


SANTA SOZZI

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PROFESSIONAL SUMMARY

PhD student in Smart Industry with a strong passion for merging engineering with medical innovation. My PhD research falls within the field of neuroscience and aims to identify early markers in neurodegenerative disease. Specifically, using high resolution 7T-fMRI and peripheral signals (EEG, ECG, pupillometry), the project focuses on developing innovative methodologies for brain connectivity analysis.

Through the Master's thesis in collaboration with Esaote SpA along with a research scholarship within the European Project SENSEI, I have improved my technical expertise, particularly in unsupervised deep learning algorithms applied to ultrasound images and segmentation of neurons in microscopy images.

I am a curious and responsible person, inclined towards collaboration and teamwork. I am eager to challenge myself by working with the team to achieve successful results.

SKILLS

- **Industry 4.0:** Internet of Things, Machine Learning, Additive Manufacturing
- **Technical:** CAD modeling (Fusion 360), rapid electronic prototyping (Arduino), electronic design (Eagle, Fritzing), biosignal and bioimage processing
- **Digital:** Google Firebase platform, creation of mind/concept maps, flow charts, block programming
- **IT:** Office suite, Android Studio, Arduino IDE
- **Programming:** MatLab, Python, C++, Java, SQL-PL/SQL, Oracle ADF
- **Neuroscience:** Processing of functional images, brain connectivity analysis; software/packages: AFNI, GIFT, Python, MatLab

LANGUAGES

Italian - Native

English - Professional



EXPERIENCE

Department of Information Engineering, University of Pisa

PhD Program in Smart Industry in collaboration with the research center Imago7 (Calambrone, Pisa), since Novembre 2023

Title of the research project: BRAIN STEM EXPLORATION: INVESTIGATING FUNCTIONAL CONNECTIVITY AND EARLY MARKERS IN NEURODEGENERATIVE DISEASES USING 7 TESLA FMRI TECHNOLOGY AND PUPILLOMETRY

Centro Piaggio, University of Pisa

Research scholarship "Development of methods for the automatic analysis of neuronal dendritic spines in confocal and super-resolution microscopy images", in the European Project SENSEI, June 2023 - November 2023

Internship with Esaote S.p.A Company

Objective: Study and research activities aimed at the thesis work
Main Activities: Analysis of ultrasound images; exploration of deep learning techniques, with a main focus on neural networks trained with unsupervised algorithms. Simulation of ultrasound data, registration and denoising.
Tools used: MatLab (Field II), Python (with TensorFlow and TensorBoard platforms), Visual Studio, Virtual Machine with S.O. Ubuntu



EDUCATION

University of Pisa

Master Degree in Biomedical Engineering (Bioinstrumentation and Bioinformatics Path), October 2020 - April 2023

Thesis title: APPLICATION OF AN UNSUPERVISED ALGORITHM BASED ON NEURAL NETWORKS FOR THE SPECKLE DENOISING FROM ULTRASOUND IMAGES

University of Pisa

Bachelor Degree in Biomedical Engineering (Information Path), September 2017 - October 2020

Thesis Title : STRATEGIES FOR THE DEVELOPMENT OF BIOACTIVE SCAFFOLDS AIMED AT THE RECRUITMENT OF STEM CELLS FOR IN SITU REGENERATION OF CARDIAC TISSUE



CERTIFICATES AND GRANTS

- **Abilitazione alla Professione di Ingegnere - Sezione A, University of Pisa**
- **Industry 4.0 learning path, University of Pisa - MIUR**



COURSES

BrainHack Lucca 2023, Scuola Alti Studi Lucca (IMT)

Hackathons and educational activities, 4-7 December 2023

Project Title: "Brain-machine interface: a closed loop system for brain signal driven stimulation deliver"

XL Scuola Annuale di Bioingegneria di Bressanone, Gruppo Nazionale di Bioingegneria (GNB)

2021 Edition

Activity Title: "*Biofabrication: an integrated bioengineering approach for the automated fabrication of biological structure for clinical and research applications*"



CONFERENCES

One Health based biomedical research. Definition, Ethics, Law and Science

International Workshop on Ethics, Research and One Health. Pisa (PI), 18-19 March 2024

Multiscale Imaging in Neuroscience

Webinar organized by EBRAINS and EURO BIOIMAGING. 27/10/2023

DGP23: Dynamics and Complexity

Conference organized by the C.I.S.S.C, Pisa (PI), from 7-9 March 2023

National Automation and Robotics Exhibition

Reference fair for industrial automation. Parma (PR), 05/23/2023

Synthetic Aperture Radar (SAR) Signal Processing Challenges and Data Sets for Associated Research

Seminary organized by IEEE Society and held by Linda Moore (AFRL, Wright-Patterson Air Force Base, USA), 11/05/23

National Conference of the Italian Association of Clinical Engineers, 2022

"*Oltre il PNRR: verso una cultura tecnologica a sostegno della salute*". 2022 Edition, Riccione (RN)

National Conference of the Italian Association of Clinical Engineers, 2020

"*Emergenza SSN: ripartiamo insieme da competenze, tecnologie, organizzazione*". 2020 Edition, held remotely