature in 1968; and William Campbell for Physiology / Medicine in 2015. Trinity also counts the first female President of Ireland among its alumni in Mary Robinson, as well as other notable former Presidents Douglas Hyde and Mary McAleese. At Trinity we are justifiably proud of our tradition, and we strive to uphold this excellence as we face the demands of the 21st century.

**Ranking Facts**
Trinity is the top ranked university in Ireland. Using the QS methodology, the University is ranked 104th in the world and using the Times Higher Education World University Rankings methodology Trinity is 117th in the world.

Overall

- Trinity is Ireland’s No.1 University in the QS World University Ranking, THE World University Ranking and the Academic Ranking of World Universities (Shanghai).
- Trinity is ranked 104th in the World, and 36th in Europe, in the 2018/2019 QS World University Ranking.
- Trinity is ranked in the Top 120 for Graduate Employability in the QS 2018 Rankings.
- Trinity is in the Top 50 most innovative universities in Europe according to Reuters.¹
- Between 2010 and 2015, Trinity was ranked the top university in Europe for entrepreneurship according to Pitchbook’s independent analysis.²

Internationalisation

- Trinity is ranked 52nd in the world in the THE World University Ranking for international outlook.

Research Performance

¹ http://www.reuters.com/article/us-innovative-stories-europe-idUSKCN0Z00CT
- Of the 981 institutions included in the THE World University Rankings for 2017, Trinity is in the top 15% internationally for research performance.
- Trinity is ranked in the top 15% internationally by QS for citations.

In the QS World University Subject Rankings:

- Trinity is ranked in the top 50 worldwide in four subject areas according to the QS World University Subject Rankings 2018. The University is ranked in the top 100 globally for 20 subjects overall.
- Trinity’s Top 50 subjects include Nursing (25th), Classics (28th), English (28th) and Politics (43rd).
- Trinity is ranked in the top 100 for each of the following 16 subjects: History, Languages, Philosophy, Theology, Computer Science, Biology, Medicine, Pharmacy, Chemistry, Geography, Materials Science, Education, Law, Social Policy, Sociology and Sport.
- The University is ranked in the top 100 for three broad subject areas: Arts & Humanities (57th), Life Sciences & Medicine (87th), and Engineering & Technology (89th).

Research Themes
The Selection Process in Trinity

The Selection Committee (Interview Panel) may include members of the Academic and Administrative community together with External Assessor(s) who are expert in the area. Applications will be acknowledged by email. If you do not receive confirmation of receipt within 1 day of submitting your application online, please contact the named Recruitment Partner on the job specification immediately and prior to the closing date/time.

Given the degree of co-ordination and planning to have a Selection Committee available on the specified date, the University regrets that it may not be in a position to offer alternate selection dates. Where candidates are unavailable, reserves may be drawn from a shortlist. Outcomes of interviews are notified in writing to candidates and are issued no later than 5 working days following the selection day.

In some instances the Selection Committee may avail of telephone or video conferencing. The University’s selection methods may consist of any or all of the following: Interviews, Presentations, Psychometric Testing, References and Situational Exercises.

It is the policy of the University to conduct pre-employment medical screening/full pre-employment medicals. Information supplied by candidates in their application (Cover Letter and CV) will be used to shortlist for interview.

Applications from non-EEA citizens are welcomed. However, eligibility is determined by the Department of Jobs, Enterprise and Innovation and further information on the Highly Skills Eligible Occupations List is set out in Schedule 3 of the Regulations https://www.djei.ie/en/What-We-Do/Jobs-Workplace-and-Skills/Employment-Permits/Employment-Permit-Eligibility/Highly-Skilled-Eligible-Occupations-List/ and the Ineligible Categories of Employment are set out in Schedule 4 of the Regulations https://www.djei.ie/en/What-We-Do/Jobs-Workplace-and-Skills/Employment-Permits/Employment-Permit-Eligibility/Ineligible-Categories-of-Employment/. Non-EEA candidates should note that the onus is on them to secure a visa to travel to Ireland prior to interview. Non-EEA candidates should also be aware that even if successful at interview, an appointment to the post is contingent on the securing of an employment permit.
Equal Opportunities Policy

Trinity is an equal opportunities employer and is committed to employment policies, procedures and practices which do not discriminate on grounds such as gender, civil status, family status, age, disability, race, religious belief, sexual orientation or membership of the travelling community. On that basis we encourage and welcome talented people from all backgrounds to join our staff community. Trinity’s Diversity Statement can be viewed in full at https://www.tcd.ie/diversity-inclusion/diversity-statement.

Pension Entitlements

This is a pensionable position and the provisions of the Public Service Superannuation (Miscellaneous Provisions) Act 2004 will apply in relation to retirement age for pension purposes. Details of the relevant Pension Scheme will be provided to the successful applicant.

Applicants should note that they will be required to complete a Pre-Employment Declaration to confirm whether or not they have previously availed of an Irish Public Service Scheme of incentivised early retirement or enhanced redundancy payment. Applicants will also be required to declare any entitlements to a Public Service pension benefit (in payment or preserved) from any other Irish Public Service employment.

Applicants formerly employed by the Irish Public Service that may previously have availed of an Irish Public Service Scheme of Incentivised early retirement or enhanced redundancy payment should ensure that they are not precluded from re-engagement in the Irish Public Service under the terms of such Schemes. Such queries should be directed to an applicant’s former Irish Public Service Employer in the first instance.
Application Procedure

Applicants should submit a full Curriculum Vitae to include the names and contact details of 3 referees (including email addresses), together with a cover letter (1x A4 page) that specifically addresses the application procedure set out above.

APPLICATIONS WILL ONLY BE ACCEPTED BY EMAIL:

monica.lechea@adaptcentre.ie

Candidates should reference MAP-REVDA in their application
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