Master´s thesis worker or Doctoral Researcher to ARotor Lab
Aalto University

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Posted Oct. 30, 2024, set to expire Mar. 1, 2025

Job Title	Master´s thesis worker or Doctoral Researcher to ARotor Lab
Department	T212 Mechanical Engineering
Institution	Aalto University , , Finland
Date Posted	Oct. 30, 2024
Application Deadline	Open until filled
Position Start Date	Available immediately
Job Categories	Graduate Student
Academic Field(s)	Mechanical Engineering
Job Website	https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Master-s-thesis-worker-or-Doctoral-Researcher-to-ARotor-Lab_R41301
Apply By Email	

Job Description

Aalto University is a community of bold thinkers where science and art meet technology and business. We are committed to identifying and solving grand societal challenges and building an innovative future. Aalto has six schools with nearly 11 000 students and a staff of more than 4000, of which 400 are professors. Our main campus is located in Espoo, Finland. Diversity is part of who we are, and we actively work to ensure our community’s diversity and inclusiveness in the future as well. This is why we warmly encourage qualified candidates from all backgrounds to join our community.

The School of Engineering is one of the six schools of Aalto University. The main task of the School of Engineering is to renew technologies related to the technical industry and the built environment through scientific research, technological innovation and inspiring education. Our objective is to create new knowledge, information and solutions to serve the goals of sustainable development. Our research

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topics are highly relevant to the surrounding society, connecting theory with practice. Collaborative projects with the technological industry and the surrounding society have been a trademark for decades. Our research focus areas are Multidisciplinary Energy Technologies, Sustainable Built Environment, Marine and Arctic Technology, Mechanics and Materials, and Systems Design and Production.

The Department of Mechanical Engineering at the ARotor lab is looking for a

Doctoral Researcher / Master thesis worker

The position is suitable for person interested in signal processing for condition monitoring of paper and steel machinery. The application is for a master’s thesis or doctoral studies. After successfully completing the master’s thesis, the student can proceed to doctoral studies. The work will be conducted in a collaboration project between an industrial partner and ARotor lab in Mechatronics research group. In practice, the aim of the work is to deploy modern signal processing in condition monitoring, and to study their performance.

Please note that the skills listed in this document will be considered asset, but mastering all of them is not required.

Skills we are looking for: * Programming Python / Matlab * Version control * Signal processing and data science * Mechanical engineering on Rotating machinery * Mechanics of materials / vibrations of structures * Paper science and engineering

Description of the project

In many industrial processes such as paper, cardboard and steel making, the end product is formed by rolls. Ensuring an accurate geometry and rotating motion is important in the process to enable higher production speeds with a satisfactory product quality. This research aims to develop improved methods for roll service, where in-process data is used in roll service to improve the behavior of the rolls in the process.

The public BETTER project aims to advance signal processing science and its applications in following ways: * Develop and apply novel signal processing methods for extracting repeating patterns caused by individual rolls, pumps, felts and other rotating components from measured machine direction quality (MD) variation. * Create useful and convenient metrics for online condition monitoring of single machine elements to quantify their individual significance to the quality of the end product in the process. Using these metrics, the longer term development of the patterns due to wear of the machine

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elements will be studied. * Conduct an experiment where the measured quality variation connected to a roll is used to grind a compensative geometry on the roll to eliminate or reduce the quality variation, as rolls and machine elements are known to deform due to mechanical and thermal loads in the production process. Simultaneously, the experiment is used to assess how well the extracted roll patterns correspond to measured geometry errors in the corresponding rolls. * The research will be conducted in close cooperation with consortium members from the paper, cardboard and steel industries, many of whom can directly exploit the results of the research. The new methods can be applied to improve product quality, increase uptime and to ease maintenance and condition monitoring. Additionally, novel implementations of the developed signal processing methods will become openly available for end users as well as the scientific community.

The general eligibility criteria are: * Master's or Bachelor's degree in mechanical engineering, materials science, computer science, statistics or other relevant field * Excellent written and oral skills in English * Fluency of the Finnish language is considered a benefit * Applicants must be able to work full-time and as soon as possible when applying to the doctoral programme. Applicants must be able to meet the official eligibility and admission requirements for the Doctoral Programme in Technology at Aalto University during a trial period of 6 months, as defined at [url=https://www.aalto.fi/en/study-options/aalto-doctoral-programme-in-engineering]https://www.aalto.fi/en/study-options/aalto-doctoral-programme-in-engineering

What we offer

Salary of a Master´s thesis phase is 2439 €/month (gross) full time max 6 months. After graduation the starting salary of a doctoral researcher is about 2700 € / month (gross), with possible increases based on achievements. The annual workload is currently 1612 hours. The employment contract includes occupational health care, and Finland has a comprehensive social security system. The first contract (for doctoral studies) will be made for 2 years, followed by a formal midterm evaluation. If the midterm evaluation is successful, an extension to the work contract will be made so that the total time for the doctoral studies is four years.

Aalto University’s main campus is located in Espoo, approximately 15 minutes by metro from the center of Helsinki. Helsinki is a safe, clean, green capital city with a very high quality of life. Most Finns speak English fluently. More information about living and working in Finland can be found at [url=https://www.aalto.fi/aalto-university/international-staff-information-package]https://www.aalto.fi/aalto-university/international-staff-information-package.

Ready to apply?

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If you want to join our community, please submit your application through our recruitment system by 30.11.2024, 23:59 Finnish time (UTC +2). The position will be filled as soon as a suitable candidate is identified.
To apply, please share the following application materials with us: * Motivation letter with the applicant’s contact information and an indication of the preferred starting date (max. 1 page) * CV including details of all academic merits (including publications, if applicable), and contact information of two persons who may be contacted to provide a character reference (max. 3 pages) * Copy of applicant’s most recent thesis (Bachelor’s or Masters’s thesis) * Copy of the applicant’s most recent degree certificate (Bachelor’s or Master’s) and a transcript of studies (with a clear explanation of the grading scale)
All materials should be submitted in English in a single pdf-file (compiled in the order specified above).

Please note: Aalto University’s employees and visitors should apply for the position via our internal HR system Workday (Internal Jobs) by using their existing Workday user account (not via the external webpage for open positions). Aalto University’s students and visitors should apply as external candidates with personal (not aalto) email.

Aalto University reserves the right to leave the position open, extend the application period, reopen the application process, and consider candidates who have not submitted applications during the application period.

Further information

For additional information, please contact Assistant Professor Raine Viitala (email: firstname.lastname@aalto.fi). For questions related to the recruitment system, please contact [url=mailto:paula.thomsson-leva@aalto.fi]paula.thomsson-leva@aalto.fi .

Want to know more about us and your future colleagues? You can watch these videos: [url=https://www.youtube.com/watch?v=5k_og_6zUJQ]https://www.youtube.com/watch?v=5k_og_6z and [url=https://www.youtube.com/watch?v=dUfEGVM-ZP8&feature=youtu.be]https://www.youtube.com/watch?v=dUfEGVM-ZP8&feature=youtu.be. Read more about working at Aalto: [url=https://www.aalto.fi/en/careers-at-aalto]https://www.aalto.fi/en/careers-at-aalto
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About Finland

Finland is a great place for living with or without family - it is a safe, politically stable and well-organized

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Nordic society. Finland is consistently ranked high in quality of life and was just listed again as the happiest country in the world: [url=https://worldhappiness.report/news/its-a-three-peat-finland-keeps-top-spot-as-happiest-country-in-world/]https://worldhappiness.report/news/its-a-three-peat-finland-keeps-top-spot-as-happiest-country-in-world/. For more information about living in Finland: [url=https://www.aalto.fi/services/about-finland]https://www.aalto.fi/services/about-finland

More about Aalto University:
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twitter.com/aaltouniversity
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instagram.com/aaltouniversity
Aalto University has been awarded with HR Excellence in Research quality label in European Commission, guaranteeing that we adhere to top quality HR practices in both recruitment and employment relations.

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

Contact

Finland