

Christian Bianchi

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Education

Sapienza University of Rome

Rome, Italy

M.Sc. in Computer Science, Honours Programme; GPA 28.57/30

Expected Jul 2027

- Thesis (Autonomous Learning Group, University of Tübingen, Erasmus+): reinforcement learning for humanoid control; advisors Georg Martius and Fabio Galasso.

Sapienza University of Rome

Rome, Italy

B.Sc. in Applied Computer Science and Artificial Intelligence

Oct 2024

- Thesis: *Calibrating Neural Networks via Radius Regularization* (advisor Indro Spinelli); reduced expected calibration error on CIFAR-100 by 57% at unchanged accuracy. Completed while working full-time.

Publications

C. Bianchi, M. Amlal, A. Palma, M. Gioia, E. Ensoli, A. Sampieri, A. Roberti, F. Galasso, and L. Franco. **Long-Horizon Compositional Manipulation via Meta-Network Dynamic Adaptation**. *Preprint*, 2026.

C. Bianchi, S. Yousefi, A. Sampieri, A. Roberti, L. Rigazio, F. Galasso, and L. Franco. **Robotic Policy Adaptation via Weight-Space Meta-Learning**. *CoRL Workshop on Compositional Generalization*, 2026. [paper]

L. Sigillo, C. Bianchi, A. Uncini, and D. Comminiello. **Quaternion Wavelet-Conditioned Diffusion Models for Image Super-Resolution**. In *International Joint Conference on Neural Networks (IJCNN)*, 2025. **Oral**. [paper | code]

Research Experience

Autonomous Learning Group, University of Tübingen

Sep 2026 – Present

Visiting Student Researcher (M.Sc. Thesis), with Georg Martius, Fabio Galasso, and Pavel Kolev

Tübingen, Germany

- Investigating whether adapters generated from failed rollouts repair a humanoid motion tracker on infeasible generated motions without degrading motions it already tracks, in simulation and on a physical Unitree G1.

ItalAI & PINlab, Sapienza University of Rome

Jun 2025 – Present

R&D Scientist, with Fabio Galasso and Luca Franco

Rome, Italy

- Raised held-out LIBERO-Spatial success from 19% (fine-tuned $\pi_{0.5}$) and 28% (LoRA-Gen) to 40% by designing **WIZARD**, a meta-network that generates LoRA adapters for a frozen VLA policy from one unlabeled demonstration; 17% to 37% on a real Franka Emika Panda.
- Doubled held-out LIBERO-10 success (0.25 to 0.50) and reached the best CALVIN ABC→D score (4.58) by designing **SPELL**, which generates skill-level adapters and switches them with learned termination heads; 0.31 to 0.56 on a real Franka.
- Led both projects as first author from problem formulation to real-robot evaluation and writing, coordinating experiments across 2 Ph.D. and 1 M.Sc. researchers.
- Co-supervised an M.Sc. thesis on multimodal game agents (GameWorld: 34 games, 170 tasks) and a B.Sc. thesis on 3D hair generation.

ISPAMM Lab, Sapienza University of Rome

Dec 2024 – May 2025

Student Researcher, with Danilo Comminiello and Luigi Sigillo

Rome, Italy

- Improved PSNR on DRealSR from 27.87 to 29.69 over the strongest diffusion baseline by conditioning latent diffusion on quaternion wavelet embeddings (ResQu); presented as an oral at IJCNN 2025.

Industry Experience

F1 Consulting Services

Mar 2025 – Jun 2025

Generative AI Engineer

Rome, Italy

- Contributed to the Aeroporti di Roma Virtual Assistant, a multi-agent Amazon Bedrock assistant on WhatsApp and the web for an airport system serving about 50M passengers a year, building its voice pipeline (Whisper on SageMaker, Polly). [demo | article]
- Contributed to a cloud IVR modernization for Cassa Depositi e Prestiti (Amazon Connect, Lex).

HCL Software

May 2022 – Mar 2025

Software Engineer II

Rome, Italy

- Built dense-vector retrieval infrastructure with approximate nearest-neighbor indexing, improving indexing capacity, memory use, and query latency; one of four HCL Software Maverick Award recipients worldwide (2024).

Research Projects

- Privileged Context and Self-Distillation for Multimodal Game Agents** | Qwen3-VL, GameWorld Ongoing
- Identified failure to adapt when progress stalls as the main limitation of vision-language agents, via a 32-feature analysis of trajectories on GameWorld (34 games, 170 tasks) in an M.Sc. thesis I co-supervised.
 - Raised Qwen3-VL-30B overall success from 12.4% to 14.9% and progress from 30.6% to 35.8%, above the 8× larger Qwen3-VL-235B (13.5%, 30.8%), by evolving game-knowledge instructions with GEPA at fixed weights.
 - Next: isolating which in-context information (memory, evolved instructions, oracle game state) makes the agent succeed, then internalizing it into the weights with on-policy self-distillation (OPSD).
- Tool-Use Adaptation with Hypernetworks** | PyTorch, AppWorld 2026
- Generating low-rank adapters that teach frozen language models new tool-use skills from demonstrations; evaluated on synthetic tasks and AppWorld APIs.
- Machine Unlearning for 3D Human Motion Generation** | PyTorch [code] 2026
- Adapted three unlearning methods (ESD, LoRA, UCE) to a text-conditioned motion diffusion model and evaluated targeted forgetting against preservation of unrelated motions.
- Physics of Flow Matching: Steering FLUX Velocity Fields** | PyTorch, FLUX.1 2026
- Decomposed the learned velocity field of a flow-matching image model via Helmholtz–Hodge into irrotational and divergence-free components, recombining them across prompts and steering sampling with Lie-bracket corrections.
- Cross-Modal Retrieval with Hard-Negative Contrastive Learning** | PyTorch 2025
- Mapped text embeddings into an image embedding space with a transformer trained on a symmetric InfoNCE loss restricted to the top- k hardest negatives, with target-space mixup and Optuna search over loss and architecture.

Presentations and Service

- Reviewer, International Joint Conference on Neural Networks (IJCNN) 2027
- Poster, *Robotic Policy Adaptation via Weight-Space Meta-Learning*, CoRL Workshop, Austin 2026
- Poster, *Robotic Policy Adaptation via Weight-Space Meta-Learning*, ICVSS, Sicily 2026
- Oral presentation, *Quaternion Wavelet-Conditioned Diffusion Models for Image Super-Resolution*, IJCNN, Rome 2025
- Student volunteer, SIGGRAPH, Vancouver 2025
- Student volunteer, International Joint Conference on Neural Networks (IJCNN), Rome 2025

Honors and Awards

- Selected participant, Machine Learning Summer School (MLSS), Tübingen 2026
- Selected participant, International Computer Vision Summer School (ICVSS), Sicily 2026
- Honours Programme, M.Sc. in Computer Science, Sapienza University of Rome 2026
- Selected mentee, LeadTheFuture, Class of 2027 2026
- Full scholarship for study abroad, sole recipient among 2,000+ applicants 2019

Technical Skills

Languages: Python, C++, C, Java, SQL, Bash

ML: PyTorch, JAX, Hugging Face Transformers, vLLM; RL, imitation learning, VLA models, diffusion, LoRA

Robotics: LIBERO, CALVIN, MetaWorld, Isaac Sim, MuJoCo; Franka Emika Panda, Unitree G1

Infrastructure: Slurm, distributed training, Docker, Git, Linux, AWS