

# Federico Cocchi

NATIONAL PHD STUDENT IN ARTIFICIAL INTELLIGENCE @ AIMAGELAB (UNIMORE)

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[https://federico1-creator.github.io/Federico\\_Cocchi/](https://federico1-creator.github.io/Federico_Cocchi/)

## Summary

I am PhD student based at AlmageLab (UNIMORE). My research activities involves Deepfake detection, Large Language Models and Multimodality. My interests extend to Generative AI and HPC systems. I actively leverage AI technologies in my daily activities to introduce breakthroughs and resolve in an innovative and disruptive way new and old problems.

## Education

### University of Pisa - (UNIPI)

Modena, Italy

NATIONAL PHD IN ARTIFICIAL INTELLIGENCE

March 2023 - Present

- Scholarship in collaboration with UNIMORE and based in Modena at the AlmageLab
- Scholarship title: *Exploring Multimodal Challenges in Generative AI*
- Supervisor: Prof. Rita Cucchiara and Dr. Marcella Cornia
- Research topics: Deepfake detection - Generative AI - Multimodal Large Language Models

### University of Modena and Reggio Emilia - (UNIMORE)

Modena, Italy

M.Sc. IN COMPUTER SCIENCE - CURRICULUM IN ARTIFICIAL INTELLIGENCE

Oct. 2020 - Feb. 2023

- Thesis title: Perceptual and Semantic Detection of Deep Fakes.
- Supervisor: Prof. Rita Cucchiara.
- Grade: 110 cum laude / 110.

### University of Bologna - (UNIBO)

Bologna, Italy

B.Sc. IN AUTOMATION ENGINEERING

Sept. 2016 - Oct. 2020

- Thesis title: Anomaly prediction with temporal convolutional networks and data augmentation in high performance computing systems.
- Supervisor: Prof. Michela Milano.

### F.lli Alberghetti

Imola (BO), Italy

HIGH SCHOOL DEGREE IN SCIENTIFIC OF APPLIED SCIENCES

End: 2015 - 16

## Experience

### Research Internship

Modena, Italy

UNIVERSITY OF MODENA AND REGGIO EMILIA (UNIMORE) @ AIMAGELAB

Sept. 2022 - Feb. 2023

- Creating a synthetic replica of the COCO dataset through a text-to-image model. Implementing a machine learning architecture to identify deepfake images based on their correlations and semantic meaning
- Supervisor: Prof. Rita Cucchiara, Dr. Lorenzo Baraldi and Dr. Marcella Cornia

### Research Internship

Bologna, Italy

UNIVERSITY OF BOLOGNA (UNIBO) @ EEES LAB

Feb. 2020 - Oct. 2020

- Developing machine learning algorithms and metrics for the analysis of data from CINECA's HPC system, with a focus on predicting anomalies
- Supervisor: Prof. Luca Benini and Dr. Alessio Burrello

## Project

### ELSA European Project

Europe

EUROPEAN LIGHTHOUSE ON SECURE AND SAFE AI

Feb. 2023 - Present

- ELSA is a virtual center of excellence that will spearhead efforts in foundational safe and secure artificial intelligence (AI)
- This network of excellence is funded by the European Union with the Horizon Program
- I am currently involved in the multimedia use case, focusing on Deepfake detection. Employing advanced Artificial Intelligence techniques to tackling disinformation
- Making publicly available the *Diffusion-generated Deepfake Detection dataset*

## ITSERR PNRR Project

ITALIAN STRENGTHENING OF THE ESFRI RI RESILIENCE

Italy

Mar. 2023 - Present

- ITSERR is an interdisciplinary and distributed Research Infrastructure, that improves the accessibility to data, facilities and promotes data FAIRness
- Associated project with RESILIENCE EU infrastructure

## Honor & Award

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2023 **Winner**, ELLIS Summer School Project on Large-Scale AI for Research and Industry

Modena, Italy

## Publication

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### Unveiling the Impact of Image Transformations on Deepfake Detection: An Experimental Analysis

Conference

22ND INTERNATIONAL CONFERENCE ON IMAGE ANALYSIS AND PROCESSING (**ORAL**)

Sept. 2023

- Authors: **Federico Cocchi**, Lorenzo Baraldi, Samuele Poppi, Marcella Cornia, Lorenzo baraldi, Rita Cucchiara

## Reviewer

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I had the opportunity to act as a reviewer in different prestigious conferences. Here is a list of them.

2023 **Reviewer**, Workshop and Challenge on DeepFake Analysis and Detection

ICCV, Paris

2023 **Emergency Reviewer**, 31st International Conference on Multimedia ACM

ACM, Ottawa

2023 **Reviewer**, 22nd International Conference on Image Analysis and Processing

ICIAP, Udine

2023 **Reviewer**, 2nd International Workshop on Artificial Intelligence for Digital Humanities

ICIAP, Udine