Matteo MARENGO
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LinkedIn
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Graduate of **ENS Paris-Saclay** in the Master of Science Mathematics, Vision, Learning **(MVA)**
Research Intern at **HARVARD Medical School**

EDUCATION

Sep. 2023 – Sep. 2024: Master of Science MVA (Mathematics, Computer Vision, Learning) @ **ENS Paris-Saclay**

- Advanced Learning for text and graph data (M. VAZIRGIANNIS), Audio Signal Indexing (G. RICHARD)
- Deep Learning & Signal Processing (T. COURTAT), Machine Learning for Time Series (L. OUDRE)
- 3D Computer Vision, C++ (P. MONASSE), Brain Imaging (B. THIRION), Advanced Deep Learning (G. CHARPIAT)
- Geometric Data Analysis (J. FEYDY), Responsible Machine Learning (D. ABU)
- Deep Learning for Medical Imaging (O. COLLIOT), Biostatistics (R. PORCHER)

Sep. 2022 – July 2023: Master of Science Nanobiotechnology | Biomedical Engineering @ **Université Grenoble Alpes (UGA)**

- Biomolecular Interactions (J. GEISELMANN), Biosensors (A. SPINELLI), Microfluidics (L. DAVOUST)
- Optics for Biological Systems (M. BALLAND), Cardiovascular Physiology (D. ROUSSEAU)

Sep. 2020 – July. 2023: Master of Engineering @ **PHELMA** (**School of Physics, Electronics, Materials Science)**

- **Biology:** Immunology, Cellular/Molecular Biology (M. WEIDENHAUPT), Neurosciences (F. BRUCKERT)
- **Engineering:** Electronics (D. BUCCI), Signal Processing (G. FENG), Data Science (A. CAPLIER)
- **Applied Physics:** Thermodynamics (A. ANTONI), Semiconductors (I. IONICA)
- **Computer Science / Mathematics:** Algorithms/#C (L. MOISAN), Probability/Statistics (M. CELETTE)

Feb. 2022 – July 2022: Academic Semester @ **Eindhoven University of Technology (TU/e)** – Netherlands
Biomedical Detection, Ultrasound for Medicine (M. MISCHI), Biomaterials (P. DANKERS)

Sep. 2018 – July 2020: Preparatory Classes, Major Physics & Chemistry @ **Lycée Stanislas** *PARIS*

- **July 2018:** High School Diploma, **Science Major,** with highest honors

EXPERIENCES

Oct. 2024 – Present: Medical AI Research Intern @ **HARVARD UNIVERSITY** *BOSTON* – Chirag Patel's Group

- **Supervisors:** Pr. Chirag PATEL, Shakson ISAAC
- Department of Biomedical Informatics, Medical School, Mapping the connections between the exposome and phenome
- Predicting Environmental Exposures and Their Impact on Human Body Structure Using Biomedical AI

Apr. 2024 – Oct. 24: AI Research Intern @**VALEO.AI** & @**INRIA** *PARIS* – Research Group

- **Supervisors:** Dr. Alexandre BOULCH, Pr. Renaud MARLET, Dr. Raoul DE CHARETTE
- Urban Scene Reconstruction with Gaussian Splatting, applications for autonomous driving

Feb. 2023 - July 2023: Computer Vision Research Intern @ **Ministère des Armées** *PARIS*

- Image analysis/processing of electronic component images with Machine & Deep Learning
- Computer Vision, Supervised Learning (CNN), Autoencoder, Unsupervised Deep Embedding & Clustering

July 2022 – Sep. 2022: Nanobiology Research Intern @ **ETH Zürich** – Laboratory of Biosensors and Bioelectronics

- **Supervisor:** Pr. Nako NAKATSUKA
- Functionalized nanopipettes with aptamers for detecting neurotransmitters in the brain (e.g Parkinson)

Jan. 2022 – Feb. 2022: Data Science Intern @ **Diabeloop** *GRENOBLE*

- **Supervisor:** Dr. Lenka STYFALOVA
- Work on the follow-up of diabetic patients equipped with the Diabeloop device - Data Science, Statistics (Pandas)

May 2021 - July 2021: Signal Processing Research Intern @ **Université Paris Cité,** BioMedTech facilities

- **Supervisor:** Dr. Danping WANG
- Electromyogram (EMG) analysis of patients with proximal spinal muscular atrophy (SMA), Signal Processing

RESEARCH PROJECTS

Oct. 2023 – Mar 2024: Hôpital Européen Georges Pompidou – Paris – **Supervisor**: *Pr. Jean-Emmanuel BIBAULT*

- Working with a Medical Doctor. Using a local LLM (e.g Mistral7B) to summarize radiotherapy patient forms.
- First-author on "Benchmarking LLMs and SLMs for patient reported outcomes" (submitted to NEJM AI)
- Co-author on "Patients Facing Large Language Models in Oncology: A Narrative Review" (ASCO)

Sep 2022 - Jan 2023 : CEA - Institut pour l'avancée des Biosciences (IAB) *GRENOBLE* – **Supervisor :** *Dr. Camille RAILLON*

- Microscopy of algae exposed to heavy metal pollution. Image processing & Analysis - *FiJi*

ACADEMIC PROJECTS

Oct. 2023 – Sep 2024: ENS Paris-Saclay

- Neuronal Style Transfer | Review & Implementation | Huang, et al. 2017
- 3D Computer Vision (Panorama, Disparity maps, Graph Cuts, Epipolar Lines) – *C++*
- Data Challenge Kaggle NLP | ChEBI-20 Dataset | First team / 55
- Data Challenge Kaggle Deep Learning for Medical Imaging | Lymphocytosis classification
- Data Challenge SNCF | Forecasting of station frequentation

2020 - 2023 : Phelma-Grenoble INP || Université Grenoble Alpes || TU/e Eindhoven

- Characterization of PDMS microfluidic chips, DNA "Microarray"; fabrication and study
- Characterization of a photoplethysmography signal | Electronic design of a scale
- Project: establishing the link between Machine Learning & electrosurgery

SKILLS & INTERESTS

Skills: Python **(**PyTorch, TensorFlow, Scikit-Learn, Pandas, SciPy), C/C++, GitHub, LaTeX, HTML, Markdown, MATLAB
Languages: English (C1+; CPE (Cambridge Proficiency Exam), TOEIC 955/990), German (B1), Italian (B1)
Interests: Taekwondo, Sailing, Saxophone (>15 years), Hiking

SOCIAL ASSOCIATIONS

- **Grenoble Red Cross:** solidarity outreach, meal distribution, responses to calls from 115 - Social Emergency Services
- **Civil Protection:** Team First Aid level 1 (PSE1, 35h), application for Paris V unit

REFERENCES

The list below presents the people who have professionally and personally accompanied me in my post-baccalaureate journey.

PROFESSIONAL REFERENCES

Dr. Alexandre BOULCH
Valeo.ai / INRIA
Research Scientist
alexandre.boulch@valeo.com

Pr. Nako NAKATSUKA
ETH Zürich - LBB
EPFL - CHEMINA
Professor
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Pr. Jean-Emmanuel BIBAULT
PUPH, Université Paris Cité
Hôpital Européen Georges Pompidou
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ACADEMIC REFERENCES

Pr. Davide BUCCI
Grenoble INP – Phelma & Institut de Microélectronique, Electromagnétisme et Photonique (IMEP-LAHC)
Biomedical degree director
davide.bucci@grenoble-inp.fr
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Pr. Laurent OUDRE
Centre Borelli, ENS Paris Saclay
Professor, MVA director
laurent.oudre@ens-paris-saclay.fr

Pr. Alice CAPLIER
Grenoble-INP Phelma & GIPSA-lab (Grenoble Images Parole Signal Automatique)
Lecturer – Researcher – Director of GIPSA-lab and Grenoble-INP Phelma.
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