



UNIVERSITÀ
POLITECNICA
DELLE MARCHE



Dipartimento
di Scienze
e Ingegneria
della Materia,
dell'Ambiente
ed Urbanistica
SIMAU

Course: Machine Learning with R: an introduction- Part 2.

Technological Science Center - UDESC (Santa Catarina State University - Brazil)/SIMAU Department - Marche Polytechnic University Partnership

30/01/2024 -01.02/2024 in person



Professor Elisa Henning develops her activities at Santa Catarina State University – Brazil, as researcher and associate professor. Her research is focused on application of statistics applied to engineering, namely Sustainable Development in Civil Construction and public health.

The course will take place at UNVIPM in person (30/01 From 14:00 to 17:00, 31/01/2024 and 01/02/2024, From 09:00 to 12:30 and From 14:00 to 17:30 20). **CLASSROOM: 155/10**

2024 Program

Machine Learning with R: an introduction (part2)

This course will cover some methods for both prediction and classification problems using supervised and unsupervised machine-learning techniques in R.

Using the R programming language, the course outlines the phases involved in machine learning analysis: problem formulation, data preparation, feature engineering and model selection.

Programme

Data preparation and feature engineering

- Reading and importing data, data exploration and filtering
- Cleaning and Preprocessing

Exploratory Data Analysis

Data splitting

- Simple random sampling, Stratified sampling, Class imbalances

Creating models

- Formulas and packages

Resampling methods

Unsupervised learning and Supervised Learning

- Supervised learning
- Classification: K-Nearest Neighbours, Logistic Regression, Regularized Regression, Decision Trees, Bagging, Random Forest, Support Vector Machines, Stacked Models



UNIVERSITÀ
POLITECNICA
DELLE MARCHE

- Regression: K-Nearest Neighbours, Linear Regression, Regularized Regression, Regression Trees, Bagging, Random Forest, Support Vector Machines, Stacked Models
- Model Evaluation and Model Selection

Variable importance

Feature selection

Hands on exercise

For further information: 0712204911-0712204530 f.fatone@univpm.it;
a.l.eusebi@univpm.it; v.g.barros@staff.univpm.it;