Course syllabus

Machine Learning for Internet of Things (IoT)
Maskininlärning för sakernas internet (IoT)

EITP40, 7.5 credits, A (Second Cycle)

Valid for: 2026/27
Faculty: Faculty of Engineering LTH
Decided by: PLED C/D
Date of Decision: 2026-04-16
Effective: 2026-05-18

General Information

Depth of study relative to the degree requirements: Second cycle, in-depth level of the course cannot be classified
Elective for: C4-ks, D4-is, D4-ns, E4-ns, F4, I4-pvs, MMSR2, MWIR1
Language of instruction: The course will be given in English

Aim

The purpose of the course is to provide an introduction to artificial intelligence and machine learning techniques for IoT systems e.g. wearable sensors for health monitoring.

Learning outcomes

Knowledge and understanding
For a passing grade the student must

- understand the IoT domain and the corresponding challenges and opportunities
- understand the state-of-the-art machine learning and artificial intelligence techniques
- understand the fundamental ideas behind the state-of-the-art machine learning techniques in the context of IoT systems

e.g. in wearable sensors for health monitoring and medical informatics.

Competences and skills
For a passing grade the student must

- analyze the suitability of a given machine learning technique for IoT systems
- apply and implement the state-of-the-art techniques in machine learning and artificial intelligence in the context of IoT systems
- evaluate and validate the existing machine learning techniques for IoT systems, in terms of relevant domain metrics.

Judgement and approach
For a passing grade the student must

- show knowledge of the possibilities and limitations of artificial intelligence and machine learning in the context of IoT systems
- independently develop, train, and implement machine learning techniques on IoT systems and investigate the results obtained.

Contents

- Introduction to IoT systems and the challenges and opportunities in this domain
- Introduction and foundation of machine learning and deep neural networks in the context of IoT systems e.g. for wearable devices and sensors for health monitoring and medical informatics;
- Machine learning for IoT systems and distributed resource-constrained platforms.

Examination details

Grading scale: TH - (U, 3, 4, 5) - (Fail, Three, Four, Five)
Assessment: Approved laboratory assignments give grade 3. An approved final project is required for grades 4 and 5.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Modules
Code: 0122. **Name:** Laboratory.
Credits: 7.5. **Grading scale:** UG - (U, G). **Assessment:** Approved laboratory sessions give grade 3.

Admission

Assumed prior knowledge: Programming, Basic probability, statistics, algebra, and Basic machine learning.
The number of participants is limited to: 80
Selection: "Completed university credits within the programme. Priority is given to students enrolled on programmes that include the course in their curriculum."

Reading list

- Andreas Lindholm, Niklas Wahlström, Fredrik Lindsten and Thomas B. Schön: Machine Learning - A First Course for Engineers and Scientists. Available online http://smlbook.org/.
- Ian Goodfellow, Yoshua Bengio, Aaron Courville: Deep Learning. MIT Press, 2016.
- Pete Warden, Daniel Situnayake: TinyML: - Machine Learning with TensorFlow Lite on Arduino and Ultra-Low-Power Microcontrollers. O'Reilly Media, 2020.

Contact

Course coordinator: Amir Aminifar, amir.aminifar@eit.lth.se
Examinator: Amir Aminifar, amir.aminifar@eit.lth.se