

ESR1

Project title: Business cases for robotisation, AI and process optimization in heavy duty machinery

Place of employment and planned mobility: Tampere University, Finland: 9 months - Bosch Rexroth, Germany: 18 months - Liebherr, Austria: 9 months

Supervisory team: Saku Mäkinen, Reza Ghabcheloo, Christine Brach, Manuel Bös

Project tasks and objectives: Tasks: AI, robotisation, automation, surround sensing, operator assistance, tele-operation enable new products, features and new opportunities for business cases in construction and mining. Identification of such cases requires knowledge on the technological possibilities and needs of this particular application field of industry. Understanding of industry trends, regulatory environment, and business practices is essential in foreseeing these opportunities. Furthermore, appropriate value creation, delivery and capture require sound decision-making with long time horizons.

Objectives: To investigate opportunities and restrictions in utilizing digitalization and automating business operations and design processes. Conduct field surveys and experiments in order to find drivers and barriers for automation in construction and mining industries. The project will reveal e.g. industry trends and practices, customer needs and technological factors that influence the appropriability and profitability of robotisation/automation business cases. The project will develop practical decision-making skills and broad knowledge of the state of the art in related fields. The aim is to produce an optimisation framework to allow more adaptive and flexible decision-making, by enabling simulation of different hypotheses by including different factors such as those mentioned above both from technology and business side.

The ESR will also be involved in dissemination through social media promotion of the network, such as Webropol surveys, and LinkedIn groups, YouTube video channels, Twitter and blogging.

Starting date: January 1st, 2020. Negotiable.

Duration of the work contract: 36 months/full-time contract

Trial period: 6 months

Target degree: PhD degree from Tampere University, Finland

Approximate gross salary: about 3600 EUR/month plus family allowance if applicable

Eligibility: ESR shall at the date of recruitment, be in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree. The researcher must not have resided or carried out his/her main activity (work, studies, etc) in the country of his/her first employer (Tampere University, Finland) for more than 12 months in the 3 years immediately prior to his/her recruitment.

"The applicant must be in possession of Master of Science (MSc) diploma in industrial engineering and management, or engineering such as systems engineering, automation, or other relevant topics with business/management minor."

English language requirements: Proficiency in written/spoken English is mandatory. In certain cases, we may ask for a language certificate.



Application

Closing date: 13.11.2019

The applicant must submit the following documents through [LAURA portal](#), only a clear copy of the documents will be considered.

1. **Certified copies of the bachelor's and master's degree certificates with the Diploma Supplement (DS)** as approved by the EU Commission for degrees completed in European universities (when applicable) Official translations into English (if the original documents are in a language other than English)
2. **Curriculum Vitae/CV** (preferably in Europass format)
3. **List of publications (if any)**, your contributions in the publication
4. **References:** Contact details of 2 or more referees included in the CV
5. **Motivation letter: maximum 1 page** where you introduce yourself and present your qualifications; you may include also your previous research fields and main research results. Please emphasize your future goals career-wise
6. **Copy of the passport**
7. **Proof of residence:** statement and certificates/documents demonstrating your residence(s) in the last 4 years. [A template is available on the website under How to Apply.](#)

Additional information

Working and living conditions in Finland - Finland is among the most stable, free and safe countries in the world, based on prominent ratings by various agencies. It is also ranked as one of the top countries as far as social progress is concerned. Tampere is counted among the major academic hubs in the Nordic countries and offers a dynamic living environment. Tampere's region is one of the most rapidly growing urban areas in Finland and home to a vibrant knowledge-intensive entrepreneurial community. The city is an industrial powerhouse that enjoys a rich cultural scene and a reputation as a centre of Finland's information society.

The new **Tampere University** and higher education community began their operations on 1 January 2019. Tampere University of Technology, the University of Tampere and Tampere University of Applied Sciences are building a unique environment for multidisciplinary, inspirational and high-impact research and education, and a hub of expertise in technology, health and society. Read more [here](https://www.tuni.fi/en) (https://www.tuni.fi/en).

Working and living conditions in Germany at Bosch Rexroth

Germany is the heart of European industry and offers a high standard of living. Beyond that a sumptuous and varied scenery and stunning medieval towns and cities are offered. Germany lives up to its reputation of being clean, efficient and very welcoming. Aside from modern advances in technology and science, Germany is also rich in culture.

The **Bosch Rexroth plant** is located in Elchingen and about 15 km away from Ulm, which is well known for the worlds highest church tower "Ulmer Münster". Ulm is a lovely small city with about 125.000 residents between Munich and Stuttgart and offers thanks to the university of Ulm and the nice historic downtown attractive living conditions.

Bosch Rexroth is an innovative company specialized in machines and systems of any size and has global application experience in market segments such as Mobile Applications, Machinery Applications and Engineering, Factory Automation and Renewable Energies. Bosch Rexroth is in the cutting edge of forming the next generation of mobile machines using electrified, electronic and digitally networked solution in order to increased power, safety, efficiency and intelligence of future Mobile Machines.



Working and living conditions in Austria at Liebherr - Situated about 45 minutes south of the city of Salzburg, Liebherr's Bischofshofen factory is the global competence centre for the group's wheel loaders. Surrounded by mountains of the Northern Limestone Alps, the site is specialised in the development, production and international marketing and sales of wheel loaders ranging from 4 t to well over 35 t gross weight - a product range of smart and efficient machines characterized by continuous innovation. The area offers a broad range of leisure activities in the mountains as well as cultural offerings in nearby Salzburg.

