



## POSTGRADUATE RESEARCH OPPORTUNITY

**Project Title:** Transforming Humanitarian  
Response through Earth observation,

open-data Analytics and Digital-twin Simulation (THREADS)

**Short Project Description:** This project investigates how open crisis, climate-risk and satellite data can be better used in humanitarian, climate adaptation and development scenarios. Platforms such as the Humanitarian Data Exchange (HDX), UNHCR's Operational Data Portal, Armed Conflict Location & Event Data (ACLED), NASA's EarthData and emerging public climate-risk and vulnerability datasets have opened large volumes of humanitarian and conflict data, with earth-observation (EO) now providing near-real-time images of damage, flooding and access (OCHA Centre for Humanitarian Data, 2025; Shah et al., 2023). However, major information gaps and limited implementation of digitalisation approaches (Patil et al., 2023; Jayadi, 2025) mean that humanitarian organisations face significant challenges for operational, tactical and strategic planning in both emergency and development scenarios, and in building climate-resilient Water, Sanitation and Hygiene (WASH) systems. THREADS will develop practical ways to pull these "threads" together. It will design and test models that use humanitarian, climate-risk and satellite data to mimic how relief systems behave under climate stress, and to explore "what-if" scenarios for climate-resilience and adaptation decisions under uncertainty. These models will be built as early versions of "digital twins": living digital representations that can be updated as AI-ready data arrive (Zaidi et al., 2024). The main outcomes will be: (i) a tested framework for turning open data into decision-support models; (ii) openly documented case examples; and (iii) practical guidance for agencies on when and how such models can improve the speed, targeting and transparency of humanitarian and WASH response, while making the limits and uncertainties of the data explicit.

**Type of Degree Offered:** Masters by Research

**Duration of Project:** 24 Months

**Funding Agency:** TU RISE

The funded research opportunity includes:

- Full fee waiver for two years
- €17,000 annual stipend
- €1,500 per annum towards research materials/expenses



Rialtas na hÉireann  
Government of Ireland



Arna chomhchistiú ag  
an Aontas Eorpach  
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Tionól Réigiúnach  
an Deiscirt  
Southern Regional  
Assembly

HEA

An tÚdarás um Ard-Oideachas  
The Higher Education Authority

TUS RISE is co-funded by the Government of Ireland and the European Union through the ERDF Southern, Eastern & Midland Regional Programme 2021-27.

### Minimum Qualifications/Experience Necessary/Any Other Requirements:

The candidates must have a primary degree in a field related to management science, operations research, industrial engineering, data science, computer science, business analytics or a cognate area. Minimum classification of *2.1 honours or equivalent*.

Candidates must also have:

- Demonstrated quantitative and analytical ability, including comfort with probability, statistics and mathematical modelling.
- Working proficiency in a scientific programming language, preferably Python or R, for data acquisition, cleaning and analysis. Evidence may take the form of coursework, a final year project, a portfolio or professional experience.
- Ability to work with heterogeneous, incomplete and imperfectly documented secondary datasets, and to reason explicitly about data quality and uncertainty.



# TUS

**Technological University of the Shannon  
Midlands Midwest**

Ollscoil Teicneolaíochta na Sionainne:  
Lár Tíre Iarthar Láir

Prior experience with simulation software and geospatial data and/or interest in humanitarian operations is desirable.

IELTS [International English Testing

System] Applicants must have a minimum of 6.5 with no component score less than 6.0.

**Project Lead Supervisor:** Dr Paul Liston

**For further information, please contact:** paul.liston@tus.ie

Closing date for receipt of completed application form is 30<sup>th</sup> September 2026. Interviews will take place within subsequent weeks.

**Download TUS Scholarship application form below, put project title in the subject line and email pro@tus.ie:**

<https://tus.ie/rdi/research/office/funded-research/>