LUIS VELA VELA PHD

Sr. AI Scientist & ML Team Lead | Computational Physicist

CONTACT

- ✉ vela.vela.luis@gmail.com
- ☎ +352 661 678965
- • Luxembourg, Luxembourg
- ⌂ OnlineResume
- ○ @luiservela
- in Luis Vela Vela

CORE COMPETENCIES

AI/ML & Deep Learning

- ML/DL Frameworks (TensorFlow, PyTorch) ●●●●●
- AI Weather Models (Aurora, AIFS, FourCastNet, GraphCast) ●●●●●
- AI-Assisted Dev (Claude Code, MCP integrations) ●●●●○
- Experiment Tracking (MLflow) ●●●●○
- Probabilistic Forecasting (CRPS, ensemble methods) ●●●●○

NWP & Atmospheric Science

- NWP Pipelines ●●●●●
- GRIB2 Expertise ●●●●●
- ERA5 Reanalysis ●●●●●
- S2S Forecasting (EC46, weather regimes) ●●●●○
- Renewable Energy Fcst ●●●●○

Programming & Development

- Python (xarray, NumPy, Pandas, Scikit-learn, Matplotlib, Cartopy) ●●●●●
- GPU/Distributed (CuPy, CuDF, CuML, Dask, RAPIDS, Numba) ●●●●○
- Bash ●●●●○
- FORTRAN ●●●○○

Infrastructure & DevOps

- HPC Operations (Lmod, SSH, GPU clusters — A100, H200) ●●●●●
- Version Control (Git, Bitbucket, GitHub, GitLab) ●●●●●
- CI/CD & Quality (pylint, mypy, pytest, coverage) ●●●●○
- Env Management (Conda) ●●●●○
- Cloud (AWS) ●●●○○

LANGUAGES

- Spanish — Native ●●●●●
- English — Fluent / Professional ●●●●●
- French — Professional ●●●●○
- Serbian — Conversational ●●●○○
- Czech — Conversational ●●●○○
- German — Working knowledge ●●○○○

KEY ATTRIBUTES

- **Scientific rigor & reproducibility**
- **Team builder & engineering culture**
- **Production ML delivery focus**
- **Cross-functional communicator**

PROFESSIONAL SUMMARY

Sr. AI Scientist with a PhD in Computational Physics, currently leading an ML engineering team building AI-powered weather forecasting systems at Spire Global. Combines deep scientific expertise in numerical weather prediction and atmospheric science with production ML engineering and team leadership. Proven track record across research (Amazon), HPC solutions engineering (LuxProvide), and operational AI deployment (Spire).

⚙ PROFESSIONAL EXPERIENCE

📅 Nov 2022 – Present
● Spire Global, Luxembourg

Sr. AI Weather Scientist

- Manage a team of 2 ML engineers. Established team-wide engineering practices including experiment tracking (MLflow), shared repositories, code review standards, and documentation workflows.
- Architected and deployed production infrastructure for multiple AI-based NWP models (AIFS, Aurora). Built model comparison and verification tooling across ensemble statistics, weather regimes, and spatial fields.
- Developed subseasonal-to-seasonal (S2S) forecasting pipelines including weather regime classification and ensemble probability tracking.
- Deep expertise in GRIB2 format handling, ERA5 reanalysis data processing (accumulated vs. instantaneous variables, temporal aggregation), and multi-model data pipelines.
- Pioneered adoption of Claude Code for AI-assisted development on HPC infrastructure, achieving 6–12x speedup in model repository scaffolding.
- Contributed to weather-to-energy production forecast pipelines for renewable energy applications.
- Presented technical solutions to internal and external stakeholders ensuring successful project delivery.

📅 Feb 2021 – Nov 2022
● LuxProvide, Luxembourg

Sr. Solutions Engineer

- Conducted technical discovery and designed custom HPC/AI solutions for clients during sales cycles.
- Managed client relationships from initial assessment through deployment.
- Led pre-sales technical presentations leading to HPC solution contracts.
- Evaluated GPU computing platforms including H200 infrastructure.

📅 Oct 2019 – Jan 2021
● Amazon, Luxembourg

Research Scientist

- Applied advanced ML and statistical methods to deliver actionable business insights with direct impact.

🎓 EDUCATION

📅 Sep 2013 – Feb 2019
● UC3M, Madrid | UGent, Ghent

PhD in Computational Physics

Specialized in computational methods for complex physical systems. Developed algorithms for HPC environments.

📅 Sep 2011 – Jul 2013
● UC3M, Madrid | UGent, Ghent

MSc in Plasma Physics

Statistical analysis and modeling of complex dynamic systems.

📅 Sep 2007 – Jul 2010
● Charles University, Prague

BSc in Physics

Foundation in computational physics and simulation methods.

🏆 ACHIEVEMENTS & RECOGNITION

- 🏆 Outstanding Colombian Abroad — Award by the Colombian Government
- 🏆 Summa Cum Laude — PhD Thesis
- 🏆 Greatest Distinction — 2013 Erasmus Mundus Master
- 🏆 UNESCO Fellowship — Bachelor Studies Scholarship

📚 SELECTED PUBLICATIONS

- 📄 Magneto-hydrodynamical nonlinear simulations of magnetically confined plasmas using smooth particle hydrodynamics (SPH)
- 📄 A positioning algorithm for SPH in smoothly curved geometries
- 📄 ALARIC: An algorithm for constructing arbitrarily complex initial density distributions with low particle noise for SPH/SPMHD applications