Adrien DORISE

RESEARCH ENGINEER IN AI AND EMBEDDED SYSTEMS

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Profile

PhD Eng. in Computer Science and Embedded Systems specializing in deploying AI on constrained hardware for real-world applications, particularly in the space domain. Proven ability to lead R&D initiatives and align technical innovation with strategic objectives to deliver high-impact solutions. Driven by the design and deployment of advanced intelligent systems, I aim to tackle complex challenges in space, robotics, and autonomous systems.

Skills

Artificial Intelligence & Machine Learning
Deep Learning (RNN, CNN, Transformers) - Machine Learning (Regression, Classification, Clustering, Reinforcement Learning) - Computer Vision - Explainable AI (XAI) - Embedded AI / TinyML

Programming & Tools
Python (PyTorch, TensorFlow, Scikit-Learn) - C / C++ / C# - MATLAB - Git - Docker - AWS

Embedded Systems & Engineering
FPGA (Xilinx) - Microcontrollers (ESP32, Atmel) - Real-time systems - Deployment on constrained systems - CAD (OrCAD, SolidWorks, CATIA, Abaqus) - Automatic controls

English (professional, TOEIC 920) - French (native)

Experience

AI Research Engineer – CNES / IRT
2024 – Present

Embedded AI for Space Image Processing
- Designed an FPGA-compatible CNN-Transformer architecture for onboard satellite object detection.
- Designed an image restoration model on FPGA (pipeline reduced from 30min to 40s).
- Contributed to image processing systems for Martian rover projects.

Model Robustness & Data Simulation
- Improved model robustness using Explainable AI (XAI) techniques.
- Built a realistic satellite image simulation pipeline for training.

Tech: Python / FPGA / Versal / Xilinx / Docker / Git

R&D Manager / AI Research Engineer – LR Technologies
2023 – 2024

R&D Strategy & Team Leadership
- Defined and implemented short/mid/long-term R&D strategy.
- Led and managed ~20 engineers across multiple research projects (ISO 9001).
- Supervised a PhD thesis in reinforcement learning and genetic programming applied to HMI.

AI Development & Innovation
- Built an open-source ML/DL training framework for research teams.
- Designed an adaptive HMI system on ESP32 for accessibility applications.

Tech: Python / PyTorch / C++ / Dataiku / ESP32 / Git / AWS

PhD Researcher – LAAS-CNRS / CNES

2019 - 2023

Radiation Fault Detection in Space Systems

- Designed an embedded ML algorithm for radiation detection (+10% detection, 2x faster execution).
- Delivered first proof-of-concept of onboard AI for radiation effects.
- Conducted radiation testing on electronic components.

Tech: Python / Tensorflow / Keras / C / C++ /Arduino / Atmel Studio / LaTeX

Adjunct Professor & Independent instructor

2019 - Present

- Taught at leading institutions (INSA Toulouse, Université Paul Sabatier, YNOV Campus, Group GEMA)
- Designed and delivered MSc-level courses (ML, DL, Reinforcement Learning, LLMs).

Education

PhD in Computer Science (AI) & Embedded Systems - INSA Toulouse, LAAS-CNRS

Highest honours (jury congratulations) **Graduated: 2022**

Engineering Degree in Industrial Engineering (Mechanical) - INSA CVL

Student representative (2013 -2016) **Graduated: 2018**

Publications (Selected)

AI4SPACE @ CVPR 2026 - *Rethinking Satellite Image Restoration for Onboard AI: A Lightweight Learning-Based Approach*
Proposes **ConvBEERS**, a lightweight learning-based alternative to traditional image restoration methods, optimised for FPGA deployment and enabling real-time onboard AI applications for satellites.

EvoAPP 2026 - *Assessing Evolving and Learning-Based Controllers for Efficient Cursor Control in Human–Computer Interaction*
Introduces an evolutionary assistance model evaluated on a target user population, demonstrating improved cursor control efficiency (validated via ANOVA analysis).

EDHPC 2025 - *Explaining Raw Data Complexity to Improve Satellite Onboard Processing*
Applies Explainable AI (XAI) techniques to assess how raw data complexity affects object detection pipelines, improving understanding and optimisation of onboard processing.

AIR 2024 - *Sequential Decision-Making in Atari 2600 Games: Comparing Temporal Features*
Analyses the impact of temporal information on reinforcement learning performance.

IFAC SAFEPROCESS 2022 - *DyD2: Dynamic Double Anomaly Detection Application to On-Board Space Radiation Faults*
Introduces **DyD²**, an embedded anomaly detection algorithm for dynamic systems, reducing latency and eliminating false negatives compared to state-of-the-art methods.

RADECS 2021 – *ML as an Alternative to Thresholding for Space Radiation High Current Event Detection*
Demonstrates the effectiveness of ML approaches in detecting radiation-induced micro-latchup.

Additional

- GitHub: https://github.com/Adrien-Dorise
- Website: https://lawtechproductions.com/adrien-dorise/
- Organiser of Scientific Game Jam (research x game dev)
- Guitar maker and Musician (guitar, drums, composition)
- References available on request