# Vacancy: PhD position

# Explainable Machine Learning Models

## SUMOLab – IDLab (Ghent University, Belgium)

IDLab is a core research group of imec, a world-leading research and innovation hub in nanoelectronics and digital technologies, with research activities at Ghent University. IDLab performs fundamental and applied research on data science and internet technology, and is, with over 300 researchers, one of the larger research groups at imec. Our major research areas are machine learning and data mining; semantic intelligence; multimedia processing; distributed intelligence for IoT; cloud and big data infrastructures; wireless and fixed networking; electromagnetics, RF & high-speed circuits and systems.

The activities of SUMOLab are embedded in this stimulating environment and include predictive analytics, data-driven modeling, time series analysis, anomaly/event detection, etc., with applications in health care, manufacturing and the energy sector.

## Job Description

The omnipresence of sensors causes an explosive growth of data that offers the potential for a revolutionary transformation in many sectors. The functioning of such systems can greatly benefit from data-driven predictive models that extract insights and actionable knowledge from these data streams. As **machine learning** models are being incorporated into a workflow, it is often desirable that the models can explain why a certain prediction was made. Therefore, **explainability** of such models is becoming an additional baseline requirement.

Apart from providing information as to why a certain decision was reached, explainability also enables a further assessment of the model in terms of transparency, trust, fairness and understanding of its inner workings. The goal of the PhD is to develop innovative methodologies that can improve model interpretability. The proposed PhD research is defined within the context of several national and international research projects on the **analysis of time series data**.

## Your profile

Highly creative and motivated PhD student with the following qualifications:

- You have (or will obtain in the next months) a master degree in Computer Science, Mathematics, Engineering or equivalent, with excellent ('honors'-level) grades.
- You have strong computer science skills (python, C++, etc.)

- You have a strong interest in machine learning, and are eager to advance the state-of-the-art.
- Experience with machine learning algorithmic approaches or frameworks (such as PyTorch, Tensorflow, GPFlow, etc.) is considered a significant plus.
- You are a team player and have strong communication skills.
- Your English is fluent, both speaking and writing.

## Our offer

We offer the opportunity to do full-time research in an international (with over 17 nationalities at IDLab, part of imec and Ghent University) and friendly working environment, with a competitive salary at Ghent University. While grounded in fundamental academic research, as a PhD candidate you will also participate in collaborative research with industrial and/or academic partners in Flanders and/or on a wider geographic scale (e.g., EU H2020 projects), in the framework of new/ongoing projects. Furthermore, you will publish your research results at major international conferences and in journal papers, as part of meeting the requirements for your PhD. The PhD positions are available starting summer 2021.

## Interested?

Send your application by email or any questions concerning this vacancy to prof. Dirk Deschrijver (dirk.deschrijver AT ugent.be), indicating “Job Application: Data analytics” in the subject. Applications should include (1) an academic / professional resume, (2) a personal motivation letter, and (3) transcripts of study results, and (4) at least two reference contacts. After a first screening, selected candidates will be invited for an interview (also possible via Skype) as a first contact in a multi-stage selection process.

- Application deadline: August 31th 2021 or until the vacancy is filled.
- Type of contract: Full-time
- Employment: Temporary (4 years), with yearly progress evaluation
- Earliest starting date: Summer 2021