Professor in Hard Real-Time Embedded AI for Autonomous Vehicles
KU Leuven

Job Title	Professor in Hard Real-Time Embedded AI for Autonomous Vehicles
Department	Faculty of Engineering Technology - Department of Electrical Engineering https://iiw.kuleuven.be/onderzoek/eavise
Institution	KU Leuven Sint-Katelijne-Waver, , Belgium
Date Posted	May 29, 2024
Application Deadline	Aug. 20, 2024
Position Start Date	Sep. 1, 2025
Job Categories	Assistant Professor Associate Professor Professor
Academic Field(s)	Electrical and/or Electronics
Job Website	https://www.kuleuven.be/personeel/jobsite/jobs/60308873
Apply Online Here	https://webwsp.aps.kuleuven.be/esap/public/ui5_ui5/sap/zh_erc_esol_go/index.html?sap-ui-language=EN&vacaturenummer=60308873&toepassing=HVY
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Job Description

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KU Leuven has a full-time academic vacancy in the area of hard real-time embedded AI at the De Nayer Campus. We are looking for internationally orientated candidates with an excellent research record and with educational competencies within the field of embedded software, strongly focussed on hard real-time applications such as autonomous vehicles. The successful applicant will be appointed in the Department of Electrical Engineering (ESAT) and the Faculty of Engineering Technology of the Science, Engineering and Technology Group of KU Leuven.

The Faculty of Engineering Technology has an extensive national and international network, both in the academic and business world.

The EAVISE research group is a multidisciplinary research group at De Nayer Campus, Sint-Katelijne-Waver and it has members belonging to the research groups PSI (Processing Speech and Images) of the Electrical Engineering department (ESAT) and DTAI (Declarative Languages and Artificial Intelligence) of the Computer Science department. The EAVISE research group performs research on demand-driven applications of state-of-the-art algorithms for artificial intelligence and computer vision in industry-specific applications. Application domains include industrial automation, product inspection, traffic monitoring, e-health, agriculture, eye-tracking research, microscopic image processing, camera surveillance, audio processing and cinematography. It can build upon a solid research infrastructure, an extensive international network, connections with companies and non-profit organisations, a stable offer of highly talented PhD students and a supportive work environment. EAVISE actively participates in the new cross-departmental research focus at De Nayer Campus regarding green mobility, which is being intensified through this vacancy.

Research

- In this position, you expand the scope of PSI-EAVISE towards hard real-time embedded artificial intelligence, with particular attention to the area of sensing for autonomous vehicles. Within the EAVISE research group at campus De Nayer, specialized in industrial applications of state-of-the-art image and audio processing techniques and artificial intelligence, we see an increasing demand from industry for hard real-time solutions. In many industrial applications such as

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inspection and production, maximum cycle times must be effectively guaranteed. Also in safety-critical applications such as visual systems that guarantee the safety of people, a guaranteed reaction speed is of prime importance. Intelligent vehicles offer an obvious application domain of hard real-time sensing, where it must be ensured that the interpretation of sensor signals must be available within a predefined time, without sacrificing accuracy. This is the case for a broad range of solutions, from driver assistance systems for passenger cars to fully self-driving cars, but certainly also for autonomous robots and drones, vessels and other transportation systems.

- In terms of functional performance, the state-of-the-art deep learning algorithms are certainly able to handle many industrial questions, but the missing link is often the translation of these complex algorithms into a hard real-time framework on specific embedded hardware with limited resources (microcontroller, ASIC, FPGA, embedded GPU). This will require an extension of the current research at EAVISE towards embedded and hardware research. This vacancy focuses on hardware-informed embedded software, rather than on the development of hardware itself. Specific research topics this vacancy targets include hardware-aware optimization of AI algorithms, embedded hardware-software co-optimization and compilers for custom AI accelerators.
- You engage in targeted scientific research, resulting in PhD’s and publications that meet international standards and lead to broad international recognition.
- You develop an international level research program in hard real-time embedded AI, applied in particular to sensing for autonomous vehicles.
- You support or initiate a network of companies through the valorisation of research results and by delivering industrial services, aimed at strengthening industrial innovation. You also give the necessary attention to the social valorisation of your research results.
- As part of your research programme, you develop international partnerships, within the academic world as well as with industrial partners.
- You acquire competitive funding, both project-based government funding as well as industrial funding.

Teaching

- You provide high-quality education for both bachelor and master students in the field of embedded software and digital design, with a clear commitment to the quality of the programme as a whole. All professors are expected to teach a few basic undergraduate courses.
- You contribute to the faculty’s and the university’s pedagogical project through the supervision of student projects (for example bachelor’s and master’s theses) and by acting as a supervisor of PhD students.
- You develop your teaching in accordance with KU Leuven’s views on activating and researched-based education and make use of the possibilities for educational professionalization offered by

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the faculty and the university.
- Your teaching duties are determined in agreement and are based on your specific profile. The scope is limited in the first years of your appointment.

Service

- You are prepared to provide services to the scientific community, to society and to the university in function of the needs and your personal interests.
- You maintain close contact with the local industry.
- You play an active part in promoting the Faculty of Engineering Technology towards new students and the wider professional field by participating in open days, networking events and fairs, etc.

Profile

- You have a degree in engineering or an equivalent degree, and a PhD where the subject of your doctoral thesis relates to the research domain.
- You have a strong research track record in the discipline, evidenced by your publications or by your research experience in industry. You have the ambition to contribute to the valorisation of research in industry and in society. International experience is an important advantage.
- You have verifiable qualities related to academic education. Teaching experience is an advantage.
- You possess organisational skills and have a cooperative attitude. You also possess leadership competencies in a university or industry context.
- A good command of English is required. KU Leuven provides courses in academic English. The official administrative language used at KU Leuven is Dutch. If you do not speak Dutch (or do not speak it well) at the start of your employment, KU Leuven will provide language training to enable you to take part in meetings and to acquire the level of Dutch that is required for tenure. Before teaching courses in Dutch or English, you will be given the opportunity to learn Dutch resp. English to the required standard.

Offer

We offer full-time employment in an intellectually challenging environment.

KU Leuven is a research-intensive, internationally oriented university that carries out both fundamental and applied scientific research. Our university is highly focused on interdisciplinary and multidisciplinary research and strives for international excellence. In this regard, the university actively works together with research partners in Belgium and abroad and provides its students with an

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academic education that is based on high-quality scientific research.

You will work at the KU Leuven De Nayer Campus, an academic campus located about 45 km from Leuven and centred on technology and industry focused research and education. Other campuses will be able to make use of your expertise in teaching.

Depending on your record and qualifications, you will be appointed to or tenured in one of the grades of the senior academic staff: assistant professor, associate professor, professor or full professor. In principle, junior researchers are appointed as assistant professor on the tenure track for a period of 5 years. At the end of this period and a positive evaluation, they are permanently appointed (or tenured) as associate professor.

To facilitate scientific integration and research in the first phase, a research position equivalent to a PhD fellowship for 4 years is made available. If you have no other substantial funding available, you can also apply for a start-up grant of EUR 100,000, on the condition that you are appointed for at least 50%.

KU Leuven is well set to welcome foreign professors and their family and provides practical support with regard to immigration & administration, housing, childcare, learning Dutch, partner career coaching, …

Interested?

For more information on the contents of the job, please contact:

- Prof. dr. ir. Georges Gielen, departmental chair of the Department of Electrical Engineering, tel.: +32 16 32 40 76, email: georges.gielen@kuleuven.be or
- Prof. dr. ir. Raf Dewil, campus chair of the De Nayer Campus, tel.: +32 15 68 82 29, email: raf.dewil@kuleuven.be.

If you have problems submitting your application online, please send an email to solliciteren@kuleuven.be.

Add to your application following documents in English (more information is available on the KU Leuven job site):
- your biosketch in which you indicate your added value as an academic for research, education and service to society of your past career and of your future activities (maximum 2 pages);
- a file on your five most important publications or realizations;
- an extensive cv including a full publication list and if applicable a portfolio of your architectural

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projects;
- your research plan with focus on the development of your research line and research team in relation with the colleague-researchers of the entity of employment (maximum 4 pages);
- your vision on academic education and its organization (maximum 2 pages);
- your contribution to society by outreach and public communication on science and technology, internal representation in boards and councils and service activities directly in relation to your developed expertise (maximum 1 page);
- your vision on leadership (maximum 1 page).

KU Leuven places great importance on research integrity and ethical conduct and will therefore ask you to sign an integrity statement upon appointment.

You can apply for this job no later than August 20, 2024 via the online application tool

KU Leuven strives for an inclusive, respectful and socially safe environment. We embrace diversity among individuals and groups as an asset. Open dialogue and differences in perspective are essential for an ambitious research and educational environment. In our commitment to equal opportunity, we recognize the consequences of historical inequalities. We do not accept any form of discrimination based on, but not limited to, gender identity and expression, sexual orientation, age, ethnic or national background, skin colour, religious and philosophical diversity, neurodivergence, employment disability, health, or socioeconomic status. For questions about accessibility or support offered, we are happy to assist you at hr.diversiteit@kuleuven.be.

Contact Information

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

Contact Professor Raf Dewil, Chair De Nayer Campus
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