ROBIN NEWHOUSE

Physics PhD, Software Engineer, Data Scientist

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SUMMARY

Senior software engineer working on agentic AI systems and LLM infrastructure, with experience spanning CERN, AWS, and early-stage applied AI. I focus on making stochastic systems reliable in practice through evaluation, observability, and data-driven feedback loops across multi-provider LLM systems and large-scale infrastructure.

TECHNICAL SKILLS

Agent & LLM Systems: agent architectures, tool orchestration, prompt and behavior iteration, pass@k evaluation, multi-provider systems (Claude, GPT, Gemini).

Infrastructure & Reliability: AWS, Docker, Linux, CI/CD, distributed systems, observability, production debugging.

Data & Evaluation: large-scale data processing, experiment design, metrics-driven iteration, reliability analysis.

Languages: Python, C++, Java, TypeScript, SQL.

EXPERIENCE

Senior Software Engineer, Applied AI
December 2025 – Present

Cline

- Built Cline's Skills system from scratch and graduated it to production, enabling reusable agent customization aligned with ecosystem standards.
- Rebuilt LLM evaluation infrastructure using a CI, merge, and nightly testing pyramid with pass@k metrics, enabling reliable multi-provider iteration.
- Implemented provider-agnostic observability using Langfuse, enabling end-to-end agent traces and self-hosted enterprise deployments.
- Delivered full Jupyter Notebook support, fixing performance and cost regressions, improving context handling, and resolving IDE corruption issues.
- Improved agent effectiveness using real user data, closing the loop between observed usage and prompt and behavior updates.

Software Development Engineer (RDS MySQL & MariaDB)
October 2022 – July 2025

Amazon Web Services

- Maintained and enhanced production database infrastructure supporting Amazon RDS for MySQL and MariaDB
- Led AWS to become the largest external contributor to MariaDB, improving upstream code quality, testing, and collaboration
- Built CI pipelines and internal tooling that reduced operational load, improved reliability, and accelerated regression detection
- Authored onboarding documentation and reusable tools that improved operational consistency and data protection practices

PhD Researcher (ATLAS Experiment)
September 2016 – August 2022

CERN / University of British Columbia

- Developed and maintained high-performance data reconstruction and analysis software in C++ and Python
- Built machine learning models for particle tracking and classification, reducing misclassification rates by up to 95%
- Processed petabyte-scale datasets on distributed computing grids and presented results at international conferences
- Led training efforts for 300+ PhD students as instructor for the ATLAS Analysis Software Tutorial

EDUCATION

PhD — Experimental Particle Physics
Sep 2016 – Aug 2022

University of British Columbia, Vancouver, Canada – CERN, Geneva, Switzerland

Breakthrough Prize in Fundamental Physics (ATLAS Collaboration, 2025); ATLAS Outstanding Achievement Award; International Doctoral Fellowship

BSc — Astrophysics (Computer Science Minor)
Sep 2009 – May 2015

University of British Columbia, Vancouver, Canada

Graduating Class Speaker; Faculty of Science International Student Scholarship; International Community Achievement Award

LEADERSHIP & OUTREACH

Black Rock Observatory educational non-profit — Board member: 2019 – Present
UBC Physics Graduate Student Association — President: 2017 – 2018
UBC Astronomy Club — President: 2012 – 2014, Lecturer: 2011 – 2015