

Doctoral researchers in audio and statistical signal
processing
Aalto University

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Posted Jul. 10, 2024, set to expire Dec. 30, 2024

Job Title Doctoral researchers in audio and statistical signal
processing

Department T412 Department of Information and Communications
Engineering

Institution Aalto University
, , Finland

Date Posted Jul. 10, 2024

Application Deadline Open until filled

Position Start Date Available immediately

Job Categories Graduate Student

Academic Field(s) Electrical and/or Electronics

Job Website https://aalto.wd3.myworkdayjobs.com/aalto/job/Kide/Doctoral-researchers-in-the-audio-and-statistical-signal-processing_R40270-3

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 Department of Information and Communications Engineering is now inviting applications for two Doctoral researchers in audio and statistical signal processing.

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The Structured and Stochastic Modeling Group, headed by Prof. Filip Elvander, conducts research in statistical signal processing, ranging from investigating fundamental properties of the mathematical descriptions of signals, to applied research in audio signal processing, radar, and biomedical modeling. We are now looking for two outstanding doctoral researchers to join the group.

The research will be in the framework of the project “AESIR - Acoustic Estimation and Interpolation fRamework”, focusing on the modeling of acoustic environments and their effect on audio signals. In particular, the research is concerned with the estimation, sampling, and interpolation of acoustic transfer functions and impulse responses that characterize an acoustic environment. The applications of the research range from noise reduction and speech enhancement in hearing aids to rendering of sound in augmented/virtual reality.

The AESIR project

Sound processing is fundamental to many of our every-day appliances such as noise-cancelling headphones, hearing aids, as well as emerging technologies such as augmented and virtual reality. For the noise reduction to be effective or for the virtual world to sound realistic, we need accurate descriptions of the acoustics of the surrounding space. However, as you move around a room, the acoustics change as the path the sound takes changes. This poses a big challenge for sound processing applications as this implies that you would have to measure the acoustics of every inch of the room. In this project, we aim to overcome this by developing tools that allow for computing complete acoustic description from just a small number of measurements. This is done by creating a framework for comparing and interpolating acoustic properties using the concept of optimal transport. The project will not only provide researchers with powerful tools but will also pave the way for improved consumer products.

Your role and goals

As a doctoral researcher in this project, you will work on mathematical models for describing the diversity of acoustic environments and to design practical algorithms for inferring audio-relevant properties from measured data. You will contribute to the AESIR vision of building a powerful framework for modeling and manipulating acoustic properties. In the project, a cornerstone will be the use of theory and methods from optimal mass transport and convex modeling. The goal of the project is to make foundational theoretical contributions and to develop tools relevant for industry applications.

This position includes doctoral studies. The successful applicant must register for the PhD program at Aalto University School of Electrical Engineering during the contracts trial period. The nominal duration of the doctoral studies in Finland is 4 years.

Your experience and profile * MSc in Electrical Engineering, Engineering Physics, Applied

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Mathematics, or related field. * A good command of English, both written and spoken. * Good programming skills in languages such as Matlab and Python. * A curious mindset. * An interest in multi-disciplinary research * ?Eligible for PhD study at Aalto University

What we offer

The Department of Information and Communications Engineering conducts world-class research in the areas statistical signal processing, audio signal processing, and acoustics. We offer a diverse and multi-cultural workplace with strong international ties. Within the scope of the project, you will also go on research visits to our collaborators at KTH Royal Institute of Technology, Lund University, and Conservatoire national des arts et métiers.

The position will be filled in for four years (2 + 2). The starting date is November 1, 2024, or as mutually agreed. The salary is determined according to the salary system of Finnish universities. The expected starting salary is approximately 2750€/month and will increase according to the performance over time. As an employer, Aalto University provides excellent learning and development opportunities as well as occupational health care services, commuter ticket benefit and sport activities offered by Unisport. The contract includes occupational health benefits and Finland has a comprehensive social security system.

Ready to apply?

To apply for the position, please submit your application including the attachments mentioned below as one single PDF document in English through our online recruitment system by using the link ("Apply Now”) on Aalto University’s web page. Please note that we only accept applications via Workday. Your application should contain * Letter of motivation including a brief description of your research interests. * CV including list of publications * Degree certificates and academic transcripts * Contact details of at least two referees (or letters of recommendation, if already available)

The deadline for applications is August 31, 2024. Note that each position will be filled as soon as a suitable candidate is identified. For additional information, kindly contact Prof. Filip Elvander, [[url=mailto:filip.elvander@aalto.fi](mailto:filip.elvander@aalto.fi)]filip.elvander@aalto.fi. In any questions regarding the recruitment process, please contact HR Advisor Monika Mäkinen, [[url=mailto:hr-elec@aalto.fi](mailto:hr-elec@aalto.fi)]hr-elec@aalto.fi.

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

Please note: Aalto University’s employees and visitors should apply for the position via our internal

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system Workday -> find jobs (not external aalto.fi webpage on open positions) by using their existing Workday user account.

About Finland

Finland is a great place for living with or without family - it is a safe, politically stable and well-organized 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/)]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/en/careers-at-aalto/living-in-finland](https://www.aalto.fi/en/careers-at-aalto/living-in-finland)]https://www.aalto.fi/en/careers-at-aalto/living-in-finland & <https://www.aalto.fi/en/services/welcome-to-aalto-university-and-finland-info-package> .

Contact Information

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

Contact

Finland