Andrew Coathup

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EDUCATION

Codecademy
May 2019 – Sept 2019

I subscribed to the online learning module, Codecademy. I have studied several programming languages through this platform, including new skills applicable to programming, statistics, data analysis, data science, and website design and implementation. For more information please check out my website, acoathup.github.io , or some of my codecademy progress at:
https://www.codecademy.com/profiles/andrewCoathup9815890929

PhD Physics (withdrew after 10 months)
Sept 2017 – Jul 2018

University of Victoria, Canada
I started a PhD. I completed two courses (A+ in both). I left the program in the first year because there were no PhD level research projects available to work on.
GPA: 4.0/4.0

MSc Physics
Sept 2015 – Aug 2017

University of Victoria, Canada
Master's Thesis Topic: Data Science in medical physics and personalized radiation therapy
GPA: 3.7/4.0

BSc Honours Physics (Co-op), Magna Cum Laude
Sept 2009 – Aug 2014

University of Ottawa, Canada
Honours Project Topic: Mathematical modelling of brain neurons in Python
GPA: 3.7/4.0

EXPERIENCE

Secondary School Science Teacher
Jan 2020 – Current

O Castro British School, Vigo, Spain

- Taught secondary school general science (Y7, Y8, Y9) and math (Y7, Y8)
- Taught GCSE physics (Y10, Y11) and chemistry (Y10)
- Taught A-level (Y12, Y13) physics
- Adapted to online teaching during coronavirus outbreak
- All of this in just the first 3 months of teaching!

ESL English Teacher — Sept 2019 – Dec 2019

London Eye Language Academy, Vigo, Spain

- Taught conversational English classes to students whose ages ranged from 6 years old to adults
- Most students were between 12 and 15 years old

Research Associate: Linac MV imaging — Apr 2018 – July 2018

University of Victoria, Canada

- Responsibly and safely operated clinical linear accelerator in developer mode to capture megavoltage images with the attached portal imager detector
- Developed programming skills by starting monte carlo simulations of the portal imager detector

Teaching Assistant: Computational Modelling and Analysis — Sept 2017 – Dec 2017

University of Victoria, Canada

- After achieving high results in the graduate version of the course (PHYS 515), the professor invited me to be a teaching assistant for the undergraduate version of the course
- Oversaw the weekly tutorial sessions and taught one lecture on an "Introduction to Python"
- Provided guidance and resolved student questions on statistics, monte carlo methods, as well as programming in Python and Java

Other Teaching Assistant Positions — Jan 2016 – Apr 2018

University of Victoria, Canada

- Lab Instructor: Introductory Physics II (Jan 2016 – Apr 2016; Jan 2018 – Apr 2018)
- Lab Instructor: Introduction to Laboratory Electronics (Sept 2016 – Dec 2016)
- ESL (English Second Language) Lab Instructor: Introductory Physics II (May 2016 – Aug 2016)
- ESL Tutorial Instructor: Introductory Physics II (May 2016 – Aug 2016)

Research Associate: Data Science in Medical Physics — Sept 2015 – Aug 2017

University of Victoria, Canada

- Built analytical and problem-solving skills by organizing and analyzing patient motion and demographic datasets, then implementing machine learning algorithms to predict patient motion during radiation therapy
- Independently learned data science and machine learning techniques/theory
- Data science methods were completed in Python (pandas, numpy, scikit-learn, matplotlib).
- Worked and communicated with a team of people coming from diverse backgrounds (physicists, radiation therapists, oncologists) to organize patient datasets

Monthly Quality Assurance (Linac and CT) Oct 2016 – March 2017
BC Cancer Agency, Victoria, Canada

- Performed monthly quality assurance (dosimetric, image, mechanical testing) on two clinical linear accelerators (Varian Truebeam) and one CT simulator (GE Optima 580), documented test outcomes, and reported results to the supervising medical physicist
- Tests performed required hands-on use of common medical physics instrumentation such as ion chambers, electrometers, electronic radiation detectors, and phantoms

Research Associate: PET Imaging Monte Carlo Jan 2015 – Jun 2015
Ottawa Hospital, Canada

- Developed strong computational and programming skills by performing PET imaging monte carlo simulations and writing scripts in Matlab.
- Worked collaboratively with other members of the research group to develop new skills and achieve results more quickly

Undergraduate Co-op Work Terms

- *Semtech Corporation, Ottawa (May 2013 – Dec 2013)*
  - Developed computational skills by modelling packaging electronics and simulating their outputs with machine learning. Wrote Python scripts for the modelling software (EmPro).
- *Radiation Protection Bureau, Health Canada, Ottawa (May 2012 – Aug 2012)*
  - Learned new programming skills (Python, SQL) to process and map airborne levels of radiation as a part of the Comprehensive Nuclear Test Ban Treaty
- *SUNLAB, University of Ottawa, Ottawa (Jan 2012 – Apr 2012)*
  - Built research and modelling skills by constructing a model CIGS thin film solar cell and simulating its performance in a proprietary modelling software (Sentaurus)

PUBLICATIONS AND TALKS

Peer-reviewed Publications

(1) **Coathup, A.**, Basran, P. (2017). *Personalized PTV margins for prostate cancer patients using a machine-learning approach*. Medical Physics. 44(8):4382, AUG 2017.
(2) **Coathup, A.**, Basran, P. (2017). *Using Patient-Specific Factors to Predict Intra-Fraction Motion in Prostate Cancer Patients with Machine Learning*. Medical Physics. 44(6):2811, JUN 2017.
(3) Morris, C. E., Prikryl, E., **Coathup, A.**, Joos, B. (2013). *Models for the Sensitivity of Voltage Gated K Channels to Bilayer Mechanical Stresses*. Biophysical Journal. DOI: http://dx.doi.org/10.1016/j.bpj.2012.11.2598

Conference Proceedings

(4) A. Walker, **A. Coathup**, O. Thériault, H. M. Myers, J. F. Wheeldon, S. Park, Z. Mi, I. Shih, K. Hinzer. "Modeling Cu(In,Ga)Se2 solar cells for applications in multi-junction solar cell

technologies," Oral presentation at the Next Generation Solar Photovoltaics Canada Scientific Conference in Montreal, Canada, May 2012. http://pvinnovation.ca/our-research/knowledge-transfer/project-11/

Outreach Invited Talks

(5) **Andrew Coathup**. *Data Science in Medical Physics and Personalized Radiation Therapy*, Victoria Data Science Meet-Up Group, Victoria, BC. Jan 25, 2018.
(6) **Andrew Coathup** and Pramodh Yapa, *Quantum Mechanics Symposium*, Let's Talk Science, Victoria, BC. April 25, 2017.

AWARDS

University of Victoria Graduate Fellowship $15 000 (2015 – 2016)
- *Awarded to outstanding entering graduate students at the University of Victoria*

Graduate Award (Masters) $2 000 (2015 – 2017)
- *Awarded to graduate students with exceptional grade point average (renewed for 2nd year)*

CANSSI Travel Award $1 000 (2017)
- *Awarded based on merit to attend CANSSI Medical Physics and Statistical Science workshop in Toronto*

SKILLS

- Python (pandas, scikit-learn, numpy, matplotlib, scipy, seaborn)
- Matlab
- Java
- SQL
- Linux
- Windows
- Microsoft Office (Excel, Word, Powerpoint)
- Data Visualization
- Machine Learning
- JavaScript
- C++
- HTML
- CSS
- PHP
- Windows
- Bash Scripting
- Github
- Analytical Skills
- Problem Solving Skills
- Mathematical Skills
- Ability to learn quickly
- Ability to work independently
- Teamwork

APPLICABLE COURSES

GRADUATE SCHOOL COURSES

- PHYS 502A – CLASSICAL ELECTRODYNAMICS – GRADE: 96%
- CSC 578D – SPECIAL TOPICS IN COMPUTER SCIENCE: DATA MINING – GRADE: 91%
- PHYS 515 – DATA ANALYSIS TECHNIQUES FOR PHYSICS – GRADE: 89%
- PHYS 535 – RADIOTHERAPY PHYSICS II – GRADE: 89%
- PHYS 539 – RADIATION DOSIMETRY – GRADE: 88%
- PHYS 544 – TOPICS IN RADIATION BIOLOGY – GRADE: 85%
- PHYS 540 – MEDICAL IMAGING – GRADE: 84%
- PHYS 534 – RADIOTHERAPY PHYSICS I – GRADE 70%

ONLINE COURSES - CODECADEMY

- JAVA
- JAVASCRIPT
- C++
- HTML
- GIT
- PHP
- BASH
- ANALYZE DATA WITH SQL
- ANALYZE DATA WITH PYTHON
- DATA SCIENCE CAREER PATH

LANGUAGES

English (Native), Spanish (B1), French (B1)