Match of the vacancy within the Strategic Goals of the Department

Global Strategic Goals of the Faculty of Engineering and Architecture at Ghent University

New members of the Professorial Staff (i.e. Assistant Professors, Associate Professors, Full Professors and Senior Full Professors) are expected to develop (research) activities aimed at engineering applications or architecture and to join, as far as is possible, existing research groups rather than to separately create (very) small new and isolated research groups.

The research activities within the Faculty of Engineering and Architecture are only partially realized by employees that are funded directly by the government (Professorial Staff, Assisting Academic Personnel, and Administrative & Technical Personnel) or through research funds provided by the university itself. Indeed, a considerable share of research activities within the Faculty of Engineering and Architecture is realized by researchers that are funded through external national/Flemish or international resources (e.g., FWO-Flanders/Research Foundation-Flanders, VLAIO-Flanders/Flanders Innovation & Entrepreneurship, EU, contract research in cooperation with companies). While the latter concerns external funding, the research activities are in fact managed by internal Professorial Staff members that succeed in acquiring external funding based on their expertise and experience.

If the Faculty of Engineering and Architecture wants to safeguard its competitive position (internationally and nationally), it will continuously have to succeed in acquiring the necessary external funding. It is therefore the Faculty's strategy to preferably create vacancies in domains in which chances are high that such external funding can be acquired. This aspect is explicitly considered during the appointment procedure of Professorial Staff members within the Faculty of Engineering and Architecture.

Strategic Goals of the Department - match with the vacancy

The Department of Information Technology (INTEC) provides high quality education from undergraduate to postgraduate level based on the excellence of its research. To excel internationally, research efforts focus on carefully chosen domains so as to achieve a critical density in each of them. An important aspect of INTEC's research strategy is to assure its relevance through a close cooperation with industrial partners, often in the framework of European Union projects and in close cooperation with IMEC. Another cornerstone of its education and research strategy is to instill entrepreneurship and to stimulate spin-off incubation in line with the technology transfer policies of Ghent University.

The full-time position in "Hardware Accelerated AI" is intended to further strengthen the research potential of the IDLab research group. This research group has a strong track record in innovative machine learning models and has broad experience tailoring such models for specific demanding (industrial) context.

The current approach in training and deploying these models typically makes use of power hungry, general purpose GPU-facilities. However, efficient training and inference requires an accurate mapping and scheduling of the computational operations onto the hardware components. Algorithmic researchers often do not take into account these constraints in their design phase. In addition, innovative HW-approaches (including, but not limited to, neuromorphic paradigms, analog computing, chiplet-based design) can substantially help reducing power and computational budgets and enable novel algorithmic paradigms, provided that these algorithms are designed to leverage on the strengths of these novel technologies.

Closing the gap between AI-model design and the HW/SW-stack these models will be deployed on during training and inference phases, is expected to bring huge advantages in power consumption and/or processing speed. The ideal candidate for the vacancy is therefor expected to close the gap in cutting-edge ML-models and the HW these models on which these models are deployed.

There is a need for a full-time staff member for research and education in this domain. The staff member should show a broad theoretical knowledge and experience with applications in the domain of HW/SW-systems for machine learning. This new staff member has to work in close cooperation with the other professors in the IDLab team, and will particularly interact with professors of the distributed machine learning (IDLab/DML) team and the hardware design team (IDLab/Design). In this respect, a close collaboration with the imec research centre is anticipated. A successful candidate should demonstrate international recognition and high-quality international collaboration. It is also crucial that the staff member can attract and lead research projects and give guidance to doctoral and master students. In view of the global challenges on sustainability, a research vision in line with the SDG's is a definite asset. Good knowledge of English is important for establishing new contacts in a rapidly changing international context. Besides excellent research skills, the new staff member should also possess the necessary didactic, organizational and communicative skills for teaching at an academic level in the domain of machine learning, chip design and HW/SW-systems.