Post Specification

Post Title:	PhD student
Post Status:	4 year contract
Funded by:	IPIC research centre (SFI)
Location:	Trinity College Dublin, School of Computer Science & Statistics
Salary:	€18,500 plus fees paid
Closing Date:	Until position filled

Open position

Novel optical access and metro networks are essential to support fast growing capacity requirement, driven by novel 5G and 6G networked applications. Flexibility is an essential feature, driven by novel reconfigurable components. These however require the development of intelligent control planes to autonomously manage network requests, maintaining high availability and optimal resource utilization.

One PhD studentships is available for work in the **area of optical communications in support of 6G networks**. The work will be developed around open optical systems, software defined networks control planes and network virtualisation and will include both access and metro networks.

The work will involve **development of intelligent control plane mechanisms** to satisfy requirements of high capacity, availability, heterogeneity, and low latency, required by future 6G networks.

The applicants should have a solid theoretical background but willing to engage in testbed-oriented research. The work will be **carried out in the new OpenIreland research infrastructure**, a large-scale testbed for experimentation in optical, wireless and cloud technologies.

The position will be based in the CONNECT research centre at Trinity College Dublin, Ireland and will be funded for 4 years. The student will also be part of the School of Computer Science and Statistics in TCD.

The position will be under the direction of **Prof. Marco Ruffini.**

Qualifications

The candidate must have a Bachelor degree (Master preferred) in Electrical Engineering, Computer Engineering, Physics, Computer Science, or a related field, with a minimum mark of

2.1 (i.e. with a score higher than 60%). First class honour (mark higher than 70% is desired). The successful candidate will join a team of highly skilled and innovative researchers in next generation wireless and optical networks.

Essential Knowledge & Experience
- Knowledge of networking both at physical layer and protocols (layer2/layer3).
- Knowledge of machine learning theory and algorithms.
- Working knowledge of python programming language and Linux operating system
- Excellent written and oral communication skills
- The ability to work well in a group.
- Strong self motivation and willing to learn attitude

Desirable Knowledge & Experience
- Experience with network-oriented programming.
- Interest in one of more of the following areas: software defined radio, open optical systems, software defined networks control plane, virtualisation and orchestration.
- Working knowledge of programming languages such as c++, java.

Post Funding
The post is funded by Science Foundation Ireland (SFI) through the IPIC research centre. IPIC is an SFI funded centre with a diverse team of over 200 researchers located across Ireland's leading universities and institutes of technology, working together to deliver research excellence, transitioning this research into market leading products with industry partners, and training future photonics research leaders. IPIC is one of a network of SFI Research Centres focused on Ireland's national priority research areas.

IPIC's outputs include 100 publications per year, with 40% in the top 10% journals, and over 20 PhD level trainees per year with over 60% departing to industry. Recent achievements include securing 37 awards in the highly competitive H2020 programme, representing an investment of €24M, and we have seen many of our technologies progress to market through companies such as Facebook Reality Labs, Agilent Technologies, Eblana Photonics and Rockley Photonics.

Post Location
The post will be hosted at the CONNECT (formerly CTVR – www.ctvr.ie) is Ireland's largest telecommunications research centre. The Centre carries out industry-informed research focusing on wireless and optical networks of the future with a strong emphasis on the technologies that will underpin these networks.

We pride ourselves in carrying out research that is of the highest quality and that has international impact. We also pride ourselves in being an inclusive, diverse, creative, and friendly place to work.

Trinity College Dublin

Founded in 1592, Trinity College Dublin is the oldest university in Ireland and one of the older universities of Western Europe. On today's campus, state-of-the-art libraries, laboratories and IT facilities, stand alongside historic buildings on a city-centre 47-acre campus.

Trinity College Dublin offers a unique educational experience across a range of disciplines in the arts, humanities, engineering, science, human, social and health sciences. As Ireland's premier university, the pursuit of excellence through research and scholarship is at the heart of a Trinity education. TCD has an outstanding record of publications in high-impact journals, and a track record in winning research funding which is among the best in the country.

TCD has developed significant strength in a broad range of research areas including the 18 broadly-based multi-disciplinary thematic research areas listed below.

Sustainable Environment	Next Generation Medical Devices	Identities in Transformation
Smart and Sustainable Cities	Creative Technologies – Digital Media, Arts and Entertainment	International Development
Cancer	Neuroscience	Immunology and Infection
Nanoscience	Telecommunications	Creative Arts Practice
Inclusive Society	Mathematics of Complexity	Intelligent Media and Human Communication
Ageing	International Integration	Digital Humanities

Its current flagship interdisciplinary research institutes are in areas such as biomedical science, arts and humanities, neuroscience, international integration studies, and nanostructures and nanodevices. The construction of Ireland's first purpose built nanoscience research institute, CRANN, was opened in January 2008, which houses 150 scientists, technicians and graduate students in specialised laboratory facilities.

The building also includes an innovative public venue, the Science Gallery. In 2011, it received the Shorty Award for Best Cultural Institution on Twitter globally and the Irish Web Award for Best Education and Third Level Website. These joined a list of awards that includes European Museum of the Year Award – Special Commendation 2010 and National IT award for best use of technology in education, 2009.

The recently opened Trinity Biomedical Sciences Institute (TBSI) is an unprecedented development for Biomedical Research in Ireland, both in terms of scale and ambition. It

provides a facility for TCD to continue its upward trajectory in both basic and translational research programmes, notably in the areas of Immunology, Cancer and Medical Devices.

The Library of Trinity College is the largest research library in Ireland and is an invaluable resource to scholars. In addition to purchases and donations accrued over four centuries, the College has had 200 years of legal deposit. By this right Trinity can claim a copy of every book published in Ireland the UK. The Library has over 4.25 million books, 22,000 printed periodical titles and access to 60,000 e-journals and 250,000 e-books. The Library's research resources also include internationally significant holdings in manuscripts (the most famous being the Book of Kells), early printed material and maps. Its collections and services support the College's research and teaching community of 15,000+ students and academic staff.

Trinity continues to attract intellectually strong students from Ireland and abroad. More than half of its incoming undergraduates have earned in excess of 500 out of a maximum 600 points in the national Leaving Certificate examination. The accessibility of a Trinity education to all students of ability is also very important. Trinity College was the first university in Ireland to reserve 15% of first year undergraduate places for students from non-traditional learning groups – students with a disability, socio-economically disadvantaged students as well as mature students. The College has met its target in this respect. There is also an exciting international mix of its student body where 16% of students are from outside Ireland and 40% of these students are from outside the European Union. TCD students also have an opportunity to study abroad in other leading European universities through Trinity's partnership agreements.

Students also benefit from a scholar teacher model where they have the opportunity of being taught by world-leading experts in their field. Interdisciplinarity forms a key element in the College strategy in increasing Trinity's international standing as a research-led university.

Many of Trinity College Dublin's alumni have helped shape the history of Ireland and Western Europe. They include author, Jonathan Swift, philosopher, George Berkeley, political philosopher, Edmund Burke, wit and dramatist, Oscar Wilde, historian, William Lecky, religious scholar, James Ussher, scientists, John Joly, George Johnstone Stoney, William Rowan Hamilton and physicians, William Stokes and Denis Burkitt.

Two of Trinity College's alumni have won Nobel prizes – Ernest Walton for Physics in 1951 and Samuel Beckett for Literature in 1968. The first President of Ireland, Douglas Hyde was a graduate as was the first female President of Ireland, Mary Robinson.

Equal Opportunities Policy

Trinity College 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 together with a full curriculum vitae to include the names and contact details of 3 referees (email addresses if possible) to marco.ruffini@tcd.ie

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