GIORGIA CARBONI

Computer Vision Engineer

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EDUCATION

Master Degree in Computer Science and AI

Università degli Studi di Milano
2022 - 2026

Bachelor's Degree in Computer Science

Università degli Studi di Ferrara
2018 – 2021

SKILLS

AI
PyTorch,
LMMs,
Distributed Training (**torchrun**),
SAM3D,
GPU Memory Optimization,
OpenCV,
MediaPipe

3D & VR
CUDA,
open3D,
Gaussian Splatting,
Unity,
BlenderProc,
VR systems,

Databases
PostgreSQL + PGVector

Web & APIs
FastAPI, Async/Await
Gradio,
Docker,
Celery

Programming Languages

Proficient in
C, C#, Python

Familiar with
C++, Java, Bash

Languages Spoken

Italian (native)
English (C1 in reading, listening, speaking)

PROFILE

Computer Vision Engineer specializing in **3D Generative AI**, **Synthetic Data**, and **Multi-Modal Systems**. Proven track record of optimizing Foundation Models (Llama-Mesh, SpatialLM) for **efficient deployment on constrained hardware (consumer GPUs)** and architecting asynchronous RAG pipelines. Proficient in Python, C, and bridging the gap between research and scalable deployment.

EXPERIENCE

Computer Vision R&D Engineer

Fifth Ingenium | Milan, May 2025 - December 2025

Fine-tuned Vision Models — Created domain-specific datasets and fine-tuned VLMs using QLoRA to bridge the domain gap between consumer and industrial environments, reducing memory footprint by 2.5x for consumer GPU deployment.
Synthetic Data Pipeline — Built automated pipelines for training data generation and annotation, handling spatial positioning, camera placement, occlusion, and multi-class labeling.
Visual Feature Extraction — Built interactive tool (Gradio) for extraction of segmentation masks (SAM), depth maps, and 3D point clouds (Gaussian Splatting) from single images.
RAG Pipeline Development — Designed novel text extraction and chunking techniques for efficient vector storage and LLM retrieval, optimizing token usage to reduce API costs (presented at SIGGRAPH Asia).
Asynchronous AI Services — Built microservices backend (FastAPI, RabbitMQ, Celery) to manage user queries and LLM inference queues for a Mixed Reality assistant (presented at SIGGRAPH Asia).

Engineer

DXC Technology | April 2022 - April 2023

Maintained Linux-based virtualization infrastructure and implemented automation scripts for service monitoring, ensuring high availability and operational continuity for enterprise applications.

MAIN PROJECTS

Point cloud acquisition using sensor

C++ | 2021
Worked with the Occipital Structure Core sensor and implemented a custom application in C++ to acquire and process point cloud data.

Tree Predictor for binary classification

Python | github.com/Giorgia01carboni/decision-tree-for-binary-classification
I implemented a tree predictor from scratch, utilizing single-feature binary tests at each node, and applied splitting criteria such as the Gini index and scaled entropy. It was used as a binary classification system to identify poisonous mushrooms.

Ping Pong AI

C# | github.com/Giorgia01carboni/pAIngPong
I used Unity's ML-Agents toolkit to develop a project where an AI agent learns to play Ping Pong using reinforcement learning.

Atrial Fibrillation Detector

Python | github.com/Giorgia01carboni/atrial-fibrillation-detector
Implemented the algorithm described in the paper "Low-complexity detection of atrial fibrillation in continuous long-term monitoring". Applied signal preprocessing techniques to ECG data.