Post Specification

<table>
<thead>
<tr>
<th>Post Title:</th>
<th>Post-Doctoral researcher in Image/Video Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post Status:</td>
<td>Fixed Term Contract until Dec 2020, Full-Time</td>
</tr>
<tr>
<td>Research Group/Department/School:</td>
<td>ADAPT Centre, Centre for Digital Content Technology</td>
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<tr>
<td>Location:</td>
<td>Sigmedia Group, School of Electronic &amp; Electrical Engineering, Trinity College Dublin, the University of Dublin, College Green, Dublin 2, Ireland</td>
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<tr>
<td>Reports to:</td>
<td>Principal Investigator: Professor Naomi Harte</td>
</tr>
<tr>
<td>Salary:</td>
<td>Appointment will be made on the IUA Postdoctorate Research Fellow Level 2 or 3 Salary scale (range €33,975 to €53,245 per ) at a point in line with Government Pay Policy</td>
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<tr>
<td>Closing Date:</td>
<td>April 17th -Open until filled</td>
</tr>
<tr>
<td>ADAPT Position Code:</td>
<td>IG_RF2</td>
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Post Summary

The ADAPT Centre, the centre for digital content technology, seeks to appoint a Postdoctoral Research Fellow to conduct research in the areas of image and video processing for human interaction.

The researcher will be responsible for the support of research in the ADAPT Research Theme entitled “Interacting with Global Content”. Overall the Theme seeks to empower people to interact with digital content in ways that are more intuitive and that mimic the richness of human perception in all interaction. The candidate should have a mature personal research plan in a relevant area of image and video processing that complements the overall Research Theme. The researcher will also be responsible for supporting research in multimodal speech analysis in a number of areas including:

- Audio-visual speech recognition
- Paralinguistic analysis of speech, particularly affect and engagement
Thus, the ideal researcher will have specific expertise in image and video processing, and be able to identify how they can contribute to wider research in multimodal speech analysis. Specific areas of research interest from candidates include:

- Facial feature analysis and extraction
- Facial movement tracking
- Gesture analysis
- Scene analysis
- Multimodal feature fusion

Reporting to a Principal Investigator, the successful candidate will work within a large group of Postdoctoral Researchers, PhD students and Software Developers.

**Background on ADAPT**

We live in a world of global digital connectivity where individuals, communities and businesses are communicating globally at incredible speed, in enormous volumes, across the world’s languages and over an ever-increasing range of devices. ADAPT’s vision is to leverage this torrent of digital content to enable unprecedented levels of global engagement among people, companies and communities. This is achieved through a unique collaboration between world-class research groups in multilingual natural language processing (NLP), multimedia content analysis and transformation, personalisation and multimodal interaction. Within ADAPT and its affiliated group of international and commercialisation projects, these posts will deliver the advances in linked data and semantic technologies that are key to efficiently manage the content, language and knowledge assets that underpin intelligent global customer engagement.

**Sigmedia**

The Sigmedia Group is based in the School of Engineering at Trinity College Dublin. The research group has a world-class reputation in digital signal processing for media applications. Major areas of expertise include human speech communication, image and video processing, post-production and restoration in digital cinema. Please visit [www.sigmedia.tv](http://www.sigmedia.tv) for more information.

**Why join ADAPT@ TCD**

- Work on hard problems in an interdisciplinary and exciting research environment. The ADAPT Centre combines expertise of researchers at Trinity College Dublin, Dublin City University, University College Dublin, and Dublin Institute of Technology. It brings together more than 150 researchers that have collectively won more than €100M in competitive research funding and have an international track record of bridging research and innovations to more than 140 companies. With €50M in new research funding from SFI and industry, ADAPT research and technologies will help businesses in all sectors to manage, personalise and deliver digital content more effectively.

- Work in a University where excellence of research is valued. Trinity is Ireland’s premier University and is ranked in 71st position in the top 100 world universities by the QS World University Rankings 2014.

- Work in a centre focused on advancing your career. Whether you you want to take an academic, industrial, or entrepreneurial career path, ADAPT prides itself in the support and mentoring that
enables all its postdocs to reach their full potential. This year alone its postdoc-to-PI programme has helped three postdocs transition to be Principal Investigators on their own H2020 projects, while four other have recently won funding with ADAPT support to realise the commercialisation of their research through spin outs and licensing.

**Standard duties and Responsibilities of the Post**

Reporting to his/her Principal Investigator the Researcher will:

- Conduct a specified programme of research under the supervision and direction of the Principal Investigator (PI).
- Support the PI and research group in the design, development and implementation of the research programme.
- Research solutions to problems in a number of areas of interest, including:
  - Key visual-based object/event detection for Human-Computer Interaction
  - Active Speaker Tracking
  - Visemic word-spotting
  - Real-time video processing
  - Audio-visual speech recognition
  - Paralinguistic analysis of speech, particularly visual cues relating to affect and engagement
- Substantially contribute to the identification of external funding sources and assist in the writing of grant proposals.
- Mentor, assist and supervise postgraduate research students as required.
- Assist the PI in the management / co-ordination of key aspects of the research programme (e.g. financial management, reporting, equipment management etc.).
- Engage in the dissemination of the results of the research in which he/she is engaged to the wider research community with the support and under the supervision of the Principal Investigator.
- Engage in appropriate training and development opportunities as required by the Principal Investigator, the School or Research Centre, or the University.
- Engage with internal and external stakeholders including academic and industry partners/collaborators as appropriate.
- Carry out administrative work associated with the programme as necessary.
- Participate in ADAPT Centre activities, such as industry showcases and annual reviews.
- Report on progress at meetings and in writing to ADAPT Centre Management.
- Produce top-quality journal and conference publications, in collaboration with the Principal Investigator (PI).

**Funding Information**
The position is funded through the Science Foundation Ireland ADAPT Research Centre.
**Person Specification**

**Qualifications**
Candidates must have a PhD in Electronic Engineering or Computer Science, with a strong image/video signal processing and machine learning foundation. Applicants should have a minimum of 2-5 years relevant postdoctoral research experience.

**Knowledge & Experience (Essential & Desirable)**

**Essential**
- A strong record of international peer-reviewed publication and presentation in top-tier conferences in image and video processing
- A strong record of international peer-reviewed publication in top-tier journals, commensurate with career stage
- Extensive machine learning experience, with deep learning an advantage
- In depth understanding of Digital Signal processing and Bayesian approaches to video processing
- Excellent programming skills in Matlab, Python, C/C++
- Participation in writing of grant applications
- Mentoring of research students
- Excellent written and oral proficiency in English
- Strong communication and interpersonal skills, both written and verbal
- Desire to learn about new products, technologies and keep abreast of new products and technical and research developments

**Desirable (i.e. the following would be advantageous)**

1. Audio-visual speech database design and capture
2. Experience of high-performance computing facilities
3. Exposure to commercialisation of research

**Further Information for Candidates**

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<thead>
<tr>
<th>URL Link to School</th>
<th><a href="http://www.tcd.ie/Engineering/">www.tcd.ie/Engineering/</a></th>
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<tbody>
<tr>
<td>URL Link to Research Group</td>
<td><a href="http://www.adaptcentre.ie">http://www.adaptcentre.ie</a></td>
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<td></td>
<td><a href="http://www.sigmedia.tv">www.sigmedia.tv</a></td>
</tr>
<tr>
<td>URL Link to Human Resources</td>
<td><a href="http://www.tcd.ie/hr/">http://www.tcd.ie/hr/</a></td>
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**The School of Engineering**

The School at Trinity College was formed in 1841 and is one of the oldest in Engineering in the English-speaking world. The Strategic Mission of the School of Engineering is the pursuit of excellence in teaching and research in Engineering with the central aim of producing graduate engineers with a capacity for independent thought in problem-solving and creative analysis and design. The School consists of the following three Disciplines:

- Civil, Structural and Environmental Engineering;
- Electronic and Electrical Engineering;
• Mechanical and Manufacturing Engineering.

At present, the School has 62 academic staff, 48 research fellows, 18 adjunct academic staff, 41 technical/support staff, 168 research students, 68 taught masters students, 135 diploma students and 847 undergraduates (including nearly 100 MAI students) spread over seven different sites on campus. With a total annual School budget of around €20M, the research income accounts for just over €8M. The School is the most successful Engineering School in the country as is recognized by its QS ranking in the world’s top 100 of Engineering and Technology Faculties.

At undergraduate level, the School runs two degree courses, the B.A.I. (Baccalaureatus in Arte Ingeniaria) and the B.Sc. (Ing) in Engineering with Management, both leading to the M.A.I. degree following successful completion of a fifth year. Graduating students obtain employment in a very wide sector, from Engineering in all its forms to finance and business.

Trinity College Dublin, the University of Dublin

Founded in 1592, Trinity is at the nexus of tradition and innovation, offering undergraduate and postgraduate programmes across 24 schools and three faculties: arts, humanities, and social sciences; engineering, maths and science; and health sciences. Spread across 47 acres in Dublin’s city centre, Trinity’s 17,000-strong student body comes from all 32 counties of Ireland, and 16% of students come from outside the country. Of those, 40% are from outside the European Union, making Trinity’s campus cosmopolitan and bustling, with a focus on diversity.

As Ireland’s leading university, the pursuit of academic excellence through research and scholarship is at the heart of the Trinity education. Trinity is known for intellectual rigour, excellence, interdisciplinarity, and research-led teaching. Home to Nobel prize-winners such as scientist Ernest Walton and writer Samuel Beckett, Trinity draws visitors from across the world to its historic campus each year, including to the Book of Kells and Science Gallery which capture the university’s connection to both old and new.

Trinity accounts for one-fifth of all spin-out companies from Irish higher education institutions, helping to turn Ireland into an innovation-intensive, high-productivity economy. That culture of innovation and entrepreneurship is a defining characteristic of our campus as we help shape the next generation of job creators.

Trinity has developed significant strength in a broad range of research areas, including the 19 broadly based multi-disciplinary thematic research areas.
Ireland’s first purpose-built nanoscience research institute, CRANN, houses 150 scientists, technicians and graduate students in specialised laboratory facilities. Meanwhile, the state-of-the-art Biomedical Sciences Institute is carrying out breakthrough research in areas such as immunology, cancer and medical devices.

The Old Library, which houses the Long Room, in Trinity is the largest research library in Ireland, with a collection of six million printed items, 500,000 maps, 80,000 electronic journals, and 350,000 electronic books. Some of the world’s most famous scholars are graduates of Trinity, including writer Jonathan Swift, dramatist Oscar Wilde, philosopher George Berkeley, and political philosopher, and political theorist Edmund Burke. Three Trinity graduates have become Presidents of Ireland - Douglas Hyde, Mary Robinson and Mary McAleese.

Trinity is the highest ranked university in Ireland, and among the world’s leading higher education institutions.

**Trinity College Dublin World University Rankings**

**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 71st in the World and 21st in Europe in the 2013/2014 QS World University Ranking across all indicators.

**Internationalisation**

• Trinity is ranked 44th in the World in the Times Higher Education Top 100 Most International Universities.
• Trinity is 46th in the World in the QS World University Ranking 2013/2014 in terms of International Faculty.

**Research Performance**

• Trinity is ranked in the top 70 universities in the world in the Times Higher Education Ranking of World Universities in terms of overall research and in the top 75 universities in the world in terms of citations (research impact).
• Trinity ranks in the top 1% of research institutions in the world in the following 17 Essential Science Indicators fields (an increase of over 150% from 2004): Physics, Chemistry, Engineering, Social Sciences (General), Immunology, Neurosciences, Nanosciences, Materials Science, Pharmacy and Toxicology, Molecular Biology and Genetics, Biology and Biochemistry, Microbiology, Plant and Animal Science, Clinical Medicine, Agriculture, Psychiatry/Psychology, Environment/Ecology.

**In the QS Faculty Rankings 2015***:

• Trinity is ranked 63rd in the world in Arts and Humanities.
• Trinity is ranked 69th in the world in Life Sciences and Medicine.
• Trinity is ranked 89th in the in Social Sciences and Management.

**In the QS Subject Rankings 2015***:

Trinity College Dublin features in the world's elite (Top 200) institutions in 25 of the 28 subjects in which it was evaluated by the QS World University Rankings by Subject 2015. Of these, Trinity ranks in the top 100 in the world in 14 subjects and in the top 5 in the world in 5 subjects.

**Top 50**

• Trinity is ranked 32nd in the world in English Language and Literature.
• Trinity is ranked 33rd in the world in Politics and International Studies.
• Trinity is ranked 39th in the world in History.
• Trinity is ranked 48th in the world in Biological Sciences.
• Trinity is ranked 49th in the world in Modern Languages.

**Top 100**

• Trinity is in the top 100 in the world in Chemistry.
• Trinity is in the top 100 in the world in Computer Science and Information Systems.
• Trinity is in the top 100 in the world in Education.
• Trinity is in the top 100 in the world in Geography.
• Trinity is in the top 100 in the world in Law.
• Trinity is in the top 100 in the world in Medicine.
• Trinity is in the top 100 in the world in Pharmacy and Pharmacology.
• Trinity is in the top 100 in the world in Philosophy.
• Trinity is in the top 100 in the world in Psychology.

**Trinity subjects ranked in the world top 101-200 (QS Subject Ranking 2015)**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Trinity Rank</th>
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<tbody>
<tr>
<td>Accounting and Finance</td>
<td>101-150</td>
</tr>
<tr>
<td>Business and Management Studies</td>
<td>101-150</td>
</tr>
<tr>
<td>Economics and Econometrics</td>
<td>101-150</td>
</tr>
<tr>
<td>Linguistics</td>
<td>101-150</td>
</tr>
<tr>
<td>Physics and Astronomy</td>
<td>101-150</td>
</tr>
<tr>
<td>Sociology</td>
<td>101-150</td>
</tr>
<tr>
<td>Engineering - Civil and Structural</td>
<td>151-200</td>
</tr>
<tr>
<td>Engineering – Electrical</td>
<td>151-200</td>
</tr>
<tr>
<td>Engineering – Mechanical</td>
<td>151-200</td>
</tr>
<tr>
<td>Environmental Sciences</td>
<td>151-200</td>
</tr>
<tr>
<td>Mathematics</td>
<td>151-200</td>
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</tbody>
</table>

* QS ‘Faculty’ Rankings 2015: [www.topuniversities.com/faculty-rankings](http://www.topuniversities.com/faculty-rankings)
**QS Subject Rankings 2015: [www.topuniversities.com/subject-rankings](http://www.topuniversities.com/subject-rankings)**

**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.

**Equal Opportunities Policy**

Trinity College Dublin, the University of Dublin is an equal opportunities employer and is committed to the 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.

**Application Procedure**

Candidates should submit a cover letter (1x A4 page maximum) explaining why you are suitable for the position, a research plan (2 page maximum), together with a full curriculum vitae to include the names and contact details of 3 referees (email addresses required) to:
Name: Sinead Gorham
Title: Administrative Officer
Email Address: sinead.gorham@adaptcentre.ie
Contact Telephone Number: +353 1896 1797

Please include the job reference IG_RF1 in the subject heading.

TRINITY COLLEGE DUBLIN, THE UNIVERSITY OF DUBLIN IS AN EQUAL OPPORTUNITIES EMPLOYER