Andrew Coathup

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EDUCATION

PhD Experimental Physics — Sept 2020 – Feb 2023 (expected)

Galician Institute for High Energy Physics / University of Santiago de Compostela, Spain

Thesis Topic: *Commissioning of a vacuum-free laser-plasma x-ray source for application in propagation-based phase-contrast x-ray imaging*

Principal tasks:

- Programmed motorized stages to reduce the movement error of a metal target to <10µm such that the surface is always in the focal point of laser pulses arriving at a rate 1000 pulses per second
- Determined parameters required to successfully capture first ever phase contrast image of a biological sample with this novel x-ray source
- Presented the results as an oral presentation at an international conference and made contacts resulting in a >100k€ piece of equipment being brought to the laboratory and the first inter-university experiment to take place at the laboratory
- Precise measurement and analysis of a micron-scale x-ray source size and x-ray spectrum

Skills: Python, Matlab, LabView, ImageJ, programming, work in laboratory environment, experimental debugging, error analysis, independent direction to work, independent research, independent learning, ability to begin and foster collaborations, presentation, writing, time and workload management, creative problem solving, resourcefulness under budget constraints, experience in Spanish and European work environments

MSc Medical Physics — Sept 2015 – Aug 2017

University of Victoria, Canada

Thesis Topic: *Towards Personalized PTV Margins for External Beam Radiation Therapy of the Prostate*

Principal tasks:

- Application of predictive models to predict patient motion during radiation therapy
- Organization / preparation of patient training data for use in predictive models
- Selection of appropriate data science / machine learning predictive tools

Skills: Error analysis, Python, programming, scikit-learn, pandas, scipy, numpy, machine learning, data science, data preparation, independent research, independent learning, presentation, writing, communication, Excel, databases

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

University of Ottawa, Canada

Thesis Topic: *Modelling of brain neurons with Markov chains in Python*

Principal Taks:

- Developped Python code to model the open probability voltage-gated of potassium channels

Skills: Python, programming, presentation, writing, research

WORK EXPERIENCE

Secondary School Science Teacher
Jan 2020 – Jun 2020

O Castro British School, Vigo, Spain

- Prepared and taught classes in physics, math and science to 500+ students from age 12 to 18
- Adapted to two schedule changes in the first two months then to online teaching due to the coronavirus pandemic for the remainder of the year
- Communicated with various stakeholders (students, teachers, parents, heads of department)
- Organized grades, performance metrics, behavioural metrics for 500+ students

Skills: Communication, organizational, time management, creativity, resourcefulness

University Teaching Assistant Positions
Jan 2016 – Apr 2018

University of Victoria, Canada

- Tutorial Instructor: Computational Modelling and Analysis (Sept 2017 – Dec 2017)
- 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)

Skills: Communication, organizational, problem solving, resourcefulness

Monthly Cancer Centre Quality Assurance
Oct 2016 – Mar 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)
- Tests performed required hands-on use of common medical physics instrumentation such as ion chambers, electrometers, electronic radiation detectors, and phantoms

Skills: Experimental measurements, clinical experience, scientific documentation

VOLUNTEER EXPERIENCE

Junta directiva Compostela Swing
Mar 2021 – Current

Santiago de Compostela, Spain

- Took active role in promoting swing dance throughout the city
- Made contacts with local businesses in the city to discover new dancing opportunities
- Created poster ads to market swing dance events
- Managed social media accounts in the last year
- Number of participants in weekly events has grown 5x since joining the organizing team

LANGUAGES

- English (Native)
- Spanish (Advanced – DELE C1)
- French (Basic – High School French Immersion)