Project Employee / Research Assistant for a Circuit design and fabrication of smart gas sensor
Aalto University

Job Title	Project Employee / Research Assistant for a Circuit design and fabrication of smart gas sensor
Department	T411 Dept. Electronics and Nanoeng
Institution	Aalto University , , Finland
Date Posted	Jan. 15, 2025
Application Deadline	Open until filled
Position Start Date	Available immediately
Job Categories	Professional Staff
Academic Field(s)	Electrical and/or Electronics
Job Website	https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Project-Employee---Research-Assistant-for-a-Circuit-design-and-fabrication-of-smart-gas-sensor_R41975
Apply By Email	

Job Description

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Aalto University is where science and art meet technology and business. We shape a sustainable future by making research breakthroughs in and across our disciplines, sparking the game changers of tomorrow and creating novel solutions to major global challenges.
Our community is made up of 13 000 students, 400 professors and close to 4 500 other faculty and staff working on our dynamic campus in Espoo, Greater Helsinki, Finland.
Diversity is part of who we are, and we actively work to ensure our community’s diversity and inclusiveness. This is why we warmly encourage qualified candidates from all backgrounds to join our community.

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The Department of Electronics and Nanoengineering conducts research and arranges related courses in the fields of electromagnetics, micro and nanotechnology, radio engineering, and space technology. The department research groups have active national and international collaboration with several institutes and companies. Research groups are working with world-class research facilities and instruments; the largest clean rooms in the Nordic countries are located in the Micro- and nanotechnology center Micronova.

The Department of Electronics and Nanoengineering is looking for either a Project Employee (M.Sc.) or a Research Assistant (Bachelor or Master level student) to work on circuit design and fabrication of a smart gas sensor.

The work is in the context of Business Finland -supported Research-to-business program and will be performed in close collaboration with industrial partners.

According to the World Health Organization, pollution and toxic gases are a contributing factor to 7 million deaths annually, 12% of global fatality. This causes a 6% loss in the global gross domestic product, as estimated by the World Bank. Thus, knowing the type and level of surrounding gases is increasingly urgent. Further issues come from climate change and the escalated geopolitical tension that can lead to the use of battle gases.

The commercial sensors made by conventional electronics have intrinsic drawbacks, e.g., high production and energy costs, low selectivity leading to false alarms, difficulty in calibrations, replacements, and recycling, which make them unable to adapt to the future sustainably.

In the sustainable smart gas sensor (SGS) project, we aim to develop a low-cost, low-energy consumption, and biodegradable multi-gas sensor by printing, and further estimating possibilities for scaling up.

The SGS project is in perfect alignment with the strategic goals of Finland, where sustainability, bio-derived materials, high-value applications, and dual-use technologies hold significant importance.

Your role and goals

The final goal of the full R2B project is to demonstrate a bio-degradable smart gas sensor, capable of detecting various analysts at low concentrations. The project consists of three major parts: sensor printing, circuit design and integration and developing of an AI algorithm.

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In this role you will design and fabricate the peripheral circuit for data acquisition and transmission and finally test the circuit and calibrate the sensor. The role requires close collaboration with our team's materials scientist for sensing measurement and AI training. You will design and fabricate the circuits board, integrating the printed sensor, to read and transmit the sensing data to the laptop or the cell phone. You will also collaborate on the sensor design, fabrication, and sensing measurement, with the team members and our partners, to build the data base for the AI training and provide feedback to material design group for sensor optimization. The goal is to demonstrate a proof-of-concept multi gas sensors based on printed nanocomposite. Together with the team, you will identify the feasible technology for large-scale sensor fabrication and circuit integration in the future as well as technical problems that need to be solved for further development.

Your network and team

The position is at the Department of Electronics and Nanoengineering of Aalto School of Electrical Engineering. The work will be done in close collaboration with potential commercial partners. Dr. Hosseini Shokouh will act as the daily manager and Prof. Zhipei Sun as the manager, but you will receive support from the entire three-person team.

Your experience and ambitions

Required and desired qualifications:
• Analog Circuit Design, OP-Amps and ADC
• Peripheral Interfacing (SPI, I2C, UART)
• Microcontroller Programming
• Embedded System Design and C Programming
• Sensor Interface and Signal Acquisition
• Hands-on experience with embedded boards (Arduino, Raspberry Pi, etc.)
• Familiarity with the fundamentals of machine learning would be advantageous.
• Problem Solving and Analytical Skills
• Ability in Team collaboration and technical presentation
• Good written and oral communication skills in English. Finnish language is not required.

What we offer
Your tasks belong to a fixed work package under the Research-to-Business project. The contract is for fixed term, equivalent to 6 months full-time workload. The planned start date is the 1st of March 2025.

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Depending on your degree qualifications, we offer either a Project Employee contract or a Research Assistant contract. The tasks can be adapted to the employee's background and knowledge. Working alongside studies is also possible, in which case the work is done part-time during the academic term.

The workplace is at the premises of the Department of Electronics and Nanoengineering, and in part at the premises of the Applied Physics department, both in Otaniemi.

Join us!

Please share the following application materials with us through our recruitment site ("Apply now!”).
• Brief cover letter (max one page).
• CV (max two pages) with a list of publications and reference contacts, if any.
• Academic transcripts of your B.Sc. and M.Sc. studies.
The deadline for applications is February 14th, 2025. We encourage you to apply as soon as possible since we aim to fill this position as soon as a suitable candidate is found. We will go through applications, and we may invite suitable candidates to interview already during the application period. You will hear from us at the latest by the end of February 2025.

Aalto University reserves the right for justified reasons 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.

Please note: Aalto University’s employees 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.

More information

For more information regarding the open position, please contact Dr. Seyed Hossein Hosseini Shokouh (seyed.hosseinishokouh@aalto.fi). In any question regarding the recruitment process, please contact HR Partner Karoliina Walldén ([url=mailto:karoliina.wallden@aalto.fi]karoliina.wallden@aalto.fi) or HR Advisor Monika Mäkinen ([url=mailto:hr-elec@aalto.fi]hr-elec@aalto.fi) .

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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 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/en/careers-at-aalto/for-international-staff]https://www.aalto.fi/en/careers-at-aalto/for-international-staff .

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Please see more of our Open Positions [url=http://www.aalto.fi/en/open-positions]here.

Contact Information

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

Contact

Finland

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