


Matteo Abrate

CURRICULUM

09/2023–Now

Avionic System Engineer


· ALTEN @ Leonardo Electronics 

Definition of testing and drafting of automatic test procedures for the integration and validation of aerospace systems and equipment. Performing integration and functional tests of aerospace systems and equipment at test laboratories.



2018–2023

Academic Tutor


· Università degli Studi di Torino 

Support for the study and preparation of exams in scientific subjects for DSA students.



2017–2019

Summer Camp Coordinator

· Cantalupa (TO) 

Organization, coordination and animation at the summer camp of Cantalupa. Logistical and practical organization of activities.



About me

I consider myself an enthusiastic, self-motivated, reliable, responsible, and hard working person, as well as a mature team worker who can easily adapt to all challenging situations, since I am able to work well both in a team environment and using own initiative. I am also able to work well under pressure and adhere to strict deadlines.

Personal

Areas of specialization

Machine Learning · Hardware Programming · Material Science

Interests

Technology, Electronics, Music, DJing, Travelling

Soft Skills

Communication
Problem Solving
Decision Making
Determination
Leadership

Hard Skills

Machine Learning (AI)
Data Analysis
Software Proficiency
Mathematics
Materials Analysis
DOORS

DEGREES

2017–2020

Bachelor Degree in Materials Science and Technology

100/110 · Università degli studi di Torino 




2020–2023


Master Degree in Physics of Advanced Technologies


110/110 · Università degli studi di Torino 




PROGRAMMING

Python/Pytorch 

HDL/Verilog 

Tensorflow 

C/C++ 

Linux OS 

LaTeX 

SKILLS

- **Machine Learning (AI):** Development of neural networks within the Tensorflow and the Pytorch frameworks. Training, validation, hyperparameters optimization. Quantization of Convolutional Neural Network within the Brevitas framework for FPGA implementation.
- **Data Analysis:** Advanced data analysis techniques in Excel and Origin. Propagation of measurement errors and interpolation of data sets.
- **Materials Analysis Techniques:** IR spectroscopy, UV-visible spectroscopy, SPM (Scanning Probe Microscopy), SEM (Scanning Electron Microscope), AFM (Atomic Force Microscopy), X-ray diffraction, DSC (Differential Scanning Calorimetry), TGA (Thermogravimetric Analysis).


BACHELOR THESIS

Ab initio study of Lu_2SiO_5 crystals as scintillation materials in medical imaging: state of the art and modeling with CRYSTAL. The CRYSTAL program is a computational tool for solid state chemistry and physics implemented by the Group of Theoretical Chemistry of the University of Torino (Italy), it computes the electronic structure of periodic systems within Hartree Fock and Density functional theory (DFT).

MASTER THESIS


Implementation and analysis on FPGA (Field Programmable Gate Array) with the FINN compiler of the Stack-CNN algorithm. This algorithm's goal is to achieve an online detection and track reconstruction of space debris in the 1-10 cm range with a space-based experiment. The algorithm is composed of a Convolutional Neural Network (CNN) and a Stacking-Procedure. An 8-Bit quantization of the CNN and the dataset was executed.

LANGUAGES

Italian | C2 | Mother tongue
English | B2 | 

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