Andrew Cameron

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Education

University of Prince Edward Island Charlottetown, PE
B. Sc., Physics Honours Expected: May 2017
Minor in Mathematics
Cumulative GPA: 4.2/4.3
GPA in Major/Minor: 4.3/4.3

Research Experience

Research Assistant
Dalhousie University Summer 2016
Supervisor: Dr. Jeff Dahn

- Explored the physics and chemistry of energy storage in materials, specifically for lithium ion batteries.
- Worked in an industry focused lab at the end of a partnership with 3M Canada, and the beginning of a new partnership with Tesla Motors.
- Experienced a more hands on approach to science in a lab where chemistry, physics, and engineering students worked together to prepare and test battery cells and analyze results.

Research Assistant
University of Prince Edward Island Summer 2014 - Winter 2016
Supervisor: Dr. Jason Pearson

- Studied and developed machine learning algorithms to analyze quantum chemical data and create optimized composite methods.
- Surveyed machine learning literature and applications to understand how different algorithms could be applied to the work of my group.
- Lead author on a paper that summarizes the work completed over two summers. Expected Submission: Fall 2017

Research Assistant
University of Prince Edward Island Fall 2015 - Winter 2016
Supervisor: Dr. Nasser Saad

- Studied a generalized class of exactly solvable differential equations with polynomial coefficients. Such differential equations are central in physics as they contain the Confluent Huen and Hypergeometric equations as special cases and hence also the classic equations of physics such as Bessel, Hermite, Legendre, and Laguerre.
- Tasked with confirming our general results in many different special cases.
- Co-author of a submitted paper.

Honours and Awards

UPEI Faculty Association Silver Medal September 2016

- Awarded to the student with the second-highest standing at UPEI in third year.

Ambrose Kwok-Yau Lee of SDU '62 Award September 2016

- Awarded to the student with the second-highest standing in the third year of the Science program at UPEI proceeding to fourth year.

Science Atlantic Undergraduate Research Award (Chemistry) May 2015

- Awarded to the top oral presentation at the Atlantic Student Chemistry Conference (ChemCon). Number of attendees: ~150

ACENET Research Fellowship (Declined) March 2015

- Awarded to users of ACENET advanced computer resources based on academic average and proposed research project.

Science Atlantic Undergraduate Research Award (Physics) February 2015

- Awarded for a second-place finish in the oral presentation competition at the Atlantic Universities Physics & Astronomy Conference.

NSERC Undergraduate Student Research Award (3) March 2014, 2015, 2016

- Awarded three consecutive summers for high academic average and successful research terms.

Dr. Lowell Sweet Calculus Award September 2014

- Awarded to the student with the highest cumulative aggregate in both first year calculus courses.

UPEI Full Tuition Scholarship July 2013

- Awarded on the basis of high academic achievement.

Colonel Gray High School Achievement July 2013

- Received highest academic average in the science based courses and second highest aggregate overall upon graduation.

Conference Presentations

Atlantic Universities Physics & Astronomy Conference (AUPAC)
University of Prince Edward Island (2017), Memorial University (2016), and Mt. Allison University (2015)

- After speaking at this conference in 2015 and 2016, I became the co-chair of the organizing committee for AUPAC in 2017. I lead a group of 10 conference organizers for 8 months to bring ~120 undergraduate physics students and faculty to UPEI from the Atlantic Provinces.
- 2015 Oral Presentation: Applications of Machine Learning on Quantum Chemical Databases: High Accuracy for Low Cost. Authors: Andrew R. Cameron, Jason K. Pearson.
- 2016 Oral Presentation: Analyzing Big Data Systems Using Machine Learned Algorithms. Authors: Andrew R. Cameron., Jason K. Pearson.
- 2017 Oral Presentation: Novel Single-Crystal LiNi0.5Mn0.3Co0.2O2 Positive Electrode Materials for High Voltage NMC/Graphite Cells. Authors: Andrew R. Cameron., Jing Li, Jeff. R. Dahn.

Pacifichem 2015
Honolulu, Hawaii

- Presented a poster at the 2015 Pacifichem international chemistry conference. This conference is hosted by the American Chemical Society every five years in Hawaii and is considered one of the largest chemistry conferences in the world.
- Poster Presentation: Machine Learned Composite Methods for Electronic Structure Theory. Authors: Andrew R. Cameron, Jason K. Pearson.

UPEI Sciences Undergraduate Research Conference 2015 (Conference Organizer)
University of Prince Edward Island

- Responsible for organizing one day of presentations. Specific duties included moderating one of the presentation sessions and talking to researchers before the conference to promote the conference and recruit students to do talks. USURC is a practice conference in a sense, organized to give UPEI students an advantage at larger conferences.
- Oral Presentation: Machine Learned Composite Methods for Electronic Structure Theory Authors: Andrew R. Cameron, Jason K. Pearson.

CIC Chemistry Conference (ChemCon) 2015
University of New Brunswick

- Attended Science Atlantic's chemistry conference and gave an oral presentation of my research.
- Oral Presentation: Applications of Machine Learning on Quantum Chemical Databases: High Accuracy for Low Cost. Authors: Andrew R. Cameron, Jason K. Pearson.

UPEI Sciences Undergraduate Research Conference 2014
University of Prince Edward Island

- Attended the student run conference after my first summer of research to learn about the research taking place at my own university. Gave an oral presentation focussing on the initial research that set up future success as a student research assistant.
- Oral Presentation: Applications of Machine Learning on Quantum Chemical Databases: High Accuracy for Low Cost. Authors: Andrew R. Cameron, Jason K. Pearson.

Relevant Coursework

- Quantum Mechanics
- Differential Equations
- Statistical Mechanics
- Special Functions
- Waves/Oscillations
- Electromagnetism
- Electronics/Instrumentation
- Linear Algebra

Technical Skills

- Microsoft Office (Word, Excel, PowerPoint)
- Matlab
- Computational Chemistry Packages (Q-Chem, Gaussian 09)
- LaTeX
- Fortran/Python/Java Coding Languages
- Keynote
- Data Analysis/Machine Learning - Linear Regression and Neural Network Experience
- Script Writing (Bash)
- Gas Chromatography - Coupled with Mass Spectroscopy and/or Thermal Conductivity Detector