Industrial Big Data Analysis and Mining (SAFI-M8)

5 days (35 hours) within a three-week time span

Fees : from 2000 € HT to 3800 € HT

ONLINE TRAINING

Dates and detailed fees on aste.asso.fr

Target Audience

The course is broad in covering problem solving with data-driven machine learning approaches. It is intended to professional Engineers, Project Managers, Data Analysts and Computer Scientists with responsibilities in new product design, planning, and development or current product quality management who wish to develop advanced knowledge and skills in the application of data-driven machine learning techniques in support of robust decision-making.

Prerequisites

- Attendance of Module 'Statistics for Engineering (SAFI M1) is recommended (or equivalent knowledge of basic concepts of statistics with practical use and equivalent education level).
- Experience with data analysis / big data concerns in the workplace is expected; a use case to study is needed.
- Use of Python: basic initial coding experience required (variables, controls, lists…).

Instructors

Professor Daniel NEAGU, Professor of Computing of the University of Bradford, and Dr Amr Rashad Ahmed ABDULLATIF, Assistant professor at the University of Bradford.

Training Delivery Methodology

The delivery is designed as a workshop style with an approximate 50/50 split between technical sessions and hands-on exercises, designed to explain the concepts by leveraging relevant industrial case studies.

Delivered online. Course package to be sent a week in advance with joining instructions and training material with Python Programming tutorials at Introductory level.

Technical equipment

The training is delivered as a virtual classroom, using Microsoft Teams. Login information sent at the latest 2 days before the training.

Modes of Asessment

- Attendance sheet signed each half day by the participants and co-signed by SIA.
- Learning assessment based on:
  * individual or group presentation with argument on a mini-project
  * Individual plan for application around a specific project in the workplace of the participant (plan based on the methods and tools from the course)
- Training performance : qualitative assessment of the training by attendants at the end of the session
- Delivery of a training certificate.

Access Deadline

Open training: registration at the latest 7 days before the training | In-house training: organisation within 4 weeks minimum.

Accessibility to Disabled people

Contact our Disability Officer : referenthandicap@sia.fr

LEARNING OUTCOMES

This module delivers the concepts, theories and frequently used tools in machine learning and big data and provides a working understanding of their application in practice.

Upon completion of this module, the participant will be able to:

- Take the initiative in reviewing solutions for big data processing and mining.
- Analyse available data and produce results, or guide toward appropriate applications of Big Data.
- Implement and advocate the use of systematic methodology for Big Data analysis and mining.
- Produce and evaluate solutions using machine learning algorithms.
- Interpret the results and communicate the impact to both technical and non-technical audience.
- Use of practical software tools, with a focus on workflow design and experimentation.

PROGRAMME

This course introduces participants to the theory, methodologies, tools, and techniques necessary to develop skills for industrial big data processing.

The module addresses data analysis (data description, quality, cleaning, and transformation), pattern exploration and data mining applications. Three types of computational solutions are studied: classification, clustering, association mining, as well as presenting data in a useful format.(data visualisation).

Fundamentals

- Statistical evaluation of data quality;
- Data wrangling (data cleaning, data selection, data transformation).

Big Data Analysis

- Investigation of knowledge discovery processes,
- Theoretical and practical applications of machine learning techniques for Big Data mining (pattern-exploration, associations, and clustering).

Classification with Machine Learning

- Exploration of algorithms for regression, classification (binary and multiclass), advanced classifiers (kNN, ANNs, ensembles) and performance evaluation criteria;
- Introduction and application of deep learning algorithms.

Mini Project

- Strengthening the delivered concepts through application to a relevant individual project
- The topic is underpinned by an industry-inspired Enginee-

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