Project Worker / Research Assistant: Building AI models for adaptive gas sensing
Aalto University

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Posted Jun. 23, 2025, set to expire Dec. 31, 2025

Job Title	Project Worker / Research Assistant: Building AI models for adaptive gas sensing
Department	T304 Dept. Applied Physics
Institution	Aalto University , , Finland
Date Posted	Jun. 23, 2025
Application Deadline	Open until filled
Position Start Date	Available immediately
Job Categories	Research Scientist/Associate
Academic Field(s)	Physics - General
Job Website	https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Project-Worker---Research-Assistant--Building-AI-models-for-adaptive-gas-sensing_R43616
Apply By Email	

Job Description

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 120 nationalities, 14 000 students, 400 professors and close to 5000 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.

At the Department of Applied Physics, our pioneering research in physical sciences creates important industrial applications that hold great technological potential. Our research focuses on Materials physics, Quantum technology, Soft & living matter, and Advanced energy solutions. Topics extend

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from fundamental research to important applications. We educate future generations of research and development professionals, data specialists, technology experts, inventors, and scientists for industry and society.

The Department of Applied Physics is looking for either a Project Worker (M.Sc.) or a student Research Assistant to work on building AI models for adaptive gas sensing.

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 of 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 an AI enabled, 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 Research-to-Business project (R2B) 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 and using it to teach the sensor to selectively measure desired gases.

In this role, you will work closely with materials scientists and device engineers to collect high-quality gas sensing data and ensure its accuracy. You will develop a database of gases with clear labeling to support effective model training.

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You will design and implement AI models for the real-time analysis of gas sensing data, focusing on tasks such as gas recognition, anomaly detection, signal de-noising, and multi-gas discrimination. You will also contribute to the implementation and optimization of machine learning and deep learning models, including DNNs, CNNs, and RNNs, enhancing the performance of our sensing system by improving adaptation to new gases, accuracy, selectivity, stability, and response time.

Part of your responsibilities will include model evaluation and benchmarking through cross-validation, sensitivity analysis, and deployment testing for specific applications. You will collaborate with electrical engineers to integrate AI models into gas sensing platforms effectively. Additionally, you will support the team with other AI-related tasks as needed.

Your network and team

The position is at the Department of Applied Physics of Aalto School of Science. The work will be done in collaboration with industrial clients. Dr. Zhongpeng Lyu (zhongpeng.lyu@aalto.fi) will act as daily supervisor and Prof. Olli Ikkala as the manager. Dr. Seyed Hossein Hosseini Shokouh will provide support for technical tasks. You will also receive support from the entire team of five people as well as the project steering group.

Your experience and ambitions

Experience and knowledge required in the following areas: * Sensor Interface, Signal Acquisition, and database construction * Machine learning and neural networks fundamental and applications for sensory signal processing * Analog Circuit Design, OP-Amps and ADC * Peripheral Interfacing (SPI, I2C, UART) * Embedded System Design and Programming * 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.

The following experience and skills are considered an advantage: * Hands-on experience with embedded boards (Arduino, Raspberry Pi, etc.) * Microcontroller Programming * Task-relevant UI development skills

What we offer

Your tasks belong to fixed work packages under the Research-to-Business project. The contract is for 12 months, and part-time, as 50% of full-time-employment. 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 possible.

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The planned starting date is September 1st, 2025. The workplace is at the premises of the Department of Applied Physics, and in part at the premises of the Micronova building, both in Otaniemi.

Join us!

Please share the following application materials with us through our recruitment site, by clicking the “Apply now!” button on the website. Note that incomplete applications will not be accepted. * Brief cover letter (max one page). * CV (max two pages) with a list of publications and reference contacts, if any. * Academic transcripts and degree certificates of your B.Sc. and M.Sc. studies.

The deadline for applications is Friday, the 1st of August 2025. 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 on the first week of August.

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). If you are a student or visitor at Aalto University, please apply with your personal email address (not aalto.fi) via [url=https://www.aalto.fi/en/careers-at-aalto]Aalto University open positions

For more information regarding the open position, please contact Dr. Zhongpeng Lyu ([url=mailto:zhongpeng.lyu@aalto.fi]zhongpeng.lyu@aalto.fi). In any question regarding the recruitment process, please contact HR Advisor Hanna Multisilta ([url=mailto:hanna.multisilta@aalto.fi]hanna.multisilta@aalto.fi)

Want to know more about us and your future colleagues? You can watch these videos:

[url=https://www.youtube.com/watch?v=i8zawpNMVG8]This is Aalto University! [url=https://www.youtube.com/watch?v=5k_og_6zUJQ]Aalto University - Towards a better world and [url=https://www.youtube.com/watch?v=ZK6pDWm1_CE]Shaping a Sustainable Future.

Read more about working at Aalto: [url=https://www.aalto.fi/en/careers-at-aalto]Careers at Aalto | Aalto University

Check out our new virtual campus experience: [url=https://virtualtour.aalto.fi/]Aalto University - virtual campus tour

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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 listed again as the happiest country in the world: [url=https://worldhappiness.report/news/world-happiness-report-2025-people-are-much-kinder-than-we-expect-research-shows/]World Happiness Report 2025

For more information about living in Finland: [url=https://www.aalto.fi/en/careers-at-aalto/for-international-staff]Aalto Careers for International Staff.

Contact Information

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

Contact

Finland