Nicola **Saitto**

Materials Engineer, Nanotechnology Engineer

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Summary

Passionate Materials Engineer with a specialization in nuclear engineering and strong analytical skills. Experienced in artificial neural networks (ANNs), including MLPs, CNNs, and XGBoost, applied to fission matrix simulations and reactor physics problems. Proficient in Python and MATLAB, with practical experience in machine learning, numerical simulations, and data processing. Good understanding of SQL from developing databases at work. Experienced Linux and Windows user with strong knowledge of the Office suite. Excellent verbal and written communication skills, capable of conveying complex information clearly and effectively. Proactive problem-solver, skilled in analyzing situations, identifying challenges, and implementing practical solutions. Highly adaptable and quick to learn, thriving in dynamic and fast-paced environments.

Work Experience

PSElectric.eu — *Massa, Italy*

Field engineer — *May. 2021 - Jan. 2024*

- Employed in the maintenance and deployment of electrical systems
- Helped to develop a database for the procurement office

Casale — *Stockholm, Sweden*

Automation engineer — *Aug. 2024 - Present*

- Managing the Automatization of chemical reactors

Skills

Languages:

- **Italian**: Native Speaker
- **English**: Fluent (C1)
- **Swedish**: Beginner
- **Spanish**: Beginner

DevOps:

- **Docker, Podman**: Good knowledge due to use at work and in projects
- **Redis, mySQL, AWS, GCP, Azure**: Good knowledge due to use at work

Programming:

- **Python, Labview**: Good knowledge due to use at work and in projects and at university
- **SQL**: Good knowledge due to use at work
- **Matlab, LaTeX**: Good knowledge due to use at university

Lab:

- Chemistry Lab Safety certification

Tools and Software:

- **Office, Solidworks, CAD**: Good knowledge due to use at work and at university
- **CES, ImageJ**: Good knowledge due to use in projects and at university

Deep Learning:

- **MLPs, CNNs, XGBoost**: Good knowledge due to use in projects and at university

Education

Politecnico di Milano (Polytechnic University of Milan) — *Milan, Italy*

B.S. in Materials and Nanotechnology Engineering, 180 ECTS — *Oct. 2017 - Mar. 2021*

- Nuclear Engineering Track
- With scholarship

Politecnico di Milano (Polytechnic University of Milan) — *Milan, Italy*

Master level courses, 15 ECTS — *2024*

- RADIOCHEMISTRY I & II: Advanced course on the nuclear fuel cycle, reactor chemistry, chemical dosimetry and decommissioning processes, 10 ECTS
- THERMODYNAMICS AND HEAT TRANSFER: Advanced course on thermodynamics, heat exchange and energy systems, 5 ECTS

KTH Royal Institute of Technology (Technical University of Stockholm) — *Stockholm, Sweden*

M.S in Nuclear Energy Engineering, 120 ECTS — *Aug. 2024 - Present*

Czech Technical University in Prague — *Prague, Czech Republic*

Master level course, 2 ECTS — *Nov. 2024*

- EXPERIMENTAL REACTOR PHYSICS B: Course on reactivity measurement, control rod calibration, dynamics study of nuclear reactor, prediction of unknown critical state, 2 ECTS

Chalmers University of Technology

Goteborg, Sweden

Master level course, 6 ECTS

Jan. 2025 - May. 2025

- DETERMINISTIC MODELING OF NUCLEAR REACTOR MULTI-PHYSICS: The course deals with the modeling of nuclear reactors, with emphasis on their multi-physics and multi-scale aspects, 6 ECTS

Projects

Automatization of Chemical Reactors

Stockholm, Sweden

Casale, Verdant Chemical Technologies, KTH Royal Institute of Technology

Aug. 2024 - Ongoing

- In collaboration with Casale, a global chemicals company based in Swizerland, Verdant Chemical Technologies and KTH Royal Institute of Technology.
- Overview: Designing and implementing a comprehensive system for real-time monitoring and control of a reactor, integrating sensor data to manage flow controllers, valves, and other critical components.
- Features: Utilizes Redis for low-latency data ingestion and processing, enabling real-time adjustments to reactor controls based on sensor feedback. Utilizes a Live dashboard for continuous monitoring and analysis, ensuring optimal reactor performance and safety.
- Impact: Achieve precise control over reactor operations, improve response times to changing conditions, and enhance system reliability, supporting thousands of sensor readings and control adjustments per second.

ANN-Based Fission Matrix Simulations

Stockholm, Sweden

KTH Royal Institute of Technology

Oct. 2024 - Mar. 2025

- Developed advanced simulations for neutron transport using artificial neural networks, leveraging MLPs, CNNs, and XGBoost.
- Designed and trained models to predict fission matrix coefficients with high accuracy, optimizing computational efficiency.
- Integrated feature engineering techniques to enhance model interpretability and performance in nuclear reactor analysis.
- Improved prediction speed and accuracy, enabling scalable simulations for reactor physics applications.

Writing

Elettrodeposizione e caratterizzazione di leghe Fe – Ni in etilenglicole

Milan, Italy

THESIS WORK, Author

2021

- Thesis on the electroplating of Fe – Ni alloys in ethylene glycol and the characterization of its magnetic properties

Professional Development

IAEA Certification in Nuclear security and safety

Vienna, Austria

Successfully completed and certified in the following IAEA nuclear Security and Safety courses:

Aug. 2024

- Security of Nuclear Information
- Information and Computer Security
- Nuclear Security Threats and Risks: Cyber Threats
- Preventive and Protective Measures Against Insider Threats
- Physical Protection
- Material out of Regulatory Control
- Nuclear Material Accounting and Control (NMAC) for Nuclear Security

Essential radiochemistry for society

Milan, Italy

MOOCS @ PoliMI

2019

- Course on the applications of radiochemistry techniques to nuclear engineering and nuclear medicine

Nuc@PoliMi

Milan, Italy

PoliMI

Nov. 2018 - Sep. 2019

- Seminar on the current state of nuclear energy production and future prospects