Dmitry Duplyakin

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Summary

PhD in Computer Science

♦ Focus on High Performance Computing and Machine Learning

7+ years of research experience

♦ Cloud Computing, performance modeling, big data, statistical analysis, predicting modeling, Machine Learning, and application of the above to complex energy projects

♦ Developing ideas into successful proposals, presenting research at top-tier venues, extensive experience with working in large interdisciplinary teams

4+ years of leading projects and tasks at a national laboratory

♦ Working closely with laboratory management on computing systems, from procurement and design to usage analytics and optimization

Research Experience

Jan 2020 – Now

Data Scientist at National Renewable Energy Laboratory

- Leading a $410K/year effort in operational data analytics for High Performance Computing focused on NREL's recently deployed 44-petaflops supercomputer.
- Over 4 years of computational work, with HPC, statistical methods, data science, and AI/ML. In wind energy, geothermal, heat storage, computational chemistry, etc., published 9 papers on the research conducted in close collaboration with domain scientists.

Jan 2020 – Now

Researcher at School of Computing at University of Utah

My research affiliation with the U. of Utah allows me to conduct research on cloud computing (for a large NSF-funded project), mentor graduate/undergraduate students, and collaborate on research proposals. Published 6 papers on performance modeling.

2012 – 2017

Graduate Research Assistant at University of Colorado

I led the research on application of AL/ML techniques to running ensembles of high-performance computing simulations. Also, I contributed to the deployment and evaluation of an HPC cluster for bioinformatics research.

Other research efforts allowed me to intern at the University of Chicago's Computation Institute (2014) and National Center for Atmospheric Research (2011-2012); both projects involved high-performance computing and performance modeling.

Professional Service

Summary: chair roles – 7, program committees – 12. Selected:

- Co-chair of the artifact evaluation committee, International Conference on Performance Engineering (ICPE) 2024
- Reviewer for The Science of Making Torque from Wind (TORQUE) conference, 2024
- Technical program committee member for (selected list):
  - HPDC'23 and '21 (ACM Symposium on High-Performance Parallel and Distributed Computing)
  - EuroPar'19 Conference
  - Supercomputing'18 Conference (Performance Track)
  - IPDPS'18 (International Parallel and Distributed Processing Symposium)

Updated: 2024/07/13

  - BigData'18, BigData'19, and BigData'20 Conferences
- Co-chair of ScienceCloud'18 and ScienceCloud'19 workshops on scientific cloud computing

Recent Publications — listed with @affiliation and (topics)

2024◇ @NREL (HPC, machine learning); to appear:
Tandem Predictions for HPC Jobs, ACM PEARC

2023◇ @NREL (HPC, machine learning):
Mastering HPC Runtime Prediction: From Observing Patterns to a Methodological Approach, ACM PEARC

2023⋆ @U. of Utah (cloud computing, performance modeling):
Avoiding the Ordering Trap in Systems Performance Measurement, USENIX ATC

2022◇ @NREL (thermal energy storage, machine learning):
One System, Many Models: Designing a Surrogate Model for Sulfur Thermal Energy Storage, AAAI 2022 Fall Symposium Series

2022 @NREL (computational chemistry, reinforcement learning):
Multi-objective Goal-directed Optimization of De Novo Stable Organic Radicals for Aqueous Redox Flow Batteries, Nature Machine Intelligence

2022⋆ @NREL (geothermal, machine learning):
Modeling Subsurface Performance of a Geothermal Reservoir Using Machine Learning, Energies journal

2021⋆ @NREL (distributed wind):
Bias Characterization, Vertical Interpolation, and Horizontal Interpolation for Distributed Wind Siting Using Mesoscale Wind Resource Estimates, NREL Technical Report

2020⋆ @U. of Utah (cloud computing, performance modeling):
In Datacenter Performance, The Only Constant Is Change, ACM/IEEE CCGrid

⋆ marks papers with the lead-author role, ◇—mentoring role. Complete list of publications: Google Scholar

Mentoring & Teaching

Summary: mentored 9 students between NREL and U. of Utah.

2021-Now @NREL: Mentor graduate/undergraduate interns,
- Recognized as NREL's Outstanding Mentor 3 times (2022, 2023 summer terms)
- Under my supervision, an intern received the best poster award at ACM PEARC'23
- One former intern was hired as NREL's software engineer

2020-Now @U. of Utah: Mentor mostly CS graduate/undergraduate students,
- Mentored several students to become key software development contributors and lead authors on research publications

2012 @U. of Colorado: Taught a class "CS1: Intro to Programming" (260 students)