Contact

Vancouver, BC
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www.robinnewhouse.com (Personal)

Top Skills

Software Engineering
High Energy Physics
Astrophysics

Languages

English (Native or Bilingual)
German (Elementary)

Certifications

Fundamentals of MCP

Honors-Awards

Faculty of Science International Student Scholarship
UBC International Community Achievement Award
Undergraduate Speaker at Graduation
International Doctoral Fellowship
ATLAS Outstanding Achievement Award

Publications

Performance of top-quark and WW-boson tagging with ATLAS in Run 2 of the LHC
Search for heavy neutral leptons in decays of W bosons using a dilepton displaced vertex in √s=13 TeV pp collisions with the ATLAS detector
Software Training in HEP
Open XAL Status Report

Robin Newhouse

Software Engineer at AWS | Physics PhD | Expert in Machine Learning, Cloud Architecture, and High-Performance Data Processing.
United States

Summary

Hi, I'm Robin Newhouse, a Software Engineer at AWS specializing in building and optimizing large-scale cloud infrastructure for Amazon RDS. With a PhD in experimental particle physics working with CERN's Large Hadron Collider, I bring a unique blend of scientific rigor and technical expertise to developing robust, scalable software solutions.

I excel in:

· Leading open-source collaboration and technical contributions (e.g., driving AWS to become the largest external contributor to MariaDB).
· Engineering solutions that streamline operations, improve data stability, and enhance security for cloud-based applications.
· Leveraging machine learning and data science to extract actionable insights from massive datasets.

Beyond my professional experience, I am deeply passionate about using technology to tackle global challenges such as renewable energy and environmental sustainability. My technical expertise spans Python, C++, cloud computing (AWS), machine learning, and modern DevOps practices, including GitLab CI/CD and containerization.

I thrive in roles that challenge me to bridge technical innovation and impactful real-world applications. If you're interested in exploring solutions in scalable computing, ML-driven automation, or cloud-native applications, feel free to connect—I'd love to discuss how I can contribute to your goals!

Experience

Amazon Web Services (AWS)

Software Development Engineer - AWS RDS for MySQL & MariaDB
October 2022 - Present (2 years 10 months)
Vancouver, British Columbia, Canada

- Maintained and enhanced AWS Relational Database Service, driving open-source contributions and deploying secure, stable updates.
- Led AWS to become the largest external contributor to MariaDB, improving code quality and community reputation.
- Automated internal tooling, reducing operational load and increasing system stability.
- Authored comprehensive onboarding documentation, accelerating new hire productivity.
- Built reusable tools enhancing operational consistency and ensuring robust data protection.
- Streamlined regression testing through GitLab CI pipelines for faster issue detection.

The University of British Columbia
PHD Student – Research Assistant – Teaching Assistant
September 2016 - October 2022 (6 years 2 months)
Vancouver, British Columbia, Canada

- Designed and delivered engaging instruction for introductory and intermediate computer science and physics courses.
- Selected as a TA mentor, guiding the professional development and providing feedback to 15 new teaching assistants.
- Earned the "Instructional Skills Workshop for Graduate Students" certification, enhancing teaching expertise and pedagogy.

CERN
Experimental Physics User - ATLAS
September 2016 - October 2022 (6 years 2 months)
Geneva, Switzerland

Contributed to several widely-cited scientific publications at the high-energy physics frontier using CERN's Large Hadron Collider
- Implemented crucial particle reconstruction and analysis software in C++, Python, and ROOT for multiple analyses
-- Modernized analysis framework to use industry-standard data science tools
-- Managed processing of dozens of petabytes of particle collision data in worldwide LHC computing grid
-- Regularly presented results at international conferences and internal plenary meetings

- Extended ATLAS's charged-particle tracking capabilities to enable searches for long-lived particle signals
-- Developed machine-learning discriminant to reduce mislabeled tracks by 95%
-- Tracking Liason to the ATLAS Machine Learning Working Group (Dec. 2020 – Present)
-- Received ATLAS Outstanding Achievement Award for contributions to tracking
- Developed and quantified performance of a novel neural-network-based algorithm to classify high-momentum quarks
- Lead coordinator for the ATLAS Analysis Software tutorial (Nov. 2020 – Jan 2022)
-- Developed, maintained, and delivered a week-long tutorial three times per year, aimed at introducing over 300 new PhD students to the complex software and data ecosystem used in ATLAS physics research

Self-employed

Private Tutor

April 2015 - August 2019 (4 years 5 months)

Portland, Oregon, USA – Vancouver, Canada

I provided individualized tutoring programs in physics, math, and computer science individually and as a private contractor through chegg.com.
My students showed marked improvement in grades and academic performance

TRIUMF

Accelerator Applications Developer

May 2014 - December 2014 (8 months)

Vancouver, Canada

Developed high-level applications for the commissioning and operation of the linear electron accelerator

• Became familiar with working in a large scientific collaboration

• Gained experience with open-source software development and contributed significantly to the project

• Wrote an academic analysis of software engineering techniques used in the project

The University of British Columbia

3 years

Science Student Ambassador (International Student Recruitment Assistant)
January 2012 - December 2014 (3 years)
Vancouver, Canada

Performed multiple tasks pertaining to the recruitment and orientation of prospective and new undergraduate students. Acted as a representative for UBC's undergraduate class.
- Travelled to multiple states to speak at prospective student information sessions
- Wrote and delivered presentations to large audiences regarding student life
- Contacted and spoke to hundreds of prospective students

Paid position from Feb 2013 - Apr 2013. Volunteer otherwise.

Undergraduate Teaching Assistant
January 2014 - April 2014 (4 months)
Vancouver, British Columbia, Canada

Teaching assistant for Computer Science 110

Software Developer and Research Assistant
May 2012 - August 2012 (4 months)
Vancouver, Canada

The group aimed to improve model-oriented software engineering techniques by gathering and analyzing data of software developers at General Motors. We developed a mobile Android app for developers to log their interactions with others. By analyzing the collected data, we sought to determine patterns in the development process at GM and propose improvements.

• Became familiar with the Agile software development methods working as part of a development team
• Presented the group’s research at an international conference
• Gained extensive experience with version control, android development, and software development standards

Fritz-Haber-Institut der Max-Planck-Gesellschaft
Software Developer and Research Assistant
May 2013 - December 2013 (8 months)
Berlin, Germany

Worked on multiple projects using quantum mechanical molecular simulations
• Explored Density Functional Theory, its applications, and its various implementations

• Created a Genetic Algorithm to quickly find the global energy minimum of lattice and cluster structures
• Became accustomed the standards in a professional theoretical research institute

The University of British Columbia Department of Physics and Astronomy
Research Assistant
May 2011 - September 2011 (5 months)
Vancouver, Canada

Responsible for the design and testing of the SPIDER II Multi Channel Electronics cooling system
• Developed interpersonal, written and verbal communication skills in a laboratory context with a team of four employees
• Undertook online research and purchasing duties for data-storage systems and various other laboratory equipment
• Maintained clear and accurate records containing involved data related to project progression
• Continued and strengthened research from previous sources through data measurement and analysis
• Researched the most current theories of the Cosmic Microwave Background’s origin and features

New Seasons Market
Courtesy Clerk
June 2006 - June 2009 (3 years 1 month)

An enjoyable first job. I learned many soft skills about working in a group, levels of management, and customer interaction.

Education

The University of British Columbia
Doctor of Philosophy - PhD, Particle Physics · (2016 - 2021)

The University of British Columbia
Bachelor’s Degree, Astrophysics Major, Computer Science Minor · (2009 - 2015)

Portland State University
Non-Degree, Physics · (2015 - 2015)

Machine Learning in High Energy Physics Summer School
· (August 2018 - August 2018)

Tri-Institute Summer School on Elementary Particles (TRISEP)
· (July 2019 - August 2019)