PhD Opportunity in Computer Science – SimuLimb Project

(University of Limerick)

Supervisor:

Prof Tiziana Margaria (University of Limerick)

In cooperation with Dr. Kevin Moerman (NUIG)

Keywords: Model driven development, Low code application development, Biomedical engineering, Matlab, Julia, data science, software development platforms.

Description:

We offer an opportunity to join the exciting **SimuLimb project** in an interdisciplinary collaboration between Dr. Kevin Moerman (Biomedical Engineering, NUIG) and Prof. Tiziana Margaria (Computer Science, UL). The SimuLimb project aims to create, deploy, and clinically evaluate an open-source computational framework for automated prosthetic socket design.

Funded by the Science Foundation Ireland Lero Research Centre, this project is located at the nexus of digital and biomedical design, with a strong reliance on advanced model driven development technologies and data science support. You will work as part of the multidisciplinary SimuLimb team drawn from the specialties of Biomedical Engineering as well as Computer Science. The specific position offers research, design and development responsibilities covering the Computer Science and Software aspects within the SimuLimb project, under the supervision of Prof. Margaria in UL.

Your role will cover research, software system design and development as needed to build a new generation of design, development and analytics platform for the design and evaluation of prosthetic sockets. The new platform needs to be robust and easily evolvable, so that it can include, over time, all the services needed for modern and future customization, evolution, analysis and refinement. It is an open-source open access platform, as we address among other goals also the ease of access and adoption, and the democratization of complex application development, lowering the barriers to access, adoption and proficiency. The platform will provide interfaces to the devices and facilitate the design of applications for the design and evaluation of the prosthetic sockets in a low-code approach enhanced by rigorous analysis and verification methods.

The successful candidate will additionally be affiliated with Lero – the Science Foundation Ireland Research Centre for Software. 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.

Benefits:

The fully funded PhD position offers

- a 18.500 Euro stipend per annum (max 4 years),
- tuition fees
- funding for equipment and conferences/publications.

The candidate will gain access to UL's exceptional student facilities and services (such as, clubs, concerts, sports centre, campus pubs, etc.).

Job   Requirements/   Experience/   Skills
We are particularly seeking a person who possesses the following attributes/ skills:

1. A degree (level 8 NFQ – 1st class or MSc) in Computer Science or similar discipline
2. Ability to work as part of an inter-disciplinary team.
3. Be self-motivated, output driven, and have good communication and presentation skills
4. Knowledge and experience in three or more of the following areas:
    o Development in Java and other programming languages/paradigms
    o Familiarity and experience of Model Driven Design and Development concepts and tools
    o Familiarity with agile software development, agile project management, DevOps
    o Ontologies, linked data or similar domain description techniques
    o Data science/analytics, information system design and development

Desirable competences:

The following attributes are desirable, but not required:

- Experience and understanding of biomechanical or cyberphysical systems
- User interface design (HCI, UX), web development (Angular JS or equivalent)
- Experience with machine learning tools (e.g., Scikit-learn, Tensorflow, PyTorch, etc.)
- Evidence of report writing skills
- Track record of publications/and conference papers in software modelling or programming, or system level design and implementation, or software design for data analytics.

The **University of Limerick (UL)** with close to 16,500 students, including more than 2,000 international students each year, is a young and enterprising university with a proud record of innovation in education and scholarship. A survey of Irish students recently voted UL Ireland's most popular university. The dynamic, entrepreneurial and pioneering values which drive UL's mission and strategy ensures that we capitalise on local, national and international engagement and connectivity.

We are renowned for providing an outstanding student experience and employability and conducting leading edge research. Our commitment is to make a difference by shaping the future through educating and empowering our undergraduate and postgraduate students. UL is situated on a superb riverside campus of over 130 hectares with the River Shannon as a unifying focal point. Outstanding recreational, cultural and sporting facilities further enhance this exceptional learning and research environment.

Duration: 48 Months
Status: Full-time
Stipend: €18,500 /year (normally tax free if no other sources of income)
Commencement: May 2022 (or as soon as possible after)

For informal information enquiries please feel free to contact Tiziana.Margaria@ul.ie .

Application procedure:
To apply, please submit your CV to Tiziana.Margaria@ul.ie, including the following information:

- A cover letter describing how you meet the criteria, with a description of your previous software development experience
- 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.

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