

# DARIO CIONI

AI Researcher · Machine Learning Engineer

 ciodar.github.io

 dario-cioni

 Milan, Italy

## WORK EXPERIENCE

### AI Developer @ AI Center of Excellence

PwC, Milan, Italy

 Python LLMs RAG FastAPI


 Jul. 2024 - Present

- Developed and optimized 3 Retrieval-Augmented Generation (RAG) pipelines leveraging Large Language Models (LLMs)

### Research Assistant @ MMV group

Queen Mary University of London, London, UK


 Python Pytorch Generative Models Deepfake Detection Vision Foundation Models

 Oct. 2023 - June 2024

- Research on Synthetic Image Attribution, working with Prof. Ioannis Patras and Dr. Christos Tzelepis to be published at TWYN@ECCV2024

### ICT Consultant, Software Developer

Hermes Trade s.r.l, Florence, Italy

 SQL ASP.Net Python Angular Hitachi Pentaho


 Aug. 2015 - Sep. 2021

- Designed and followed the development of an ERP/CRM application as Database Developer and Backend Developer for 5 main clients, managing all phases of software development lifecycle and cutting support costs by 30 %
- Worked as Product Owner in an Agile team of 8 people, translating clients' needs into actionable User Stories
- Built an ETL pipeline (Pentaho DI) for continuous database update during the migration phase, increasing velocity by 50%

## EDUCATION

### M.S. in Artificial Intelligence

University of Florence

 110/110 with Honour (First Class Honours)

 Sep. 2021 - Apr. 2024

- Thesis: "Forensic Techniques for Detection and Attribution of Synthetic Images"
- Main subjects: Deep Learning, Statistical Learning, Data Mining, Computer Vision, Generative Models, Big Data Architectures

### B.S. in Computer Science and Engineering

University of Florence

Thesis "Convolutional Neural networks for Object counting in thermal imagery"

 Sep. 2015 - Apr. 2021


- Performed transfer learning on features extracted by a YOLOv3 network trained on cross-domain thermal imagery
- Main subjects: Databases, Algorithms and Data Structures, Artificial Intelligence, Theory of Computation, Software Engineering

## ACHIEVEMENTS

### Best paper award

TWYN workshop, ECCV

Received "Best paper award" at Trust What You learnN (TWYN) workshop, in conjunction with ECCV 2024

 Sep. 2024

## PROJECTS & PUBLICATIONS

### Are CLIP features all you need for Universal Synthetic Image Origin Attribution?

TWYN @ ECCV 2024

 Python Deepfake Detection Open Set Recognition Vision Foundation Models

 ciodar/UniversalAttribution

- Leveraged Vision Foundation Models to perform Open-Set Attribution of Diffusion-generated synthetic images, resulting in a 20% increase in Open Set OSCR and a 5% rise in closed-set accuracy compared to existing baselines

### Diffusion Based Augmentation for Captioning and Retrieval in Cultural Heritage

ICCV 2023 4th Workshop on e-Heritage

 Pytorch Lightning Python Diffusion Models Transformers Image Captioning Image Retrieval

 ciodar/cultural-heritage-diffaug

- Used Diffusion models to perform 8x augmentation of Cultural Heritage datasets for Image Captioning and Retrieval

### Deep Compression

Paper replication

 Pytorch Lightning Python Neural Network Compression Image Classification

 ciodar/deep-compression

- PyTorch Lightning replication of "Deep compression: Compressing deep neural networks with pruning, trained quantization and Huffman coding" - Song Han et al., 2015
- Obtained paper results within 1% error on smaller-scale datasets, replicating from scratch the 3-step procedure described in paper

### Deep Learning Portfolio

Paper replication

 Pytorch Python Image Classification Natural Language Processing OOD-Detection

 ciodar/deep-labs

Collection of Deep Learning projects replicating results of foundational papers in each area

- Image Classification:** Replicated small-scale results of ResNets, Image Localization through Fully Convolutional networks and Class Activation Maps
- Natural language processing:** Sequence prediction, Sequence generation and Question Answering with Transformer nets
- Adversarial Learning & OOD Detection:** Out-Of-Distribution detection, evaluated FGSM attack and trained an image classification network for robustness against adversarial attacks