

https://stm.uniroma3.it/job/postdoc-machine-learning/

# Postdoctoral position - advanced machine learning and data analysis for nano-mechanical testing

## Description

We are seeking a Postdoctoral Researcher with expertise in machine learning, data science, and mechanical materials characterization to join the SunRise FIS 2023 Project.

This position focuses on developing data-driven approaches for analyzing nanoindentation, correlative characterization, and microscopy data (e.g., EBSD patterns, and micrographs).

# Responsibilities

The researcher will work on integrating advanced machine learning and deep learning algorithms to extract patterns, correlations, and predictive insights from high-dimensional datasets. The ultimate goal is to understand mechanical behavior, failure mechanisms, and microstructural features of 3D-printed nano- and microarchitectures.

The role also involves building frameworks for data fusion, combining mechanical measurements with imaging data to provide holistic interpretations of material behavior.

#### Education

Doctoral Degree in Materials Science, Mechanical or Aerospace Engineering, Computer Science, or related fields.

## Qualifications

## Essential:

- Proven expertise in machine learning and deep learning techniques for data analysis.
- Proficiency in Python programming and the use of libraries such as TensorFlow, PyTorch, Scikit-learn, or Keras.
- Experience in handling and analyzing large datasets, including microscopy images, nanoindentation data, and EBSD patterns.
- Familiarity with data preprocessing methods, dimensionality reduction, and pattern recognition algorithms.
- Ability to develop predictive models for mechanical properties based on experimental and simulation data.
- Strong knowledge of mechanical characterization techniques, such as nanoindentation, microhardness testing, and elastic modulus mapping.
- Excellent skills in data visualization and statistical analysis tools (e.g., MATLAB, Excel, or R).

# Hiring organization

Università degli Studi Roma Tre -Department of Civil, Computer Science and Aeronautical Technologies Engineering

# **Employment Type**

Full-time

# **Beginning of employment**

September 2025

## **Duration of employment**

36 months

## Job Location

Via Vito Volterra, 62, 00146, Rome, Latium, Italy

#### Date posted

28 Febbraio 2025

## Valid through

31.05.2025

## Desiderable:

- Knowledge of image processing algorithms for feature extraction and analysis from SEM, TEM, and EBSD images.
- Proven ability to work with neural networks for classification and regression tasks applied to materials data.
- Expertise in using unsupervised learning techniques for clustering and pattern recognition in experimental data.
- Record of scientific publications in machine learning and materials science journals.