Vangelis Kourlitis PhD

Scientific Computing | Machine Learning | ex-CERN

PROFILE

Scientific software developer with 10 years experience at CERN. Specialized at the end-to-end development of solutions at the intersection of machine learning, simulation software and data analytics. Skilled leader with extensive experience mentoring teams and managing R&D projects. Now seeking to transition into tech industry, with interest enhancing design optimization with differentiable methods.

CONTACT

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GitHub: ekourlit

SKILLS

Programming
Python • C++ • CUDA • SQL • Bash

Performance Profiling
VTune • Valgrind (Callgrind)

DevOps & Cloud
Git (CI/CD) • MLflow • Docker • GCP

Distributed Compute
Dask • Ray

Workflow Schedulers
HTCondor • Slurm

EDUCATION

ATHENA RESEARCH CENTER
Athens Natural Language Processing Summer School
2024 | Athens, GR

UNIVERSITY OF SHEFFIELD
PhD in Physics
2015 - 2019 | Sheffield, UK

ARISTOTLE UNIVERSITY OF THESSALONIKI
B.Sc. in Physics
2009 - 2015 | Thessaloniki, GR

EXPERIENCE

FREELANCE | Thessaloniki, GR
Technical Consultant
Jan 2025 - Jun 2025

- Built `Geant4` application (geometry, large-scale runs, ML-ready curation) providing ground truth to train a flow-matching foundation model for radiation simulation; contributions helped secure an ERC grant (€1.5M, 5-year).

CERN & TECHNICAL UNIVERSITY OF MUNICH | Geneva, CH
Analysis Model Group Coordinator
Oct 2023 - Dec 2024

- Directed a global, 120-member cross-functional team, delivering 24/7 production support and new features for a ∼1 M LOC data analysis platform serving more than 3,000 users.
- Reduced organizational data storage costs threefold by adopting a lightweight columnar data format ahead of schedule.
- Rolled out streamlined software configuration paradigm, reducing analysts onboarding time by over 95%.
- Planned and supervised 5 early-career developers projects, delivering innovative software products on time and fostering professional growth.

Data Science Researcher
Mar 2023 - Sept 2023

- Awarded €40k grant to modernize legacy C++ data transformation tools with scalable array-based solutions, achieving 4x faster analysis and aligning with modern Pythonic data science standards.
- Piloted an LLM-based workflow to generate user-facing changelogs from software release diffs, reducing manual effort by 80%.

ARGONNE NATIONAL LABORATORY | Chicago, US
Data Science Researcher
Nov 2019 - Feb 2023

- Identified bottlenecks and optimized `Geant4`-based radiation simulations, achieved a speed gain of a factor of two through computational improvements.
- End-to-end developed a 3D CNN computer vision model, with multi-GPU training strategy in `PyTorch`, to restore fast, low-accuracy sensor images and improve simulation software cost-efficiency by up to 20%.
- Achieved 10× higher training throughput for a variational autoencoder-based anomaly detection model, benchmarking novel SambaNova RDU accelerator against NVIDIA GPUs.
- Established FAIR principles for AI models and standardized methodologies among research teams, allowing faster review cycles and enhanced transparency.

UNIVERSITY OF SHEFFIELD | Sheffield, UK
Doctoral Researcher
Nov 2015 - Oct 2019

- Developed C++ data-analysis software, enabling high-throughput distributed computations on a 500 k core computing grid.
- Taught Python programming, scientific computing and ML fundamentals (`NumPy`, `SciPy`, `scikit-learn`) to MSc students through hands-on lab sessions.