



COURSE SYLLABUS

Explainable Artificial Intelligence, 3 credits

Explainable Artificial Intelligence, 3 högskolepoäng

Course Code: TEXR20	Education Cycle: Second-cycle level
Confirmed by: Dean Mar 1, 2020	Disciplinary domain: Technology
Valid From: Aug 1, 2020	Subject group: DT1
Version: 1	Specialised in: A1N
	Main field of study: Computer Engineering, Informatics

Intended Learning Outcomes (ILO)

After a successful course, the student shall

Knowledge and understanding

- Show familiarity with concepts within Explainable AI and interpretable machine learning.
- Demonstrate comprehension of current techniques for generating explanations from black-box machine learning methods.
- Demonstrate comprehension of current ethical, social and legal challenges related to Explainable AI.

Skills and abilities

- Demonstrate the ability to select and assess Explainable AI methods.

Judgement and approach

- Demonstrate the ability to review, present and critically assess state-of-the-art papers in relevant areas within Explainable AI.

Contents

This course gives an introduction to Explainable AI (XAI), providing an overview of relevant concepts such as interpretability, transparency and black-box machine learning methods. The course provides an overview of state-of-the-art methods for generating explanations, and touches upon issues related to decision-support, human interaction with AI/intelligent systems and their evaluation. In summary, the Explainable AI course covers the following topics:

- Definitions and concepts such as black-box models, transparency, interpretable machine learning and explanations.
- Decision-making and decision support, Human-Computer Interaction (HCI) and AI.
- Explainable AI.
- Methods for Explainable AI.
- Applications and examples.
- Trust and acceptance.

- Evaluation methods and metrics.
- Ethical, legal and social issues of explainable AI.

Type of instruction

Web-based lectures and assignments. Three on-site sessions are mandatory for the participants; each session lasts four hours.

The teaching is conducted in English.

Prerequisites

The applicant must hold the minimum of a bachelor's degree (i.e the equivalent of 180 ECTS credits at an accredited university) with at least 90 credits in computer engineering, electrical engineering (with relevant courses in computer engineering), or equivalent. The bachelor's degree should comprise a minimum of 15 credits in mathematics. Proof of English proficiency is required.

Examination and grades

The course is graded Fail (U) or Pass (G).

The final grade for the course is based on a balanced set of assessments. The final grade will only be issued after satisfactory completion of all assessments.

Registration of examination:

Name of the Test	Value	Grading
Assignment	1.5 credits	U/G
Presentation	1.5 credits	U/G

Other information

Explainable AI is targeted for professionals working in the industry.

This course is given under SMARTER, a competence development project within Artificial Intelligence (AI) for professionals, funded by the Knowledge Foundation; a collaboration between Örebro University (lead), Jönköping University and University of Skövde. The Knowledge Foundation supports research and professional competence development pursued in partnership with the industry, with the purpose of strengthening Sweden's competitiveness.

Explainable AI is a part-time course, 3 credits; it is expected that the participants will work 80 hours of study throughout one study period. If you apply for the course through regular admissions, there is no course fee.

Course literature

Literature

The literature list for the course will be provided one month before the course starts.

The course literature comprises relevant papers from the areas of Explainable AI and interpretable Machine Learning and will be published before the course starts.