

<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 micro-architectures.

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.