



"This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 813884".



PhD Student Vacancy for the Lowcomote Project

Mining Interaction Processes in Low-Code Engineering Platforms

JK University of Linz is hiring a PhD Student for its Lowcomote Project in Linz, Austria.

The Lowcomote project

The MSCA ITN 2018 project Lowcomote will train a generation of experts that will upgrade the current trend of Low-code development platforms (LCPDs) to a new paradigm, Lowcode Engineering Platforms (LCEPs). LCEPs will be open, allowing to integrate heterogeneous engineering tools, interoperable, allowing for cross-platform engineering, scalable, supporting very large engineering models and social networks of developers, smart, simplifying the development for citizen developers by machine learning and recommendation techniques. This will be achieved by injecting in LCPDs the theoretical and technical framework defined by recent research in Model Driven Engineering (MDE), augmented with Cloud Computing and Machine Learning techniques.

The Lowcomote project will train the first European generation of skilled professionals in LCEPs. The 15 future Early Stage Researchers (ESRs) will benefit from an original training and research program merging competencies and knowledge from 5 highly recognized academic institutions and 8 large and small industries of several domains. Co-supervision from both sectors is a promising process to facilitate agility of our future professionals between the academic and industrial world.

Partners

IMT Atlantique (FR), University of York (UK), Universidad Autónoma de Madrid (ES), University of L'Aquila (IT), JK University of Linz (AT), British Telecom (UK), Intecs (IT), Uground (ES), CLMS (UK), IncqueryLabs (HU), SparxSystems (AT), Metadev (ES), The Open Group (UK)

Training activities

The training program of Lowcomote aims at enabling the recruited ESRs to develop a broad range of scientific, technical and transferable skills that will prepare them for fruitful careers in academia and industry, namely thanks to training led by world experts in the field and timely and high-quality feedback by all co-supervisors.

In particular, the network will provide training for the three main competences needed for developing future LCEPs:

- MDE, for domain analysis, language construction and code generation;
- Cloud computing, for an efficient use of the Cloud infrastructure to manage a large number of users and artefacts;
- Machine learning, for building smart assistants for citizen developers.

Other training activities will include communication, career development and plan, and entrepreneurship.



Phd. research topic: Mining Interaction Processes in Low-Code Engineering Platforms

Within the context of the Lowcomote project, the Phd candidate will work to the following specific research subject.

Objectives: Software development environments originally have been mostly considered as some kind of text editors for manipulating source code. Nowadays this view is changing as not only source code makes up a software system, but different kind of artefacts contribute to a software system such as models, configurations, etc. Therefore, the development environments are becoming a multi-faceted set of user interfaces that are designed to support various tasks such as navigation, restructuring, debugging, and delegation for different user groups. The interaction of low-code developers, in particular, when it comes to citizen programming, with the development tool and its associated user interfaces produces a continuous stream of interaction events which provides a promising data basis for improving software development. For instance, the development processes can be reconstructed and aligned or even improved with respect to the observed behavior. The main objective of this project is to provide an interaction mining framework, which allows for scalable analyses of LCEP interactions. Such a framework requires effective and efficient analysis algorithms which can deal with a huge amount of interaction history in off-line but also in online processing settings. Already existing approaches applied in different domains such as process mining for workflow systems or Web application analytics should be investigated and analyzed if they are applicable to this domain as well and which extensions and adaptations are necessary.

Expected results: The goal of the project is to provide a framework for collecting interaction histories in LCEPs, storing these histories in an efficient data structure, and provide algorithms for performing analytics. This framework will be evaluated in different scenarios such as providing recommendations in an online setting to low-code developers and providing feedback to project managers if certain development processes are efficiently executed or if improvements are necessary. Finally, studies will be conducted to verify if the usability and acceptance of LCEPs can be substantially improved by interaction mining.

Requirements

Degree: Master degree in Computer Science or equivalent providing access to PhD programs.

Language: English proficiency must be attested either through a previous English language diploma, or an internationally recognized proficiency test (at least C1 level of the Common European Framework of Reference for Languages i.e. IELTS, IBT, TOEFL or Cambridge).

Career: When starting their contract (February 2021), selected researchers should be within the first four years of their careers. This means being both within a four years window following their most recent graduation and not having been awarded a prior doctoral degree so far.

Mobility: At the time of recruitment, the researcher must not have resided, or carried out his/her activity in Austria for more than 12 months in the 3 years prior to recruitment date.

Employment conditions

Full-time Equivalent Position



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Duration: 36 months, including 2 secondments of 3 months each at other consortium members' premises (see Hosting institution section)

Starting date: 1st February 2021

Remuneration:

The gross remuneration will approximately amount €3,000 (if the researcher has no family) or €3,250 (if the researcher is married or in civil partnership).

Research, Training and Networking costs:

All relevant expenses linked to the research and training activities (travel, accommodation, etc.) will be paid by the project budget.

Hosting institution

The Johannes Kepler University Linz (JKU Linz, <http://www.jku.at>) is a young European university with a focus on the academic areas of social and economic sciences, law, natural sciences and engineering. The studies of Human Medicine were added in 2014. During its fifty year history, the university has achieved a national and international standing with its manifold achievements in research and teaching. The JKU is a campus-style university located north of the city of Linz.

As the largest institution of research and education in Upper Austria, and thus as a knowledge transfer center, the university contributes to the continual support and development of Upper Austria as a dynamic economic region. The JKU is also actively involved in competence centers, and has developed spin-off programs that support the establishment of new companies.

ESRs will be hosted at the Institute for Business Informatics - Software Engineering

Altenberger Straße 69
Science Park 3, Zwischengeschoß ZA
A-4040 Linz / Austria / Europe

The ESR will spend 2 secondments of 3 months at the premises of 2 project's members as detailed in the following table.

	Planned Secondments	Hosting Partner	Start – End Date
1	Collaborate with ESR2 on applying the prototype on industrial cases in the enterprise systems domain.	Uground (Madrid, Spain)	to be defined
2	Collaborate with ESR1 on integrating interaction knowledge in chatbots.	Universidad Autónoma de Madrid (Madrid, Spain)	to be defined

Supervisors

Manuel Wimmer, manuel.wimmer@jku.at



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Application process

All applications shall be sent by filling in the form on the Lowcomote website:

<https://www.lowcomote.eu/esr/07/>

Applications are composed of the following documents in English (and when necessary a certified translation of official documents):

1. a complete CV with references to past research and training experiences;
2. a motivation letter highlighting the consistency between the candidate 's profile and the chosen ESR position for which they are applying;
3. at least 2 reference contacts (could be substituted by a reference letter, which should be in English or in certified translation)
4. scan of the degree qualification.
5. scanned copy of valid identification document (identity card or passport)
6. proof of proficiency in English (either through a previous English language diploma, or an internationally recognized proficiency test - at least C1 level of the Common European Framework of Reference for Languages i.e. IELTS, IBT, TOEFL or Cambridge).