# Andrew Coathup

<u>Home</u>: Vigo, Spain
<u>Email</u>: acoat00@gmail.com
<u>Phone</u>: +34 644947508
<u>Website</u>: acoathup.github.io

## EDUCATION

### Codecademy                                          May 2019 – Current

*Brussels, Belgium*

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, <u>acoathup.github.io</u> , or some of my codecademy progress at:
<u>https://www.codecademy.com/profiles/andrewCoathup9815890929</u>

### 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 I was unable to find a project 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

Data Science, Programing, Website Self-Guided Learning       May 2019 – Aug 2019

*Brussels, Belgium*

- While my wife was working a contract in Brussels, I worked everyday to improve my programming skills
- I focused heavily on the data science, data analysis, and web design career modules – areas I am interested in pursuing as a career
- Please check out my website hosted on Github: <u>acoathup.github.io</u>
- Please also find some of my Codecademy progress here: <u>https://www.codecademy.com/profiles/andrewCoathup9815890929</u>

## Personal Travel + Language Learning                     Oct 2018 – Apr 2019
*Various EU countries*

- 1 month travelling through Belgium, the Netherlands, and Germany
- 2 months in Spain (mostly in parts of Galicia) visiting my wife's family and studying Spanish
- 1 month in Toulouse (France) improving my French language skills
- 1 month travelling throughout the UK and Ireland
- 1 month in Rouen (France) continuing to work on my French

## 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

## 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), French (B2), Spanish (A1)