Apprentissage

Component
École Nationale Supérieure d'Électrotechnique d'Électronique d'Informatique d'Hydraulique et des Télécommunications

In brief

- **plugin.odf-inp:PLUGINS_ODF_COURSE_NBHOURS_TXT:** 6 lectures + 6 practical sessions
- **Ametys Code:** M34Z76F1
- **Open to exchange students:** No

Presentation

Objectives

Understand the main anomaly detection methods and implement them on various datasets.

Build, train and evaluate simple neural networks (CNN, RNN) for classification and prediction

Description

This course studies the theory and the implementation of anomaly detection methods and classifiers based on neural networks. Anomaly detection methods considered in this course include one-class support vector machines, isolation forests, local outlier factor and discords. The second part of the course studies classifiers based on neural networks from logistic regression to convolutional neural networks, recurrent neural networks and deep architectures. Practical sessions will alllow these approaches to be implemented on real datasets and evaluated using appropriate performance measures.

Pre-requisites

Data analysis and probability courses

Skills

One-class support vector machines
Isolation forests
Local outlier factor
Discords
Logistic regression
convolutional neural networks
recurrent neural networks
Deep architectures

Bibliography

1. M. Pimentel, D. A. Clifton, L. Clifton and L. Tarassenko, A review of novelty detection, Signal Processing, vol. 99, pp. 215-249, June 2014.
2. V. Chandola, A. Banerjee and V. Kumar, Anomaly detection: a survey, ACM Comput. Surv., vol. 43, no. 3, 2009.

Useful info

Contacts

Geraldine MORIN
2170
Geraldine.Morin@enseeiht.fr