

## PhD position

Ecole/Institution/Société:

**Catholic University of Leuven, Belgium / Leuven**

Discipline:

**Artificial Intelligence**

Type d'emploi::

**Full-time**

Date de publication:

**2020-05-03**

Personne à contacter:

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### PhD: Artificial Intelligence for Segmentation of Time Series

#### **Job Description**

This project is hosted by the STADIUS Center for Dynamical Systems, Signal Processing, and Data Analytics group of the Department of Electrical Engineering (ESAT) at KU Leuven.

STADIUS is an academic research center, with a research focus on mathematical engineering, where mathematical tools from numerical linear and multilinear algebra, statistics and optimization are engineered for applications of dynamical systems and control, signal processing, data modeling and analytics.

#### **Project**

AI systems often have to cope with an overwhelming amount of input data. Time series often contain long sequences which have a similar behavior and which can be processed as a whole, rather than cutting it in a large amount of fixed-size epochs.

In this task, we will automate such segmentation processes as much as possible, with a focus on automatically splitting (multi-modal) time series into segments of variable sizes, within which the statistics are homogeneous across each segment. Such segmentation allows to model or process each segment with a different (more tailored) model, or to treat each segment as a higher-level object, which can be described or embedded as a single feature vector in further processing steps.

The main goal is to design a general-purpose segmentation pipeline and apply it in several use cases, for example in the analysis of electroencephalography (EEG) data for epilepsy.

This project will be funded by the impulse program on Artificial Intelligence (AI) Research, which is an initiative of the Flemish government to position Flanders as an international leader in the field of AI.

#### **Profile**

- You should have a master's degree in information technology, electrical or mathematical engineering, artificial intelligence, biomedical engineering, or a similar degree with an equivalent academic level.
- You have a strong mathematically-oriented background
- You obtained good grades and you can show that you are able to do independent research

(e.g. excellent grades on a MSc thesis, etc.)

- You have hands-on experience with machine learning and deep neural network toolboxes
- You have a genuine interest in stochastic signal processing and machine learning
- You have a critical mindset
- You have an excellent proficiency in the English language
- The candidate should have strong social abilities allowing an active participation to the multidisciplinary network, fruitful exchanges with other students and researchers, and an excellent integration in the team of your research group.

## **Offer**

- A funded PhD scholarship
- An exciting interdisciplinary research environment
- A KU Leuven affiliation, Europe's most innovative university and 7th in the world (Reuters)
- The possibility to take part in international conferences and collaborations
- A competitive salary
- The selected candidate will be able to take advantage of the unique set-up of the AI impulse program. The PhD candidates involved in this AI impulse program will become independent researchers with improved career prospects in both the academic and non-academic sectors, and will contribute to Flanders's competitiveness and attractiveness in the field of AI.

## **Interested?**

- Earlier applications are encouraged and will be considered as soon as they are received.
- For more information please contact Prof. dr. ir. Alexander Bertrand, tel.: +32 16 32 18 99, mail: [alexander.bertrand@kuleuven.be](mailto:alexander.bertrand@kuleuven.be) or Prof. dr. Maarten De Vos, tel.: +32 16 37 39 97, mail: [maarten.devos@kuleuven.be](mailto:maarten.devos@kuleuven.be).
- KU Leuven seeks to foster an environment where all talents can flourish, regardless of gender, age, cultural background, nationality or impairments. If you have any questions relating to accessibility or support, please contact us at [diversiteit.HR@kuleuven.be](mailto:diversiteit.HR@kuleuven.be).

## **Job Details**

**Title** PhD: Artificial Intelligence for Segmentation of Time Series

**Employer** KU Leuven

**Job location** Oude Markt 13, 3000 Leuven

**Job types** PhD

**Fields** Information Science, Biomedical Engineering, Artificial Intelligence, Artificial Neural Network, Electrical Engineering, Machine Learning

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