Alessandro Palmas Senior AI / Research Engineer

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Technical Skills

C++ | Python
Reinforcement Learning
LLM/VLM, SFT, RLHF/RLAIF
Imitation Learning
Computer Vision
Deep Learning
Mathematical Modeling
Numerical Simulation
Numerical Optimization
Physics-Based Simulation
Computational Geometry
Docker | CMake

Soft Skills

Quick Learning
Problem Solving
Positive Attitude
Brainstorming
Collaborative Teamwork
Result-Oriented
Proactivity
Self-motivation
Continuous Improvement

Education

MSc by Research Space Eng
University of Glasgow (2013)

MSc AeroSpace Eng
Milan Polytechnic (2010)

MSc AeroSpace Eng
Turin Polytechnic (2010)

BSc AeroSpace Eng
Turin Polytechnic (2008)

Publications

Linkedin | Google Scholar

Languages

Italian
(First language)

English
(Full professional proficiency)

Spanish
(Elementary)

French
(Elementary)

Interests and Passions

Building Tech

History of Mathematics

Summary & Highlights

Senior AI Engineer with a strong track record building production-grade AI systems, spanning reinforcement learning, simulation-based optimization, and multi-modal learning applications. Over 13 years of experience developing intelligent systems for aerospace, defence, developer tools, gaming, and cybersecurity. I specialize in turning foundational research into reliable, scalable products, and have led high-impact efforts across agent design, training, validation, and AI-native software features.

Foundational knowledge of LLMs and VLMs. I have a strong grasp of transformer architectures, pretraining pipelines, SFT and RL stages. I am ready to accelerate into deeper aspects of LLMs/VLMs, from low level high performance parallelization for training and inference pipelines (CUDA/Triton, DDP/FSPD), to integration with simulation environments (Physical AI) and structured data (VectorDB, RAG, Re-Ranking).

Reinforcement Learning at scale. Developed population-based, curriculum-driven, and offline RL pipelines for autonomous agents in adversarial, multi-agent, and control tasks. Deployed solutions across AAA games and real-world simulators with cloud-based training at scale.

Simulation, Geometry, and Physical Modeling. Built complex AI agents interfacing with multi-physics simulations, including orbital mechanics, UAV dynamics, and CFD, leveraging the creation of pipelines for simulator-based training.

AI Infrastructure & Engineering. Built full-stack AI platforms for model benchmarking and evaluation, and reproducible experimentation. Integrated ML workflows into production systems with a focus on scalability, observability, and training throughput optimization.

Bridging Research and Deployment. Extensive experience translating cutting-edge research, across RL, LLMs, CV and simulation, into robust, deployable systems. Worked on agent learning from synthetic environments, structured data, and simulation feedback.

Professional Experience

12/2022 - present | **Senior AI Engineer** - Ubisoft La Forge Montreal

At Ubisoft La Forge, I lead the development of next-generation AI systems for AAA games, with a focus on Deep Reinforcement Learning and simulation-driven agent training. My work spans research, tooling, and deployment, delivering scalable learning pipelines and integrating AI behaviors into live game environments.

- Developed curriculum-based and population-based RL training (League Training) to produce generalizable multi-agent policies for navigation, combat, and emergent behavior in large-scale simulations.
- Led the design of a distributed, modular RL pipeline supporting both online and offline training workflows. Enabled large-scale benchmarking and reproducible evaluation across internal environments.
- Deployed trained agents into proprietary game engines for use in automated QA, live server-side behavior, and next-gen NPC logic. Collaborated with productions to ensure reliability and performance.
- Coordinated research and engineering teams across France and Canada, aligning R&D strategy with product needs. Mentored interns and engineers on advanced AI methods and technical execution.
- Contributed to cross-functional exploration of Imitation Learning, Continual RL, and hierarchical control architectures, while tracking extensions towards multimodal and LLM-enabled agent capabilities.

02/2018 - present | **AI/ML Consultant** - Artificial Twin - *AI/ML, Simulation & Computational Geometry*

Design and delivering of advanced AI/ML systems across industries, with a focus on Reinforcement Learning, LLMs, computer vision, and physics-based modeling. Led architecture, development, and customer delivery across embedded, cloud, and on-prem platforms.

- Built intelligent agents for decision-making and control using custom RL pipelines in simulation and real-world settings. Applied curriculum learning, imitation learning, and hybrid modeling.
- Explored applications of transformer-based LLMs and early Visual-Language-Action Models into end-user applications, supporting tasks from retrieval and reasoning to application control.
- Delivered vision systems for detection, segmentation, and semantic understanding in industrial and robotics use cases. Supported deployment to constrained compute environments.
- Maintained and evolved a suite of core libraries for ML (RL, CV, LLM), for 3D geometry and CAD/NURBS-based workflows, and for engineering modeling and simulation.
- Acted as principal engineer and product owner, balancing prototyping with production reliability and supporting clients across aerospace, defense, cybersecurity, and manufacturing domains.

11/2020 - 12/2024 | **Founder & Principal AI Engineer** - DIAMBRA | AI Tournament Platform *(Acquired)*
Deep Reinforcement Learning, Agent-Based Modeling and Virtual Environments Simulation

Founded and led DIAMBRA, a cloud-native platform for competitive multi-agent RL. Enabled researchers and practitioners to train, benchmark, and deploy agents in complex environments.

- Built a distributed platform for tournament-style benchmarking with support for cloud inference, model submission, and automated evaluation.
- Developed cross-platform environments based on competitive fighting games. Supported workflows for curriculum design, human-in-the-loop training, imitation learning, agent-vs-agent/human competition, and offline experience replay.
- Released core tools as open-source Dockerized packages, fostering a community of RL researchers and ensuring reproducibility and real-world applicability.
- Led DIAMBRA to acquisition, validating product's technical foundation and commercial relevance.

07/2017 - 11/2022 | **Principal Research Engineer** - Nurjana Technologies
Aerospace & Defense - Software and System Engineering

Led development of AI-driven autonomous systems, perception, and simulation for aerospace and defense applications. Delivered real-world solutions across aerial ISR, satellite collision avoidance, and robotics, integrating ML, embedded systems, and physical modeling.

- Deployed real-time computer vision models (object detection, segmentation, tracking, activity recognition) on edge devices (e.g., NVIDIA Jetson) for drones operating in GNSS-denied zones.
- Built hardware-in-the-loop pipelines with Unreal Engine to validate vision-based navigation, target detection, and collision avoidance in photo realistic environments.
- Developed custom flight control, vision-based landing, and obstacle avoidance for autonomous aerial platforms. Integrated vision, control, and simulation into deployable systems.
- Designed software for orbit propagation, attitude dynamics, conjunction analysis, maneuver planning, and sensor tasking. Contributed to operational space situational awareness systems.

01/2019 - 09/2022 | **AI/ML & Simulation Advisor and Industry Expert** - NATO - *Defense*

Contributed to NATO initiatives by evaluating and guiding the integration of advanced technologies, particularly artificial intelligence and machine learning, into emerging capability development. Supported cross-collaboration between government and industry to identify high-impact, technically feasible solutions aligned with NATO's operational requirements in areas such as autonomous systems, sensor fusion, and decision-making support under uncertainty.

06/2015 - 02/2018 | **Founder & Research Engineer** - CONSELF - *SaaS Scientific Computing (Acquired)*

Built one of the first cloud-native CAE platforms, enabling high-fidelity simulation directly in the browser. Led development of the geometry and meshing core, including CAD interoperability, mesh generation, and real-time 3D visualization for simulation-ready workflows.

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