Resume

Personal Information

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Who am I?

An experimental particle physicist (ZEUS, T2K and Hyper-Kamiokande experiments) with a background in physics (PhD) and computer science (BCS). Looking to make the transition from academia to private sector data science roles.

Experience

- Postdoctoral Research Associate at
  Rutherford Appleton Laboratory/STFC Jun.2013-Jan.2018
  T2K experiment
  – Physics analysis utilizing the T2K near detector, ND280 (charged current anti-neutrino π^-)
  – Detector calibration - timing calibration and time-of-flight timing system (INGRID detector)
  – Operation, maintenance, and upgrade of the T2K near detector data acquisition system software/hardware
  – T2K Run-coordinator (In charge of the near detector complex operation during data taking)
  – Data distribution on the GRID (scientific distributed computing platform) and maintaining data distribution software
  Hyper-Kamiokande experiment
  – R&D: requirements of the data acquisition system for the planned Hyper-Kamiokande detector
  – R&D: trigger algorithms to lower the e^- energy threshold to explore new physics regimes
  – Software development for the water Cherenkov detector simulation package, WCSim (flexible implementation of experimental trigger algo./analogue signal digitization, radioactivity simulation)
- Graduate Student at University of Toronto Sep.2006-Aug.2012
  ZEUS experiment
  – Development of 2 major physics analyses (see Education for details)
  – Data driven corrections to the ZEUS detector monte carlo simulation
  – Validation and study of long term data storage proposals for the ZEUS experimental data
  – Operation, maintenance and calibration of the ZEUS calorimeter and high level Third Level Trigger

- Research Assistant University of Toronto Jun. 2004/5-Aug.2004/5 - May. 2006-Aug.2006
  ZEUS experiment
  – Maintenance, and evaluation of new triggers for the ZEUS Third Level Trigger system
  – Studied Kaon reconstruction in the ZEUS tracking detectors
  – Developed a data-driven correction to account for the effect of backsplash on the measured kinematic variables
  Teaching Sep.2007-Apr.2008/Sep.2008-Apr.2010
  – Physics laboratory demonstration, supervision, and evaluation of first year physics/engineering science students
- Teaching Assistant at University of New Brunswick Sep.2005-Dec.2005
  – Physics laboratory demonstration, supervision, and evaluation of first year engineering students

Research

- **Related expertise**: scientific data analysis, computer programming, quantum field theory, quantum physics, statistical mechanics
- **Research papers**: All publications Primary author: 1, 2 Contributor: 1, 2, 3
- **Major Conferences/Workshops**:
  The Europhysics Conference of High-Energy Physics, Grenoble, France, July 21-27, 2011
  The XIX International Workshop on Deep-Inelastic Scattering and Related Subjects, Newport News, VA, USA, April 11-15, 2011
  5^{th} International Conference on New Frontiers in Physics, Crete, Greece, July 6-14, 2016
  GPU Hackathon 2017, Brookhaven National Laboratory, 5-9 June

Education

University of Toronto, Toronto, Canada 2006-2012

- **PhD Degree**, advisor: John Martin
  thesis: Measurement of High-Q^2 Neutral Current cross-sections with longitudinally polarised positrons with the ZEUS Detector
- **MSc Degree**, advisor: John Martin
  thesis: Charm production in High-Q^2 Charged Current Deep Inelastic Scattering

University of New Brunswick, Fredericton, New Brunswick, Canada 2000-2005

- **BSc Degree** Physics, with honours
- **BCS Degree** Computer Science First Division

Awards, Scholarships

- Ontario Graduate Scholarship (OGS) 2007
- Natural Sciences and Engineering Research Council of Canada (NSERC) Undergraduate Student Research Award 2004
- Dr. A. Wilmer Duff Memorial Prize 2005
- Frank and Isa Pridham Memorial Scholarship 2001
- UNB Fredericton Scholarship Guarantee 2000

Skills

- Languages: English (native), Japanese (basic - conversational)
- Programming languages: Python (data science stack: NumPy, SciPy, Pandas, scikit-learn, XGBoost, TensorFlow), C, C++, FORTRAN, Perl. Some experience with: x86 and 68HC11 assembly, R, Java, CUDA
- Technologies: LaTeX, Git, SVN, MS Office Suite (Powerpoint, Word, Excel), Linux, Windows, OSX, batch and GRID computing
- Communication: Scientific presentations (internal and international conferences), public science communication, scientific paper writing
- Team management: Management of scientific projects as T2K Run-Coordinator