



UNIVERSITÀ  
DI PAVIA

**Ph.D. Program in Electronics, Computer Science and Electrical Engineering**

## **COURSE**

### **AI Risk Management**

***Prof. Emanuela Raffinetti***

**OBJECTIVES:** The course will introduce the statistical models that can be employed to assess and monitor the risks deriving from the application of Artificial Intelligence methods in relevant domains such as automotive, finance, health care and robotics.

It will do so by reviewing the most important AI safety principles introduced by the recent regulations, international standards and codes of conduct for a trustworthy AI: Sustainability, Accuracy, Explainability, Fairness. For each of the most important machine learning models, the course will examine their trustworthiness characteristics, and measure them in practical applications, also leveraging recent research contributions on AI risk management metrics.

The course will be organised into 12 hours of lectures. Each lecture will combine theoretical aspects with practical ones. The statistical software R will be used throughout.

Case studies and dataset examples will be extensively used to give students a practical experience on the application of statistical metrics to measure, monitor and mitigate the risks of artificial intelligence.

#### **PROGRAM**

- Review of the most important machine learning models: Logistic regression models; Classification trees and Random Forest models; Neural Network models
- Introduction to the principles for a trustworthy AI: sustainability; accuracy; fairness; explainability: the S.A.F.E. AI model
- How to measure predictive accuracy
- How to measure robustness (sustainability)
- How to measure fairness
- How to measure explainability

**ATTENDANCE:** The course will take place in the Seminar room of the Department of Public Health, Experimental and Forensic Medicine (Hygiene building, Via Forlanini 2).

**LECTURES:** 12h; **CREDITS:** 3 CFU

**DATES:** Nov. 8, 15, 22

**Ph.D. Coordinator**

Prof.ssa Ilaria Cristiani

Lectures in English

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