COURSES

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 WITH ANSWER SET PROGRAMMING

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.

EXPLAINABLE ARTIFICIAL INTELLIGENCE

When using AI, we get automated suggestions and recommendations, but sometimes we don't really know how and why the AI-system came to its conclusion. In this course, we give you an overview of Explainable AI methods to make models and AI-systems more transparent and increase the interaction and trust between human and machine.

INTRODUCTION TO HUMAN-ROBOT INTERACTION

As robots enter our society, it is becoming evident that humans and robots must learn how to cooperate and interact. To accomplish this, we must understand both the technological and human perspective. In this course we introduce you to the field of Human-Robot Interaction.

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.

ENTRY REQUIREMENTS: At least 180 credits including 15 credits programming as well as qualifications corresponding to the course "English 5"/"English A" from the Swedish Upper Secondary School.

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 distance courses with three mandatory meetings (remote participation allowed). 3 credits per course which corresponds to 80 hours of study conducted during a 10–15 week period.

CREATE AN USER ACCOUNT ON ANTAGNING.SE	SEARCH FOR SMARTER-COURSES	SEND IN YOUR APPLICATION	SAVE THE DATES	REGISTER FOR COURSE	COURSE STARTS
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 by the name of the course or use the link in the course description on oru.se/ai-courses	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".	All courses have three mandatory meetings (remote participation allowed). Save the dates in your calendar.	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: make sure that you can access the course in blackboard through ORU Ny student

HÖGSKOLAN
I SKÖVDE

JÖNKÖPING UNIVERSITY

ÖREBRO UNIVERSITY