Master by Research Opportunities in Digital Health – DHP-Transform Project

(Dublin City University, Maynooth University)

Supervisors:

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Keywords: Digital Transformation, Framework, Health, Implementation, Patterns, Interoperability, Standards.

Description:

We offer students an opportunity to join the exciting **DHP-Transform project** in an interdisciplinary collaboration among University of Limerick (UL), National University of Ireland, Galway (NUIG), Maynooth University (MU), and Dublin City University (DCU). The DHP-Transform project aims to design, develop and evaluate a model for digital health transformation (DHT). As DHT is not a straightforward application of digital technologies to healthcare, the healthcare process needs to be restructured. DHT influences behaviour, care pathways, and processes, causing stakeholders and technologies to co-operate in novel ways.

Funded by Lero, the Science Foundation Ireland Research Centre for Software, this project is located at the nexus of digital and healthcare design, with a strong reliance on advanced model driven development technologies and data science support. The two students will work as part of the multidisciplinary DHP-Transform team drawn from the specialties of Data Science as well as Computer Science. The positions offer research, design and development responsibilities covering the Computer Science and Software aspects within the DHP-Transform project. Initially, one student will be registered in DCU and another student will be registered in MU. Students will collaborate and will be jointly supervised by Dr. Silvana Togneri MacMahon (Dublin City University), Prof. Markus Helfert (Maynooth University), and Dr. Marco Alfano (IVI, Maynooth University), contributing to the deliverables of the project. A possibility of transferring to a PhD program can also be explored.

The roles of the two students will cover research, software system design and development to understand how AI-enabled DHT impacts data/information streams, interoperability architectures and regulatory environment and build a platform that interconnects health data coming from heterogeneous sources, by following standards and guidelines, and implement DHT through the use of AI.

The successful candidates will be registered respectively at Dublin City University, working at School of Computing and Maynooth University, working at the Innovation Value Institute, a world-class and interdisciplinary research environment. They will be additionally affiliated with Lero, the Science Foundation Ireland Research Centre for Software.

Benefits:

The fully funded M.Sc. positions offer (subject to sufficient progress):

- A 18.500 Euro stipend per annum (max 2 years).
- Tuition fees (max 2 years, fees beyond the 2 years will be the responsibility of the student).
- Funding for equipment and conferences/publications (subject to approval).

The two students will gain access to exceptional student facilities and services (such as, clubs, concerts, sports centre, campus pubs, etc.).

Job Requirements/ Experience/ Skills

We are particularly seeking two people who possess the following attributes/ skills:

1. A degree (level 8 NFQ) in Computer Science, Information Systems, or similar disciplines
2. Ability to work as part of an interdisciplinary team.
3. Students must satisfy minimum English language requirements for the institution in which they are registered (for DCU look at https://www.dcu.ie/registry/english-language-requirements-non-native-speakers-english-registry#tab-114966-2, for MU look at https://www.maynoothuniversity.ie/study-maynooth/postgraduate-studies/courses/phd-business-management)
4. Be self-motivated, output driven, and have good communication (oral and written) and presentation skills
5. Knowledge and experience in three or more of the following areas:
   - Development in Php, Javascript, and other programming languages/paradigms
   - Familiarity and experience of Model Driven Design and Development concepts and tools

○ Familiarity with agile software development, agile project management, DevOps
○ Ontologies, linked data or similar domain description techniques
○ Data science/analytics, information system design and development

Desirable competencies:

The following attributes are desirable, but not required:

- Experience and understanding of data modeling and management
- User interface design (HCI, UX), web development (Angular JS or equivalent)
- Experience with machine learning tools (e.g., Scikit-learn, Tensorflow, PyTorch, etc.)
- Knowledge of Standards
- Evidence of report writing skills
- Track record of publications/and conference papers in Computer Science, Information Systems, or similar disciplines.

The Universities

Dublin City University (DCU) is a research-intensive, globally engaged, dynamic institution that is distinguished by both the quality and impact of its graduates and its focus on the translation of knowledge into societal and economic benefit. Excellence in its education and research activities has led to DCU's consistent ranking (THE; QS) as one of the world's leading young universities. With a strong commitment to research excellence the University is home to a number of internationally renowned research centres in specific areas of Science, Digital Innovation, Engineering, Humanities, Social Sciences, Education and Business. As Ireland's University of Enterprise, DCU is renowned for its commitment to innovation and entrepreneurship, and its proactive engagement with the enterprise sector. DCU has created an environment that promotes and rewards research, scholarship, innovation, entrepreneurship and external engagement. This enables DCU to maintain and develop our areas of research excellence while encouraging researchers and partners from different disciplines to work and advance together.

Maynooth University is a very distinctive university, a collegial institution focused on science and engineering, humanities, and social sciences, and equally committed to research, teaching and community engagement. Located in Ireland's only university town, its distinctive features and character owe much to its unique history and heritage. It provides a high-quality educational experience to over 13,500 students on a campus with 18th century roots and 21st century dynamism.
Maynooth's unique collegial culture fosters an interdisciplinary approach to research, which

its world-class academics bring to bear in tackling some of the most fundamental challenges facing society today. The University's research institutes and centres consolidate and deliver this impact as vibrant communities of learning, discovery and creation. Research at Maynooth also is very much central to its teaching and the University prides itself on placing equal value on its research and teaching missions.

The **Innovation Value Institute** (IVI) at Maynooth University is a multidisciplinary research centre focused on digital transformation, technology management & adoption challenges. The institute was founded in 2006 in collaboration with Intel and has a strong track record of industry collaboration both locally and internationally. IVI has an excellent dissemination capability including education and training and has a close working relationship with academic institutions internationally. The IVI Digital Health Cluster focuses on digital transformation for person-centred health and wellbeing. It recognizes the importance of people's access, comprehension, and management of health information together with the value of connectivity among the stakeholders of the healthcare ecosystem.

Lero, Science Foundation Ireland Research Centre for Software

The project is funded by Lero, the Science Foundation Ireland Research Centre for Software (http://lero.ie). Lero brings together expert software teams from universities and institutes of technology across Ireland in a co-ordinated centre of research excellence with a strong industry focus. Lero's research spans a wide range of application domains from driverless cars to artificial intelligence, cybersecurity, fintech, govtech, smart communities, agritech and healthtech. Hosted by University of Limerick, Lero's academic partners include Dublin City University, Trinity College Dublin, University College Dublin, Maynooth University, National University of Ireland Galway, University College Cork, Dundalk Institute of Technology, Munster Technological University, South East Technological University, Technological University of the Shannon: Midlands Midwest, and Atlantic Technological University.

Duration: 24 Months

Status: Full-time

Stipend: €18,500 /year (normally tax free if no other sources of income)

Commencement: September 2022 (or as soon as possible after)

For informal information enquiries please feel free to contact silvana.macmahon@dcu.ie , for DCU, and markus.helfert@mu.ie or marco.alfano@mu.ie for MU.

Application procedure:

To apply, please submit your CV to silvana.macmahon@dcu.ie, markus.helfert@mu.ie, and marco.alfano@mu.ie , including the following information:

· A cover letter describing how you meet the criteria, with a description of your previous software development experience (please indicate for which university, either DCU of MU, you are applying)

· Details of at least two referees.

· Full transcript of records of your university-level studies so far

· Previous publications or previous significant work (thesis, final year project, or similar). Links to an online free access repository are sufficient.

Shortlisted applicants may be invited to interview.

On receiving an offer, the successful applicant will be required to submit supporting documentation (e.g., Copies of degree certificates and English language competency where required).

Application End Date: Applications will be accepted until the position is filled.

Interviews will be carried out as soon as a suitable candidate is identified.