

Federico Fontana

Postdoctoral Researcher — Efficient & Trustworthy Deep Learning

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RESEARCH INTERESTS

Extreme-efficiency deep learning (binary/low-bit neural networks, model compression); trustworthy AI (robustness over time / continual learning, deepfake detection, machine unlearning); on-device and green AI. *Citations: 215 • h-index 6 • i10-index 5 (Jul 2026).*

Summary. Computer-science researcher (PhD 2026, Sapienza) working on making deep networks extremely efficient and trustworthy. First or sole author on the core efficiency methods, with a self-initiated international collaboration network across nine countries, competitive funding as PI, and open-source releases adopted by the community.

EDUCATION

Jan 2026 **PhD, Efficient Deep Learning** — Sapienza University of Rome.
Advisors: D. Avola (2021–22), then L. Cinque (2022–26).
Jul 2022 **MSc, Computer Science** — Sapienza, **110/110 cum laude**. Thesis: *Training binary neural networks without floating-point precision*.

APPOINTMENTS

2026– **Postdoctoral Researcher**, Sapienza University of Rome.
2024 **Visiting Researcher**, University of Klagenfurt (AAU), Austria (3 months).
2022–23 ML Scientist (intern), MBDA Italia; earlier: SOONAPSE (2019), NEXTREK (2018), INFN (2016).

PUBLICATIONS (* FIRST AUTHOR; † SOLE AUTHOR)

1. **Faster than Lies: Real-time deepfake detection using binary neural networks** — CVPR Workshops, 2024. (*~110 cit.*)
2. * **Distilled Gradual Pruning with Pruned Fine-tuning** — IEEE Trans. Artificial Intelligence (Q1), 2024. (*~27 cit.*)
3. **UAV Geo-Localisation for Navigation: A Survey** — IEEE Access (Q1), 2024. (*~20 cit.*)
4. **Semantically Guided Representation Learning for Action Anticipation** — ECCV (A*), 2024. (*~15 cit.*)
5. **SATEER: Subject-aware Transformer for EEG-based Emotion Recognition** — Int. J. Neural Systems (Q1), 2025. (*~13 cit.*) (U. Calabria)
6. **NT-ViT: Neural Transcoding Vision Transformers for EEG-to-fMRI Synthesis** — ECCV, 2024. (*KTH; U. Calabria*)
7. * **CycleBNN: Cyclic Precision Training in Binary Neural Networks** — ECCV Workshops, 2024.
8. **Hand Gesture Recognition Exploiting Handcrafted Features and LSTM** — ICIAP, 2023.
9. **A Unified Framework for Diffusion-Model Unlearning with f -Divergence** — ICML, 2026. (*Imperial College; U. Klagenfurt*)
10. * **Revisiting Deepfake Detection: Chronological Continual Learning and the Limits of Generalisation** — 2025.
11. * **BNNAction-Net: Binary Neural Networks for Hand-Gesture Recognition** — ACM SIGGRAPH Posters, 2024. (*U. L'Aquila*)
12. * **BiCrossNet: resource-efficient cross-view geolocalisation with BNNs** — MLST (Q2), 2025. (*U. Klagenfurt*)
13. **DualFocusNet: Dual-Stream Spatio-Temporal Transformer for Generalizable Deepfake Detection** — ACM TOMM (Q1), 2026. (*Warwick; UAB; Algeria*)
14. † **Training Binary Neural Networks without Floating-Point Precision** — 2023.

GRANTS & FUNDING

- **Sapienza “Avvio alla Ricerca” research grants (PI)** — 2023, 2024, 2025; Sapienza Research Grants (2023, 2024).
- **EUR 40,000 innovation grant** — Regione Lazio “Creativi Digitali / APP-ON” (SMART CHARGING app), 2015.
- LazioDisCo merit grants (2016–2022).

HONOURS & AWARDS

- Best Paper Award, ICVSS 2024. Path of Excellence, Sapienza Dept. of Computer Science, 2022.

INVITED TALKS

- **Invited:** Digital Futures @ KTH, Stockholm (2026); **University of Klagenfurt (AAU); Rome Technopole Spoke 6 — International Young Researcher Workshop.**
- Speaker: CADL @ ECCV, Milan (2024); DFAD @ CVPR, Seattle (2024, co-speaker).

TEACHING

- **Main lecturer** (from 2026): “Fondamenti di Statistica, Matematica e Informatica”, Faculty of Law, Sapienza.
- Guest lecturer: Deep Learning (ACSAI) and Computer Vision (Computer Science), Sapienza, 2024–25. Co-supervised ~10 BSc/MSc students.

ACADEMIC SERVICE & OPEN SOURCE

- Reviewer: CVPR, ECCV, ICCV, ICML, ICLR, WACV (4 years). Associate Editor (from 2026).
- **Open source:** `binary_deepfake_detection` — official code for *Faster than Lies* (66★ / 6 forks).

INTERNATIONAL COLLABORATIONS

U. Klagenfurt (AT); KTH (SE); U. Calabria & U. L'Aquila (IT); Imperial College London & U. Warwick (UK); UAB Barcelona (ES); U. Tiaret & USTO-MB (DZ); TU Munich (DE); industry: Thales.

SKILLS & LANGUAGES

Technical: Python, PyTorch, C/C++; binary/low-bit networks, model compression, continual learning, machine unlearning; edge/embedded AI & on-device energy profiling. **Languages:** Italian (native), English (B2–C1).