A @ UMONS

The recent increase in computing power (GPU), coupled with access to very large databases (Big Data) and high-performance learning algorithms (Deep Learning), have resulted in the rapid development of Artificial Intelligence (AI). The University of Mons is a key player in this field, with its teaching, continuing education, research, business support and creation of spin-offs contributing to advances in the domain.

RESEARCH

The University of Mons (UMONS) has structured the organisation of its research around 10 institutes in order to prioritise the quality and the impact of its research and to ease technology transfer to the benefit of society.

Three of these institutes are dedicated to information and communication technologies (ICT) : Numediart, Infortech and Complexys. They gather more than 200 researchers, many of whom are now tackling AI-related issues.

Naturally, AI also impacts research in other UMONS institutes be it in energy (smart grids) or social and educational sciences.



PARKAR

Some key AI projects

IGLU

In collaboration with INRIA, Univ. of Sherbrooke, Univ Lille 1, KTH & Univ. de Zaragoza

Use of deep neural learning techniques for automatic language understanding in a multimodal context.

ROADSTEP

220,319 € In collaboration with ULiège, A.R.S.I.A., & Centre des Technologies Agronomiques (CTA)

The project aims at monitoring cattle with the use of the official electronic identification and AI in order to predict disease.

MOBFACENET Win2Wal - 556,096 €

In collaboration with MoodMe

embedded in a smartphone for face analysis tasks (prediction of age, sex, emotions, etc.).

iVARLEarn

LIA (Belgium's electricity transmission system operator)

ne project aims to model the reactive behaviour of transmission/ stribution interfaces at various time horizons, in the context of creasing penetration of decentralised generation.

Tangerine (First Spin-off)

Development of tangible (non-virtual) games to learn programming.

EGC (First Spin-off)

Automatic and polyphonic transcription tool for guita providing notes, chords and playing techniques automatic detection.

CLEO (First Spin-off)

Applying AI to the reconstruction of the 3D internal structure of a bone from simple x-rays.

UMONS SPIN-OFFS in Al

acapela



Acapela (1996) Personalised digital voice creation Hovertone (2016) Interactive technologybased installations

Teaching and continuing education

UMONS integrates a large number of AI-related courses into its various Masters degrees in engineering and computer science. Starting in the 2019-2020 academic year, artificial intelligence will be explicitely integrated as a specialist focus of three UMONS Master's degrees in engineering and computer science. This gives the students the opportunity to access a large range of AI-focused courses and to deepen their expertise with an internship and Master dissertation in the field. Artificial intelligence is also part of a wide variety of curricula in other faculties, including those of the Faculty of Architecture and Urban Planning, and the Faculty of Psychology & Education.

Since 2018, UMONS has also developed a university certificate worth 10 ECTS in AI : Hands on AI.

► THE « HANDS ON AI » GRADUATE CERTIFICATE PROGRAMME

Convolutional Neural Networks, Deep Reinforcement Learning, Generative Adversarial Networks and even Autoencoders, are already seen as basic tools which our students and graduates require knowledge about and feel the need to master. This programme specifically offers them not only a broad understanding of recent developments in AI but also the know-how that is requested by the industrial sector.

The Hands on AI programme is spread over 16 evenings and a hackathon week-end to learn about and practise using AI tools (for engineers and computer scientists).

AI Challenges (4 ECTS)

AI Seminars (1 ECTS)

Three applied challenges coming from different domains (such as fire detection, image analysis for applications in Alzheimer's patients, SLAM for robot vision, etc.). 12 hours of seminars to appreciate the application of AI in a wide range of domains (such as health, ethics, transport, etc.).

Reasons to join ?

- Staggered schedule (evenings and 1 week-end)
- Open to PhD students as well as to adults returning to education
- Hands-on training with concrete projects and practical challenges
- Ideal place to network with AI experts and make industrial contacts

TEDDIAI f(Technologies forResEarly Diagnosis ofPhDDevelopmentalDeel

Impairments through Data Mining) PhD Thesis - FNRS

Development of AI tools trained on brain data, allowing clinicians to make early diagnosis of mental disorders in children.

AI for Breast Tumor Response Prediction PhD Thesis - UMONS

Deep Learning approach predicting breast tumour response to neoadjuvant treatment using two DCE-MRI exams for patients' data provided by the Jules Bordet Institute.



Ittention (2016) Predictive visual impact



Dephten (2019) Image analysis and automatic tagging

76 participants in 2018-2019

AI Workshops (5 ECTS)

A full week-end for all students registered on the Certificate, targeting team work for the realisation of an ambitious AI project.



AI Challenge, 2018-2019

Ecosystem building and regional impact

At the heart of a rich ecosystem, UMONS collaborates on many AI initiatives in close connection with a wide range of partners. It also benefits from a strong connection to Multitel and CETIC and to local innovation and financing structures such as Creative Valley, Digital Attraxion and IDEA. It is also at the origin of two AI-related organisations : CLICK and the Deep Learning Academy.

UMONS Innovation Centers in AI

Created in 2019, the Innovation Centers associate UMONS and their long-term strategic partners. UMONS and its Innovation Centers form a unique structure in Belgium, allowing us to carry out fundamental, strategic and applied research with our partners, who are recognised for their excellence. The research carried out can benefit

MULTITEL : Research centre in Telecommunications, Signal and Image Processing, founded by the the Engineering Faculty of Mons.

any socio-economic organisation, regardless of the TRL

CLICK' LIVING LAB: Where AI meets creativity

CLICK CREATIVE INDUSTRIES LIVING LAB

At the heart of the creative Walloon ecosystem and benefiting from the expertise of the NUMEDIART Institute (UMONS), CETIC and Multitel, CLICK' is

the chosen partner for project owners wishing to develop innovative products and services. CLICK's methodology includes exploration, experimentation and evaluation, in the lab and in the field, and is based on co-creation and feedback from the target users (UX). It is a place of experimentation for short prototyping projects, mixing AI with sounds, images, texts, gestures, etc.

www.clicklivinglab.org

UMONS in the AI ecosystem

UMONS has recently joined the Walloon AI network, which gathers together Walloon companies, research centers and universities. It collaborates with the network on a regular basis to provide it with research and training cartography and to better analyse regional industrial needs on that topic. UMONS is also member of the AI4Belgium coalition and has collaborated on the writing of the AI federal report.

Deep Learning Academy

In 2017, UMONS, along with UCLouvain and Multitel, initiated the so-called "Deep Learning Academy" with the aim of organising quarterly gatherings for dozens of researchers from academia, research centres and companies (mainly SMEs) and to share experiences and best practices around AI. An « AI Mons Meetup » group and related mailing list has also been created to facilitate local networking around AI and provide information on AI events and scientific breakthroughs.

Contact us



of the results.

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