



SMARTER

Professional education in Artificial Intelligence (AI)

VIRTUAL REALITY IN INDUSTRIAL APPLICATIONS

Speed up training for factory workers with Mixed Reality or teleoperate complex equipment with Virtual Reality. The uses for VR in industry are infinite. This course will teach you how to apply VR.

DISTRIBUTED ARTIFICIAL INTELLIGENCE AND MULTI-AGENT SYSTEMS

How to manage heterogeneous, autonomous entities in a way that there is a coordinated, fair and/or resilient overall result? In this course, we teach approaches and architectures for achieving this using Distributed Artificial Intelligence.

AI ETHICS FOR ENGINEERS

As AI systems become more common and expand their abilities, the decisions they made have a crucial and lasting impact on society as a whole.

It is of paramount importance that those in charge of designing such systems work toward ethical and responsible systems. In this course, we cover the theoretical and practical aspects of Ethics applied to AI systems through case studies, practical application of theoretical concepts, and open discussions.

REINFORCEMENT LEARNING

Reinforcement Learning allows to solve complex decision-making problems by learning from trial and error.

This AI method is used in such applications as resource management, robot control and personalised recommendation systems.

This two-part course will teach you how to choose the right Reinforcement Learning algorithm by analysing the problem to be solved.

MACHINE LEARNING

Machine Learning is a very hot topic since it is the foundation for technological advancements such as self-driving cars, customer behaviour prediction and automated analyses of CT scans. Basically there is a chance to use Machine Learning wherever you collect data. In this two-part course, we will show you how.

AI – BASED SEARCH METHODS

Autonomous robots are key to realizing automated solutions that are general and re-usable across industries and applications.

In this course, we study key AI Search Methods underlying this flexibility, namely, planning, scheduling and coordination.

DECLARATIVE PROBLEM SOLVING FOR ARTIFICIAL INTELLIGENCE

When solving difficult searching problems, like scheduling, planning and configuration tasks, Answer Set Programming is an invaluable AI method. Due to the declarative aspect of ASP we can model the problem statements instead of the problem solution and thereby approach the problem from a different perspective.

AUTONOMOUS ROBOTS AND ROS

By using ROS, Robot Operating System, you can embed intelligence in a robot that from the start had none. ROS is often used by R&D teams to develop prototypes quickly. And as a bonus, by mastering ROS, you also get quick access to the latest research results that you can incorporate into your future products.

NATURAL LANGUAGE PROCESSING (NLP)

is a sub-field of Artificial Intelligence (AI) that studies how computers process human language.

This course allows learners to obtain knowledge about NLP problems, applications, and recent methods for solving them.

The aim of this course is to expertise in applying neural networks and deep learning methods to solve ongoing problems in NLP.

AI AND CYBERSECURITY

With the advances of modern technology, cybersecurity has become hard to provide and guarantee.

AI can enhance cybersecurity, but can also undermine it.

In this course, you will learn the different uses of AI for defending and attacking a cybersystem, from fingerprint recognition for authenticating legitimate users, to fuzzing attacks for crashing vulnerable targets.

DATA MINING

Nowadays, a hot topic among industrial companies is using AI and deep learning. However, there is a lack of dealing with the collected data to define an appropriate problem statement before creating any advanced AI model. Data mining is the field of discovering novel and potentially useful information from large amounts of data, by exploring the characteristic features and extracting hidden patterns.

CYBERSECURITY FOR THE INTERNET OF THINGS

This course provides you with an in-depth understanding of the Internet of Things (IoT) and the associated cybersecurity challenges. You will learn

about the fundamentals of IoT and its applications, the communication protocols used in IoT systems, the cybersecurity threats targeting IoT, and the measures that can be taken to mitigate these threats.

ARTIFICIAL INTELLIGENCE AND THE (R)EVOLUTION OF WORK

This course explores how artificial intelligence (AI) is transforming the workforce and labor market. Participants will delve into AI-driven changes in demand for labor, wages, skills, and work environments through research-based insights, theories, case studies, and future forecasts. Ethical implications for employees, employers, and policymakers are also covered. The course includes guest lectures from experts in economics, computer science, law, and industry leaders. It is designed for both students and professionals.

HIGH PERFORMANCE COMPUTING

The course teaches participants to work with large-scale computing infrastructures, focusing on scalability and performance. It emphasizes their role in advancing the industry's green transition by optimizing resources and reducing environmental impact. Key

topics include distributed computing, multi-core architectures, hardware/software acceleration, and container solutions (e.g., Docker, Kubernetes), along with tools for performance monitoring and energy efficiency. Participants gain knowledge to drive sustainable digital solutions.

LARGE LANGUAGE MODELS FOR INDUSTRY

This course focuses on the increasing demand for sustainable practices in industries and how large language models (LLMs) can transform operations, communication, and innovation. It covers traditional Natural Language Processing (NLP) and Natural Language Understanding (NLU), emphasizing the use of LLMs to solve industry-specific challenges with sustainability in mind. Through practical examples and exercises, participants gain the skills to apply LLMs to real-world problems while advancing sustainability objectives.

ENTRY REQUIREMENTS:

Ensure that you meet the specific pre-requisites for the course, either through academic qualifications or relevant work experience. These requirements can be found on the application page of each course's website.

WORK EXPERIENCE AND VALIDATION:

If you for example, do not meet the formal requirement of 15 credits of programming but have many years of work experience in the field. You need to fill in and upload [THIS](#) document together with a certificate to antagning.se. Your certificate must describe your knowledge and amount of work experience in relation to the entry requirements. Lastly, your certificate needs to be signed by your employer.

COURSE FORMAT:

Smarter courses are tailored for working professionals, primarily offered as distance learning with a few scheduled meetings. Some courses include on-site sessions (up to three). For details specific to your course, visit oru.se/ai-kurser.

CREATE AN USER ACCOUNT ON ANTAGNING.SE

Create an user account on antagning.se
If you already have an user account – please make sure that your email address is updated – all communication will be carried out through email to prepare you for the course.

SEARCH FOR SMARTER-COURSES

Search for SMARTER-courses by the name of the course or use the link in the course description on oru.se/ai-kurser

SEND IN YOUR APPLICATION

Fill out and send in your application. A confirmation is sent to you shortly.

Upload required documents if necessary – Please see “Work experience and validation”.

SAVE THE DATES

All courses have three mandatory meetings (remote participation allowed). Save the dates in your calendar.

REGISTER FOR COURSE

Check your email for any messages regarding your application. Once you are admitted, you need to register for your course (usually one week before course-start). This is done through [ORU Ny student](#)

COURSE STARTS

Course starts: make sure that you can access the course in blackboard through [ORU Ny student](#)



oru.se/ai-courses



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