PERSONAL INFORMATION

Francesca dello Iacono

WORK EXPERIENCE

09/2024 – 03/2025

Research Intern – Master's Thesis

Industrial Neuroscience Laboratory, Department of Anatomical, Histological, Legal Medicine and Locomotor System Sciences - Sapienza University of Rome

- Researcher in the study of human neurophysiological signals (EEG, PPG, EDA) for the investigation of mental fatigue, cognitive load, and Human Factors in realistic and operational driving environments..

EDUCATION AND TRAINING

09/2022 – 18/03/2025

Biomedical Engineer

2nd level degree - Master

Final Grade: 110/110

Sapienza University of Rome, Rome (Italy)

Exams:

COURSES	GRADE
Biomechanics and Tissue Engineering Laboratory	28/30
Advanced Methods for Biomedical Data Analysis	25/30
Biomedical Data and Signal Processing II	27/30
Biomechanics	26/30
Biomedical Instrumentation II	28/30
Technological Applications in Surgery and Hospital-related Pathologies	30/30
Biomedical Techniques and Equipment	28/30
Radiation Physics Applied to Medicine	27/30
Bioelectromagnetic Interaction I	28/30
Models of Biological Systems	27/30
Industrial Neuroscience	29/30
Electrical Measurements for Biomedicine	30/30

Projects carried out:

- Design and construction of an electrical impedance plethysmograph for thoracic volume variation measurement, with hardware on breadboard and data acquisition in LabVIEW
- Mechanical and contractile characterization of murine biological tissues (skin, tendon, bone, soleus muscle), using ASI systems and DIC (GOM) for data acquisition
- Experimental analysis of the decay of sodium-22 (22Na) and performance characterization of radiation detectors, with statistical verification (Poisson, exponential) and data processing in MATLAB and GIADA
- Study of the dielectric properties of biological tissues and SAR simulation using anatomical models (Yoon-sun) in Sim4Life, with modeling in MATLAB

Thesis:
"Processing of electroencephalographic, photoplethysmographic, and skin conductance signals for the identification of neurophysiological markers of mental fatigue"

Experimental thesis within the European project FitDrive, focused on biosignal processing for monitoring mental fatigue during driving. Protocol design, preprocessing, feature extraction, and statistical analysis of data in a simulated environment using MATLAB.

04/2022 – 06/2022

Junior Innovation Consultant

Training Program

ELIS, OPEN ITALY project, Rome (Italy), , www.elis.org

▪ Intensive training on Consulting & Innovation Skills: project management (Agile methodology), storytelling, business case development, effective communication, personal leadership, time and stress management
▪ Participation in a business game within the SMART CITIES & NEW MOBILITY cluster: development and presentation of the project YOU nGO in response to a multi-corporate challenge (Poste Italiane, Autostrade per l'Italia, Aeroporti di Roma), proposing integrated mobility systems and data-driven services

09/2018 – 09/03/2022

Clinical Engineer

1st level degree - Bachelor

Final Grade: 98/110

Sapienza University of Rome, Rome (Italy)

Exams: Mathematics, Physics, Electrical Engineering, Electromagnetic Fields. Control Systems, Signal Theory, Electronics, Signal Processing, Fluid Mechanics, Anatomy, Biomedical Instrumentation

Thesis: *"Analysis of the Logarithmic Amplifier through LTSpice Simulation"*
Design and simulation of logarithmic and anti-logarithmic amplifiers using LTSpice, with application in dynamic range compression. Study of op-amp and BJT behavior, comparison of circuit configurations, and identification of the most stable and efficient design. Analysis extended to real components and integrated circuits (e.g., AD538, LOG112), with evaluation of performance limitations and practical constraints.

09/2013 – 06/2018

Maturità Classica

Italian secondary school diploma

Final Grade: 83/100

Liceo Classico "Norberto Turriziani", Frosinone (Italy)

PERSONAL SKILLS

Mother tongue(s): Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	B2	B2	B2	B2

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

Job-related skills

- Experience in experimental protocols involving the acquisition and processing of neurophysiological signals (EEG, PPG, EDA) for the assessment of mental fatigue and cognitive load in operational driving environments.
- Familiarity with wearable and lab-grade biosignal acquisition systems (e.g., Mindtooth Touch, Shimmer3 GSR+), including signal quality verification and synchronized data logging.
- Skills in experimental design, implementation, and validation of neurophysiological protocols in realistic scenarios.
- Ability to develop and apply signal processing pipelines for EEG (artifact removal, epoching, spectral analysis), PPG (HR, HRV), and EDA (SCL, SCR, deconvolution).
- Competence in designing analog biomedical circuits and virtual instruments for physiological monitoring (e.g., impedance plethysmography).
- Experience in biomechanical testing of biological tissues, with knowledge of viscoelastic modeling, mechanical preconditioning, and DIC-based strain analysis.
- Practical knowledge of statistical validation of experimental data: ANOVA, t-tests, Wilcoxon, Friedman, correlation analysis.
- Advanced user of **MATLAB** for preprocessing of biosignals, feature extraction, statistical analysis, and data visualization in neurophysiological studies.
- Good command of **LabVIEW** for developing virtual instruments and managing data acquisition in biomedical instrumentation projects.
- Proficient with **LTSpice** for simulating analog and nonlinear electronic circuits, especially in the context of signal compression and amplification.
- Experienced with **Sim4Life** for FDTD-based electromagnetic simulations and SAR estimation on anatomical models.
- Skilled in **Microsoft Excel** for dataset structuring, basic descriptive statistics, and technical reporting.
- Familiar with **Python** for basic data handling and signal processing tasks in biomedical engineering contexts.

Communication skills

I have developed strong communication skills during my experimental thesis at the Industrial Neuroscience Laboratory of Sapienza University, where I collaborated closely with researchers and colleagues in the design and implementation of a neurophysiological research protocol. This experience allowed me to present scientific results in a clear, structured, and effective way, both orally and in written form.
Furthermore, during the ELIS – Open Italy program, I worked in multidisciplinary teams with companies and startups, enhancing my ability to communicate in technical and strategic contexts and to adapt my language to different audiences, including professionals from non-scientific backgrounds.

Organisational and Managerial Skills

During my master's thesis period, I autonomously coordinated the scheduling of experimental sessions, managed participant involvement, and oversaw the entire data collection and analysis process, ensuring compliance with rigorous scientific protocols and deadlines.
Additionally, through the ELIS – Open Italy program, I strengthened my project management and organisational skills by working in multidisciplinary teams on real-world challenges. I contributed to the definition of objectives and work plans, collaborated on communication materials, and participated in regular meetings and progress reporting. This experience enhanced my ability to manage tasks within shared timelines, coordinate collaborative efforts, and adapt to dynamic and goal-oriented environments.

Digital skills

SOFTWARE/TOOL	LEVEL
MATLAB	Advanced user
Excel	Advanced user
Python	Intermediate user
LTSpice	Intermediate user
LabVIEW	Intermediate user
Sim4Life	Basic user
Microsoft Office Suite	Advanced user

Levels: Basic user – Intermediate user – Advanced user
Digital skills – Self-assessment sheet

ADDITIONAL INFORMATION

Publications

- **F. Dello Iacono**, L. Guinti, M.Cecchetti ... & G. Di Flumeri. “Analysis of neurophysiological correlates of mental fatigue in both monotonous and demanding driving conditions”
  Manuscript submitted for peer review on:
  Brain Sciences, MDPI, Impact Factor: 2.8

According to law 679/2016 of the regulation of the European Parliament of 27th April 2016, I Hereby express my consent to process and use my data provided in this CV.