USEEN6 - Artificial Intelligence and Machine Learning for Connected Systems

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Code : USEEN6

Unité spécifique de type cours

6 crédits

Responsabilité nationale :
EPN05 - Informatique / 1

Contact national :

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Présentation

Prérequis

M1 courses or equivalent courses done at another institution.

Objectifs pédagogiques

The objective of the course is to study basics of machine learning and artificial intelligence algorithms used for network applications and IoT systems optimisation and acquire hands-on experience via experimental labs. The course will show how conventional ML/AI algorithms can be challenged in their performance and accuracy when running under constraints emerging in network and IoT systems environment, as for instance : execution time target, limited live and storage memory space, energy consumption and power limitations.

Programme

Contenu

The course covers the following topics with half of the lessons as practical labs :

- refresh on statistics and network optimisation
- unsupervised machine learning
  - main algorithms, comparison, experimentation
  - time-constrained applications (traffic anomaly detection, etc)
  - memory-constrained applications (spatio-temporal mobility characterization, etc)
- supervised machine learning and applications
  - main algorithms, comparison, experimentation
  - time-and-energy-constrained application (IP traffic classification, etc)
  - time-and-memory-constrained applications (cyber attack classification, etc)

Modalités de validation

- Contrôle continu
- Examen final

Description des modalités de validation

Evaluation of TP lab reports and of a final exam.