Jeremie Meurisse

Redwood City, CA | (650) 237-9942 | jeremie.meurisse@gmail.com | LinkedIn | Portfolio

LEAD SOFTWARE ENGINEER

AI/ML Engineering | Applied Science & HPC Solutions | Technical Leadership & Innovation

Software engineer with 9 years of experience developing simulation platforms and integrating AI/ML to optimize workflows and accelerate research. Led team of 8 engineers for 7 years to support NASA's efforts in protecting astronauts and interplanetary rovers during atmospheric entry. Delivered scalable HPC and cloud solutions to predict heat shield behavior. Published 19 research papers advancing multi-physics modeling for entry systems.

AI/ML Engineering Expertise

Applied AI Integration • DL Segmentation
Transformer Models • LLM Optimization
Real-time Inference • Cloud Deployment
PyTorch, TensorFlow, JAX, Warp, Modulus

Core Competencies & Technical Skills

C++, Python, Java, SQL • MPI, OpenMP
Scalable System Design & Architecture
Platform Ownership • HPC Simulations
Cloud: GCP, AWS, Terraform • CI/CD

PROFESSIONAL EXPERIENCE

NASA Ames Research Center, CA: Entry Systems & Technology Division **2015 – Present**

LEAD SOFTWARE ENGINEER: Progressed across Intern, SWE, Senior SWE, Lead SWE – UIUC, STC, AMA

Led team of 8 engineers to develop AI/ML-enhanced simulation platforms for critical NASA missions. Delivered HPC and cloud solutions, built open-source infrastructure, enhanced UX, and fostered strategic partnerships.

Applied AI/ML Engineering (2021 – Present)

- Directed development of DL segmentation tools for video: arcjetCV and 3D imaging data: TomoSAM.
- Fine-tuned and deployed Llama 3.3 70B LLM to build AI chatbot, streamlining documentation for 200+ users.
- Developed surrogate models for statistical analysis by training PINNs on OpenFOAM simulation data.
- Facilitated ML sessions with external experts and conducted training to enhance team proficiency.

End-to-End Software Development (2015 – Present)

- Delivered 2 simulation platforms from conception to launch: ARCHeS, digital twin of plasma wind tunnels, and PATO, R&D platform for analyzing heat shield materials, supporting NASA programs and missions.
- Accelerated simulations by implementing GPU optimization, achieving 100x speedup for 100M-cell grids.
- Developed testing frameworks with CI/CD pipelines using Docker, ensuring high-quality automated tests.
- Implemented embedded flight software for CubeSat science data acquisition, tested in Antarctica balloon.
- Open-sourced PATO through complex government approvals, scaling it to 200+ users and 100+ developers.

Scalable HPC & Cloud Solutions (2016 – Present)

- Executed 30M+ core-hours of multi-physics simulations on NASA supercomputer to support Mars missions.
- Streamlined workflows to process petabytes of flight and experimental data into actionable insights, validating engineering tools through statistical analysis to ensure reliability in NASA’s decision-making.
- Enhanced UX by integrating HPC modules, cloud-based APIs for scalability, and SQL web database.

Technical Leadership & Management (2017 – Present)

- Directed 8-engineer team across 12 NASA projects and 6 simulation platforms (including PuMA and SPARTA), managing code development, research initiatives, milestone tracking, and long-term strategic planning.
- Led technical section for successful $43M ESTRAD proposal, supporting NASA in entry systems technologies.
- Secured $3M in research funding through proposal development and mentored 30+ team members.
- Built partnerships with 100+ collaborators by hosting summer programs through international agreements.

Applied Research & Innovation (2016 – Present)

- Authored 19 peer-reviewed publications and presented at 21 leading conferences, leveraging large-scale simulation data to advance entry systems modeling and contribute to NASA's mission objectives.
- Developed novel multiscale physics-based models to address key NASA challenges including ablation, micro-CT analysis, particle tracking, solid mechanics, turbulence, hypersonic CFD, radiation, and plasma physics.

Mission-Critical NASA Projects (2017 – Present)

- Leveraged Mars flight data and statistical analysis to refine heat shield temperature predictions, guiding instrumentation team before launch, and contributing to successful landing of Perseverance rover on Mars.
- Calibrated model using plasma wind tunnels to evaluate NuSil heat shield overcoat during Martian flights.
- Predicted aerosol sampling performance and integrity of Venus probe, improving NASA mission design.

AWARDS

NASA Early Career (2020) • NASA Software of the Year (2022) • AMA Technical Excellence (2024)

EDUCATION

Master of Science in Aerospace Engineering, ISAE-Supaero (2013 – 2015)
Bachelor & Master of Science in Electromechanical Engineering, UCLouvain-EPL (2009 – 2013)

INDEPENDENT PROJECTS

Drone Club **2016 – 2018**

- Founded 5-member club to design & build drones using CAD tools, 3D printer, and commercial components.
- Created embedded flight software in C/C++. Tested drones in field and debugged flight software in real time.

Mars Desert Research Station **2013 – 2015**

- Established analog mission club and secured $15K in funding to send 6 members to Utah Desert station.
- Developed flight software in C/C++ for 3D-printed drone to study communication relays for Mars missions.

CubeSat Design **2013 – 2015**

- Developed embedded flight software in C for IMU of QB50 CubeSat in collaboration with ONERA & CNES, contributing to successful deployment from ISS and transmission of flight data during atmospheric entry.