



Benedetta Baldini

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● ABOUT ME

Driven by an insatiable curiosity for the world that envelops us, my relentless pursuit of knowledge knows no bounds, as I strive to continuously enhance my understanding across an array of diverse disciplines

● WORK EXPERIENCE

01/05/2023 – CURRENT Bologna, Italy

HPC SPECIALIST IFAB - INTERNATIONAL FOUNDATION ARTIFICIAL INTELLIGENCE AND BIG DATA FOR HUMAN DEVELOPMENT

- EuroCC Italy Task 4 Leader - Services for PAs and Academia
- Development of Proof-of-Concept for SME
- Support in the Management of ICSC Life Sciences Projects (Healthcare)
- Development of Datalake-as-a-Service and Digital Twins-as-a-Service for EuroCC Project

Department IFAB | **Address** Via Galliera 32, 40121, Bologna, Italy | **Email** benedetta.baldini@ifabfoundation.org

13/02/2023 – 01/05/2023 Casalecchio di Reno (BO), Italy

TECHNICAL PROJECT MANAGER INTERN CINECA CONSORZIO INTERUNIVERSITARIO

- Intern in the Technology Transfer group of the High Performance Computing Department
- Focus on Datalakes and database languages
- Activities within the EuroCC2 project, focused on high-tech topics such as Supercomputing, AI, Big Data.

Business or Sector Information and communication |

Address Via Magnanelli 2, 40033, Casalecchio di Reno (BO), Italy | **Website** <https://www.cineca.it>

● EDUCATION AND TRAINING

09/2020 – 22/03/2023 Bologna, Italy

MSC ELECTRONIC ENGINEERING Alma Mater Studiorum - Università di Bologna

Structural Health Monitoring (SHM) is a major challenge in ensuring the safety and integrity of civil and industrial structures.

In this study, a new approach to SHM based on spiking neural networks (SNNs) was presented, specifically evaluating the ability of these new neural approaches to detect anomalies in a reference use case, i.e. the Z24 bridge in Switzerland.

Through a series of experiments, it has been demonstrated that the analysis of vibrational responses with SNN is able to accurately and reliably identify variations in the behavior of the structure.

Secondly, the efficiency of Superlets to obtain high resolution time-frequency representations has been demonstrated compared to more traditional methods such as wavelet transforms and spectrograms.

Furthermore, we demonstrated that the use of SNNs is a winner over a more traditional approach focused on the use of convolutional neural networks (CNNs), significantly improving performance in terms of accuracy (a maximum increase of 15%).

In summary, our study demonstrated that the SNN approach can represent a promising solution for structural health monitoring and early detection of anomalies related to changes in the spectral signature

of the target structure, offering new opportunities to improve safety and reliability of civil and industrial infrastructures.

Address Viale del Risorgimento 2, Bologna, Italy, 40136, Bologna, Italy | **Website** www.unibo.it |

Field of study Electronics and automation | **Final grade** 110/110 | **Level in EQF** EQF level 7 |

Number of credits 120 | **Thesis** Spiking Neural Networks for SHM based on vibration analysis

09/2016 – 11/03/2020 Bologna, Italy

BSC ELECTRONIC AND TELECOMMUNICATIONS ENGINEERING Alma Mater Studiorum -
Università di Bologna

The goal of the following study is focused on the implementation and optimization in a Python environment using the Keras library with Tensorflow back-end of a CNN in an AI detection code for vehicle classification in order to obtain a better performance in a completely open source and compatible with a previous study on a vehicle counting system in Python and OpenCV.

Website www.unibo.it |

Field of study Information and Communication Technologies (ICTs) not further defined , Electronics and automation |

Final grade 103/110 | **Level in EQF** EQF level 6 | **Number of credits** 180 |

Thesis Python and Tensorflow implementation of a convolutional neural network for vehicle classification

09/2011 – 06/2016 Bologna, Italy

DIPLOMA SCIENTIFICO INTERNAZIONALE ITALO-INGLESE (BROCCA) Liceo Ginnasio Luigi
Galvani

- Stages in UK to attend courses on field

- IGCSE Certification (Physics, Maths, Biology, English as Second Language, French, Art and Photography, Geography)

- Participation to the EEE Project- Extreme Energy Events, special Centro Fermi research activity about the origin of cosmic rays, performed in collaboration with INFN carried out with the essential contribution of students and teachers of high schools. Each of the participating Institutes hosts a "telescope" made of the most advanced particle detectors (Multigap Resistive Plate Chambers, MRPC). EEE telescopes are put in coincidence using GPS, with the goal to detect cosmic muons and extensive showers (as large as a small town), produced by primary cosmic rays of the highest energy. Data from all telescopes are sent to CNAF-INFN, in Bologna, to allow track reconstruction so that all relevant information can be stored in a database to be later available for analysis.

Address Via Castiglione 38, 40124, Bologna, Italy | **Website** <https://www.liceogalvani.edu.it/> | **Final grade** 95/100 |

Level in EQF EQF level 4

01/11/2023 – CURRENT Bologna, Italy

PHD IN ENGINEERING AND INFORMATION TECHNOLOGY FOR STRUCTURAL AND ENVIRONMENTAL MONITORING AND RISK MANAGEMENT – EIT4SEMM Alma Mater Studiorum
- Università di Bologna

Research Activity: Empowering Predictive Maintenance in a SHM Digital Twin Framework

Address Viale del Risorgimento 2, 40136, Bologna, Italy | **Website** www.unibo.it |

Field of study Inter-disciplinary programmes and qualifications involving engineering, manufacturing and construction

Level in EQF EQF level 8

● LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C2	C1	C1	C1
FRENCH	B2	B2	B2	B2	B2
GERMAN	A1	A1	A1	A1	A1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

● **DIGITAL SKILLS**

Deep Learning Tools

Tensorflow | Keras | OpenCV | Nengo | Pandas | Numpy | Scikit-Learn | Pytorch

Programming

Python | VHDL | LaTeX | VSCode, Visual Studio | C | MATLAB | Ansible

Software applications

LabVIEW 16.0 | LTSpice | MATLAB/simulink | Intel Quartus | ModelSim | OpenStack | Advanced Design System (ADS) - Keysight

HPC and Digital Twinning

Databases (SQL, No SQL) | Cloud Computing: OpenStack, AWS, GCP | DataLake | MongoDB | Parallel computing in HPC environment | Digital Twins | Microsoft Office package: Microsoft Word, Excel, PowerPoint, Access

OS

Linux | Microsoft Windows | MacOS

Others

Licensed Drone pilot

● **ADDITIONAL INFORMATION**

DRIVING LICENCE

Driving Licence: B | 26/01/2017

VOLUNTEERING

08/2015 – 08/2015 Cooperativa Il Pungiglione

Scouting Community Service An operational characteristic of this association is the opening to different areas of hardship: minors in difficulty and the elderly, the physically and mentally handicapped, prisoners and ex-prisoners, homeless people, girls who have escaped the prostitution racket, etc.

The project in question aims to be a response mainly to prisoners or ex-prisoners, marginalized and often unwanted people in the workplace because they are considered incapable and/or unreliable for a production inserted in the competitive market in which we live.

03/2021 – 06/2022 Alma Mater Studiorum - Università di Bologna

OrienteME

Training and support as a mentor to high school students in their approach to university choice

11/2021 – CURRENT AVIS Bologna

Blood Donor

HOBBIES AND INTERESTS

Structural Health Monitoring and Predictive Maintenance

Bioengineering

Artificial Intelligence

A handwritten signature in black ink, reading "Benedetta Baldini". The signature is written in a cursive style with a large, looping initial 'B'.

Benedetta Baldini