



Post Specification

Post Title:	PhD Studentship
Post Status:	Fixed-term Contract or Specific Purpose Contract
Department/School/ Research Group:	Dept of Electronic & Electrical Engineering, School of Engineering
Location:	Aras an Phiarsaigh, Trinity College Dublin, the University of Dublin, College Green, Dublin 2, Ireland
Reports to:	Dr. Nils Peters, Assistant Professor
Terms & Conditions:	Annual stipend of 25,000 Euros + tuition fees for EU and non-EU students, excluding fees charged for student levies
Hours of Work:	Full time (~ 38 hours/week)
Closing Date:	Midnight (GMT), [29 June 2026]

Post Summary

PhD Topic: A data-driven Acoustic Digital Twin for heritage preservation and interactive experiences

Group project title: From Silence to Story: Revisiting TCD's Long Room through Acoustics and Immersive Storytelling

Core Principal investigators: Nils Peters (Engineering), Nicole Basaraba (Digital Humanities), Jennifer O'Meara (Film Studies), and Gareth W. Young (Computer Science).

Supporting Principal Investigators: Fionnuala Conway, John Kennedy, and Francis Boland.

Funding provided by: [Trinity Research Doctorate Award \(Group\)](#) 2026.

About the group project:

The renovation and public closure of Trinity College Dublin's (TCD) Long Room of the Old Library present an unparalleled opportunity to conduct pioneering research "on," "through," and "for" this iconic space. This initiative will redefine how we preserve and enhance one of Europe's premier cultural heritage landmarks. This project will delve into aspects of the Long Room that have been largely overlooked: its acoustic experiences and sonic architecture. It will use state-of-the-art robot-aided acoustic measurements and employ advanced computational and acoustic modeling techniques to create a versatile Acoustic Digital Twin, which will be combined with existing 3D image data.

This approach enables unprecedented exploration of the Long Room's physical properties, enabling new acoustic experiences for both physical and virtual visitors. Previous related research includes the "[Jonathan Swift in VR/AR Long Room Project](#)" in 2018. The From Silence



to Story project will create immersive XR experiences that preserve and reimagine the library's significance through site-specific media art and storytelling. This research will set a precedent for future heritage preservation efforts by developing a preservation-by-design strategy in collaboration with experts at TCD's digital library and the Digital Repository of Ireland. This project addresses Trinity College's research themes of "Identities in Transformation" and "Digital Humanities" by preserving and innovating the Long Room through state-of-the-art acoustic and digital technologies. By creating immersive and interactive experiences, we aim to foster meaningful connections between visitors and the cultural significance of the Long Room. Furthermore, this project aims to promote inclusiveness by enabling personalized experiences for vision- and hearing-impaired visitors and for those with diverse linguistic backgrounds and neurodivergent needs. We aim to create a resilient digital preservation system for sustainable, long-term, inclusive access.

The project's interdisciplinary PhD Team:

The project comprises four work packages, including training four PhD researchers across four disciplines, all under a unifying project goal: To preserve, enhance, and reimagine the Long Room Library's unique acoustic and cultural heritage by creating a pioneering Digital Acoustic Twin that integrates advanced acoustic measurements with immersive storytelling tools, fostering innovative interdisciplinary research and transformative cultural experiences.

Four doctoral students will be funded under this award, with specializations in the following domains: engineering (PhD-1: "A data-driven Acoustic Digital Twin for Heritage Preservation and Interactive Experiences"), computer science (PhD-2: "Advanced Computational Models and Digital Tools for Immersive Storytelling"), creative arts (PhD-3: "Audiovisual Media Experiences using the Long Room's Multimodal and Acoustic Digital Twin"), and digital humanities (PhD-4: "Sonic Narrative Approaches to Cultural Heritage - The Long Room's Digital Twin"). This unique multidisciplinary approach will provide students with invaluable experiences and skills that extend beyond traditional disciplinary boundaries, preparing them to become leaders in academic and/or industry settings.

Duties and Responsibilities of the Post

The recruited PhD fellow will be registered with the School of Engineering in the department of Electronic & Electrical Engineering under the primary supervision of Dr. Nils Peters. The PhD fellow will primarily contribute to the Work Package entitled *A data-driven Acoustic Digital Twin for heritage preservation and interactive experiences* and will focus on developing methods for creating a high-fidelity volumetric acoustic digital twin using TCD's Long Room as a case study.

The PhD fellow will also be supported through an interdisciplinary supervisory structure including Prof. Jennifer O'Meara and Prof. John Kennedy which brings together expertise across signal processing, digital media, and computational acoustics.

Research Objectives:



1. Conduct high-precision spatial acoustic measurements using state-of-the-art robotic technology in the Long Room before and after the renovation
2. Derive a high-fidelity volumetric Acoustic Digital Twin (ADT) of the Long Room based on the measured acoustic data and using deep learning methods
3. Analyse and document the acoustics by utilizing the ADT
4. Personalization of ADT's real-time audio rendering to support accessibility and inclusive storytelling

Expected Results:

1. Create Long Room's first acoustical investigation and documentation
2. Utilizing AI and robotics for advancing acoustic preservation methods of heritage sites
3. Scientific journal publications presenting findings of the acoustic analysis of the measurement data and advancements in data-driven acoustic modelling
4. Contribute to best-practice acoustic preservation guidelines to inform policy makers and other stakeholders

Standard Duties and Responsibilities for a PhD:

1. Produce a PhD thesis according to Trinity College Dublin's criteria
2. Attend/organize interdisciplinary group project research meetings
3. Identify and participate in research dissemination activities, including conference presentations and writing academic papers (in consultation with supervisor(s))
4. Identify and participate in public outreach activities (e.g., public lectures; workshops, etc.)
5. Be an active affiliate researcher of the School of Engineering (e.g., attending networking and researcher development events, etc.)
6. Engage with professional development opportunities (e.g., teaching assistance, demonstrating duties, etc.)

Person Specification

Minimum eligibility requirements for PhD entry:

The ideal candidate should hold an honours undergraduate degree in a relevant discipline (e.g. acoustics engineering, music technology, or electrical engineering). We are looking for someone that is motivated, intrigued by science and innovation, diligent and communicative; and overall a good team player.

Skills and competencies:

Essential:

1. Commitment to interdisciplinary research approaches
2. Strong academic writing skills in the English language
3. Excellent research and project management skills
4. Knowledge of acoustics, auditory perception, DSP, statistics, machine learning

Desirable:



1. A master’s degree in a related subject (e.g., Electrical Engineering, Audio Technology), ideally with distinction
2. Software skills: room simulation software (e.g., CATT, Raven), programming (e.g., Matlab, Python, C/C++), audio software)
3. Experience in a cross-cultural or dynamic workplace/environment

Application Procedure

Applicants should submit:

1. Cover letter, stating the suitability and motivation for this PhD with reference to past relevant experience and achievements
2. CV, including relevant experience, undergraduate results, postgraduate results (if applicable)
3. Academic transcripts
4. References: Names and email addresses of two academic referees
5. Relevant publications

Please submit the above-mentioned documents as a SINGLE PDF **by the 29th of June 2026** to: Prof. Nils Peters, nils.peters@tcd.ie.

Online interviews will take place **in early July**.

Further Information for Applicants

Link to PI profile	https://peoplefinder.tcd.ie/petersn
Sigmedia Lab	https://sigmedia.tv
Project Website	https://dh.tcd.ie/projects-2/from-silence-to-story
Why TCD	https://www.tcd.ie/study/international/why-trinity

Trinity College Dublin, the University of Dublin

Trinity is Ireland’s leading university and is ranked 75th in the world (QS World University Rankings 2026). Founded in 1592, the University is steeped in history with a reputation for excellence in education, research, and innovation.

Located on an iconic campus in the heart of Dublin’s city center, Trinity has 22,000 undergraduate and postgraduate students across our three faculties – Arts, Humanities, and Social Sciences; Engineering, Mathematics and Science; and Health Sciences.

Trinity is ranked as the 31st most international university in the world (Times Higher Education Rankings 2024) and has students and staff from over 120 countries. 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 19 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. Trinity is also home to 5 leading flagship research institutes:

- Trinity Biomedical Sciences Institute (TBSI)
- Trinity College Institute of Neuroscience (TCIN)
- Trinity Translational Medical Institute (TTMI)
- Trinity Long Room Hub Arts and Humanities Research Institute (TLRH)
- Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN)

Trinity is the top-ranked European university for producing entrepreneurs for the past five successive years and Europe's only representative in the world's top-50 universities (Pitchbook Universities Report).

Trinity is home to the famous Old Library and to the historic Book of Kells as well as other internationally significant holdings in manuscripts, maps and early printed material. The Trinity Library is a legal deposit library, granting the University the right to claim a copy of every book published in Ireland and the UK. At present, the Library's holdings span approximately 6.5 million printed items, 400,000 e-books and 150,000 e-journals.

With over 120,000 alumni, Trinity's tradition of independent intellectual inquiry has produced some of the world's finest, most original minds including the writers Oscar Wilde and Samuel Beckett (Nobel laureates), the mathematician William Rowan Hamilton and the physicist Ernest Walton (Nobel laureate), the political thinker Edmund Burke, and the former President of Ireland Mary Robinson. This tradition finds expression today in a campus culture of scholarship, innovation, creativity, entrepreneurship and dedication to societal reform.

Rankings

Trinity is the top ranked university in Ireland and ranked 75th in the world (QS World University Rankings 2026). Trinity ranks in the top 100 in 18 subjects (QS World University Rankings by Subject 2025). Full details are available at: www.tcd.ie/research/about/rankings.

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 experts in the area. Applications will be acknowledged by email.

Given the degree of co-ordination and planning to have a Selection Committee will only be 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.



Trinity College Dublin
 Coláiste na Tríonóide, Baile Átha Cliath
 The University of Dublin

The Selection Committee will conduct interviews online via video call in early to mid-July 2026. The University’s selection methods may include any or all of the following: Interviews, Presentations, References, and Supplementary Documents.

Applications are open to EU and Non-EEA applicants. This PhD Award will cover tuition fees of EU/Non-EEA applicants. Applicants must have been resident in an EU member state for three out of the last five years to be eligible for EU fees. Non-EEA candidates should note Ireland's requirements for study visas.

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 traveling 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>.

Application Procedure

Application Deadline: 29 June 2026
Applicants should submit a completed application package to: Name: Nils Peters, Assistant Professor School: School of Engineering, Trinity College Dublin Email Address: nils.peters@tcd.ie



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