TRINITY COLLEGE DUBLIN
COLÁISTE NA TRÍONÓIDE, BAILE ÁTHA CLIATH
THE UNIVERSITY OF DUBLIN

Post Specification

Post Title:	**Post-doc fellow** in Resilient 6G Networks through Robust Topology & Fungibility
Post Status:	24 months contract
Funded by:	Research Ireland
Location:	**Trinity College Dublin**, School of Engineering
Salary:	Commensurate with experience and achievement (salary scale range starting from €60,225)
Closing Date:	Until position filled

Open position

This post-doc project aims to create a comprehensive analytical model for capturing and quantifying network criticality and robustness metrics, employing wavelet packet transform for algorithmic fungibility. This framework will be inspired by the concept of degeneracy from biological networks.

One **post-doc fellowship** is available to work on **Resilient 6G Networks through Robust Topology & Fungibility**, in relation to *Predicting Degeneracy and Alternative Decision-Making*. In this postdoc project, the aim is to apply the concept of degeneracy from biological networks to improve the resilience of future 6G networks against cyberattacks and failures. Our research aims to answer critical questions: How can we identify the emergence of network degeneracy? And then, how can we infer the existence and level of degeneracy as the network topology evolves? The insights gained from estimated degeneracies will serve as a metric to quantify fungibility and inform decisions regarding the degree of interchangeability between different networks resources, components, and functions.

The position will be based in the CONNECT research centre at Trinity College Dublin, Ireland and will be funded for **24 months**. The post-doctoral fellow will be part of the School of Engineering in TCD. **The position will be under the direction of Prof Nicola Marchetti (Trinity College Dublin), in collaboration with Dr Indrakshi Dey (South East Technological University).**

This postdoc project is part of a larger research project named **'PlastG (Fungibility in Mobile networks for Resilient 6G)**', supported by Research Ireland and NSF, under the US-Ireland R&D Partnership Programme. The post will also entail possible collaborations within the CONNECT (https://connectcentre.ie/) which is Ireland's largest telecommunications research centre.

Qualifications

The candidate must have a PhD in Electronic Engineering, Computer Engineering, Computer Science, or a related field. Equivalent experience to a PhD will also be considered. Salary will be commensurate with experience and achievement. The successful candidate will join a team of highly skilled and innovative researchers in next generation wireless networks.

Required Knowledge & Experience

- Interest in at least two of the following areas: self-organising networks, AI/machine learning for 6G networks, graph theory
- Strong background in software design for telecoms applications, networks, components (e.g., protocol implementation, PHY/MAC algorithms)
- Familiarity with complex systems science and/or self-organising networks
- Established track record of publication in leading journals and/or conferences, in the area of communication theory and engineering
- The ability to work well in a group, and the ability to mentor junior researchers, such as PhD students
- Working knowledge of machine learning theory and algorithms
- Working knowledge of programming languages such as c++, java, python
- Excellent written and oral communication skills
- Strong self-motivation and willing to learn attitude

Post Funding

The post is funded by Research Ireland.

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.

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.

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.

Four of Trinity College's alumni have won Nobel prizes, in Physics (1951), Literature (1968), Peace (1976), and Medicine (2015). The first President of Ireland, Douglas Hyde was a TCD graduate as was the first female President of Ireland, Mary Robinson.

Application Procedure

Candidates should submit a cover letter together with a **curriculum vitae to include the names and contact details of 3 referees (along with their email addresses)** to:

nicola.marchetti@tcd.ie

Prof Nicola Marchetti,
Electronic & Electrical Engineering, Aras an Phiarsaigh
Trinity College, Dublin 2, Dublin, Ireland