

# Chukwudubem Umeano

79 Sundon Road, Houghton Regis, Dunstable, Bedfordshire LU5 5LN  
+447906099539 | [ccumeano@gmail.com](mailto:ccumeano@gmail.com) | <https://www.linkedin.com/in/chukwudubem-umeano/>

## EDUCATION

---

### 2021-Present University of Exeter, Doctor of Philosophy, Physics

Project title: 'Developing a Theory for Quantum Feature Maps'

I study theory and applications related to Quantum Machine Learning, Quantum Simulation and Quantum Algorithms.

#### Publications:

- C. Umeano, F. Jamet, L. P. Lindoy, I. Rungger and O. Kyriienko, **Quantum subspace expansion approach for simulating dynamical response functions of Kitaev spin liquids**, *Phys. Rev. Materials* **9**, 034401 (2025).
- C. Umeano, A. E. Paine, V. E. Elfving and O. Kyriienko, **What can we learn from Quantum Convolutional Neural Networks?**, *Adv Quantum Technol.* 2400325 (2024)
- S. Scali, C. Umeano and O. Kyriienko, **The topology of data hides in quantum thermal states**, *APL Quantum* **1**, 036106 (2024).
- S. Scali, C. Umeano and O. Kyriienko, **Quantum topological data analysis via the estimation of the density of states**, *Phys. Rev. A* **110**, 042616 (2024).

#### Preprints:

- C. Umeano, S. Scali and O. Kyriienko, **Quantum community detection via deterministic elimination**, arXiv preprint arXiv:2412.13160 (2024).
- C. Umeano, S. Scali and O. Kyriienko, **Can Geometric Quantum Machine Learning Lead to Advantage in Barcode Classification?**, arXiv preprint arXiv:2409.01496 (2024).
- C. Umeano and O. Kyriienko, **Ground state-based quantum feature maps**, arXiv preprint arXiv:2404.07174 (2024).
- C. Umeano, V. E. Elfving and O. Kyriienko, **Geometric quantum machine learning of BQP<sup>A</sup> protocols and latent graph classifiers**, arXiv preprint arXiv:2402.03871 (2024).

#### Selected Conferences and Workshops:

- **APS Global Physics Summit 2025** (Anaheim, California, USA) – talk
- **Quantum Techniques in Machine Learning 2024** (Melbourne, Australia) – talk
- **Quantum Simulation with Tensor Networks for Digital Twins 2024** (Exeter, UK) – talk
- **Workshop on Quantum Machine Learning 2024** (London, UK) - talk
- **Q-Sci-ML Research meeting 2023** (Amsterdam, the Netherlands) - talk
- **Quantum Techniques in Machine Learning 2023** (CERN, Geneva, Switzerland) – poster
- **Quantum Computing Theory in Practice 2023** (Cambridge, UK) - poster
- **Mini workshop on quantum computing 2022** (Bristol, UK) - talk

### 2020-2021 Imperial College London, Master of Science, Quantum Physics and Fundamental Forces – Merit, 69.6% average

Modules included Quantum Field Theory, Particle Symmetries, Unification, Quantum Electrodynamics, General Relativity and Quantum Information.

**Dissertation – 90%:** 'Quantum Algorithms – A Review'

### 2017-2020 University of Warwick, Bachelor of Science, Physics – First Class, 80% average

I was awarded the **Seymour Prize**, given to the **highest achieving student in the class**.

# Chukwudubem Umeano

79 Sundon Road, Houghton Regis, Dunstable, Bedfordshire LU5 5LN  
+447906099539 | [ccumeano@gmail.com](mailto:ccumeano@gmail.com) | <https://www.linkedin.com/in/chukwudubem-umeano/>

**Final Year Project – First Class, 75%:** ‘Computational recognition of crystalline environments’: used algorithmic and supervised machine learning protocols to recognise crystalline features

## EXPERIENCE

---

**2022-Present** *Postgraduate Teaching Assistant* | **University of Exeter**

- Deliver maths problems classes to small groups of physics students

**July-Dec 2023** *Intern* | **PASQAL (remote)**

- Conducted research on approximate gradient methods for quantum models

**Jul-Aug 2022** *Intern (Modelling)* | **Quantile, London**

- Developed and trialled a QAOA algorithm for trade count optimisation

**2017-2020** *Student Ambassador* | **Warwick Welcome Service, Coventry**

- Prepared and delivered interactive 1-hour lessons to educate Year 8 and 9 students about options after leaving school

**Jul-Aug 2019** *Summer Intern (IT Risk and Assurance)* | **Ernst and Young, Birmingham**

- Channel 1 & 2 Audit - completed ITGC and ITAC testing for external clients (e.g. Dyson, Clarks, Tarmac, AGA), did risk categorisation for Mercedes

**Aug 2016** *Business Insight Week* | **PricewaterhouseCoopers, London**

- Data analysis, report writing, collaboration with assurance team

**July 2016** *Work experience in Actuarial Department* | **Transatlantic Reinsurance Company, London**

- Analysed financial data, created graphs, researched state of Reinsurance market

## SKILLS

---

- **Languages:** English (Native), French (Intermediate).
- **IT Skills:**
  - Python (Proficient), Julia (Proficient), Microsoft Office (Proficient), Mathematica (Intermediate), Git (Intermediate), SQL (Intermediate), HTML (Intermediate), CSS (Intermediate), C (Intermediate), Linux (Basic), JavaScript (Basic)
  - Quantum SDKs: Yao, Qiskit, PennyLane
  - Experience editing websites using WordPress as well as managing social media channels.
- **Other:** Certificate of Financial Studies (A\*), two European Maths Kangaroo Certificates of Merit

## ACTIVITIES AND INTERESTS

---

- **Part of Physics mentoring scheme** – While at Warwick, I helped three first year physicists with some tutoring, revision tips and general advice to help them through their first year at university
- **Head of Sponsorship at RAW 1251AM** - Obtained and maintained relationships with sponsors and sat in board meetings, helping make key decisions about the running of the student radio station
- **Represented GB** in basketball at the 2016 FISEC World Championships in Beauvais, and currently play intramural football and basketball for a few societies at university
- **Student Radio:** I was a regular on the sports student radio show, as well as producing and hosting my own show, ‘Urban Nights’, based on UK music and culture

References are available upon request