Salvatore Prochilo

Nationality: Italian (EU) **Location:** Rome, Italy **Availability:** open to relocation within the EU and to remote roles
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Profile

AI Engineer working on computer vision for Earth Observation. Since 2024 I have built supervised restoration chains for Sentinel-1 SAR and astronomical imagery at Starion, from multi-temporal reference construction to architecture benchmarking and single-pass inference, after three years shipping production software across data, infrastructure and front end. First author and oral presenter at the ESA INSIGHT2026 workshop.

Work Experience

AI Engineer

10/2024 – present

Starion Group – Frascati (Rome), Italy

- Authored the denoising section of the state-of-the-art analysis for a national space agency's on-ground processing chain, then implemented and trained the denoising module delivered for the near-Earth object use case on 16-bit astronomical imagery
- Built the subpixel co-registration and multi-temporal stacking pipeline that generates pseudo-clean Sentinel-1 GRD references from real acquisitions (five geographic regions, 64 passes each over a three-year span), removing the dependency on synthetic speckle for supervised training
- Trained a supervised SAR denoiser on real Sentinel-1 noisy–clean pairs: PSNR ≈ 30 dB, SSIM ≈ 0.85, EPI ≈ 0.92 on a held-out Sentinel-1 test set, with single forward-pass inference at deployment instead of 64 acquisitions
- Benchmarked supervised and self-supervised denoising architectures on Sentinel-1 SAR and 16-bit astronomical imagery, weighing reconstruction quality against inference cost to support architecture selection
- Assembled an offline document Q&A assistant around BitNet b1.58 2B4T, a natively 1.58-bit model running CPU-only in 0.4 GB of non-embedding memory against 2–5 GB for full-precision peers of the same size, with ChromaDB retrieval, for air-gapped deployment
- Evaluated the downstream effect of denoising on land-cover classification against a Lee-filter baseline
- Coordinated the engineering team on a national space agency programme alongside the technical work: acted as the interface between management and the engineers, owned the deliverable documents and kept the team aligned with the delivery schedule

Technologies: PyTorch, Transformers, OpenCV, GDAL, Rasterio, SentinelHub API, ChromaDB, Weights and Biases

Associate Product Software Developer

08/2021 – 09/2024

Capgemini Engineering – Rome, Italy

- Engineered the data layer of the grid-monitoring portal of a national electricity transmission operator: parsing a proprietary multi-table file format with Python and Pandas, deduplicating and cleaning records with SQL, and exposing the result through the APIs the front end consumes, improving portal start-up time
- Unblocked deployment of a telecom vendor's containerised platform, which dependency conflicts had until then prevented entirely: wrote, with the team, a Kubernetes and Helm module that initialises and bootstraps the microservices, with DaemonSets for per-node components and per-service log visibility boundaries, released through Jenkins CI/CD pipelines
- Led a small team building an internal reporting portal from scratch, as the most experienced engineer on it: designed the questionnaire workflow and client-side state model in React, and set the technical direction the team followed
- Developed portlets and reusable components on Liferay for a gaming operator's retailer portal

Technologies: Python, Pandas, SQL, React, Docker, Kubernetes, Helm, Jenkins, Git

Conferences & Talks

05/2026
Frascati, Italy

INSIGHT2026 – Innovative Signal Exploitation for Geospatial Intelligence

European Space Agency – ESRIN, Centre for Earth Observation
From Temporal Stacking to Single-Pass Inference: A Deep Learning Framework for SAR Denoising with Real Sentinel-1 References
First author, oral presentation

Education

2023 — Modena, Italy
Computer Engineering | MSc (Master's degree)
Università degli Studi di Modena e Reggio Emilia
Thesis: *Document Image Binarization using Fast Fourier Convolution* – AImageLab, advisor Prof. Rita Cucchiara

2017 — Cosenza, Italy
Computer Engineering | BSc (Bachelor's degree)
Università della Calabria

Projects

Document Image Binarization using Fast Fourier Convolution
https://github.com/ZippoCode/DocumentImageBinarization

- Combined spatial and spectral features to exploit global page context, outperforming published transformer baselines on H-DIBCO 2018 (F-measure 92.1, PSNR 20.4 dB, DRD 2.51)
- Designed a patch-merging augmentation scheme to synthesise unseen degradations from a 139-image corpus, addressing ground-truth scarcity
- Repository forked by AImageLab as the starting point for the laboratory's BiLama project

PenaltyVisual – Penalty Direction Prediction from Kicker Motion
https://github.com/ZippoCode/PenaltyVisual

- Predicted penalty shot direction from the kicker's run-up and strike alone, anticipating the outcome before ball contact: tracking to isolate the kicker against a static background, action-recognition backbones over the two phases, and contextual metadata combined in a two-stream classifier

Certifications

11/2023 — **Deep Learning Specialization**
DeepLearning.AI

04/2024 — **Natural Language Processing Specialization**
DeepLearning.AI

07/2024 — **Generative AI with Large Language Models**
DeepLearning.AI

Skills

Deep Learning & Computer Vision: PyTorch, OpenCV, CNNs, Transformers, image restoration, segmentation, object detection

Earth Observation & Geospatial: Sentinel-1/2, SAR (GRD, speckle, ENL/EPI), multi-temporal stacking, subpixel co-registration (AROSICS), GDAL, Rasterio, SentinelHub API

LLMs & Retrieval: Hugging Face, RAG, semantic retrieval, ChromaDB, quantisation (BitNet)

MLOps & Deployment: Docker, Kubernetes, Helm, Git, Jenkins, experiment tracking (Weights & Biases, TensorBoard), inference profiling, job scheduling on HPC clusters (Slurm)

Programming & Data: Python, Java, SQL, NumPy, scikit-learn, REST APIs, unit testing (pytest)

Ways of Working: technical leadership on a small delivery team, client-facing engagements, conference presentation to a technical audience

Languages

Italian
MOTHER TONGUE

English
PROFESSIONAL WORKING

Tools

Python | SQL | PyTorch | Pandas | Hugging Face | OpenCV | GDAL | Rasterio | Docker | Kubernetes | Git | Weights and Biases | TensorBoard