Batuhan **Yildirim**

PhD Physics · University of Cambridge

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Education

University of Cambridge — *Cambridge, UK*

PhD Physics - Molecular Engineering Group — *Oct. 2018 - Oct. 2022*

- Materials discovery using deep learning - graph neural networks for structure-property mapping and generative models for inorganic crystal structures.
- Developing software to enable advanced analysis of electron microscopy data (segmentation and detection of particle boundaries) using image processing and computer vision techniques.
- Automated chemical information, figure and image extraction from scientific documents to create materials property/image databases.

Queen Mary, University of London — *London, UK*

MSc Data Science — *Sep. 2017 - Sep. 2018*

- Notable examinations: Machine Learning - 90%, Computer Vision and Deep Learning - 85%, Applied Statistics - 84%.
- Thesis - Unsupervised deep learning for optical flow estimation.

University of Manchester — *Manchester, UK*

MEng Materials Science and Engineering — *Sep. 2013 - Sep. 2017*

- First-Class Honours - awarded the Rolls-Royce/Tin Plate Workers prize for finishing top of the class during my 3rd year.

Skills

Programming	Python; MATLAB; Git; LaTeX.
Machine Learning	PyTorch; Keras; sklearn; ability to design and implement machine/deep learning pipelines.
Research	ability to conceptualise and implement ideas; ability to turn papers into code and results.
Languages	English, Turkish

Honors & Awards

2019	**College Senior Scholarship (£350),** Fitzwilliam College, University of Cambridge - Awarded on the basis of excellent work to the highest performing PhD students.	*Cambridge, UK*
2018	**2nd Place (£5000),** Citadel Dublin DataOpen.	*Dublin, Ireland*
2017	**Rolls-Royce/Tin-Plate Workers Award (£250),** Awarded for finishing top of my class (3rd year) at the University of Manchester.	*Manchester, UK*

Employment Experience

StatusToday — *London, UK*

Data Science Intern — *Jun. 2018 - Oct. 2018*

- Implemented machine learning models to classify user activity from automated system activity: the model incorporated methods to deal with class imbalance and data leak.
- Deployed model to production, leading to more accurate employee insights and features computed by StatusToday.

Rolls-Royce Motor Cars — *Chichester, UK*

Materials and Process Engineer Intern — *Jun. 2015 - Jun. 2016*

- Development of automotive components by failure analysis and functional testing.
- Researched the suitability of using 3D-printed components in production vehicles.
- Collected and analysed data to provide detailed technical forensic reports on damaged components.

Projects and Relevant Experience

ChemDataExtractor – Molecular Engineering Group (Cavendish Laboratory) — *Cambridge, UK*

Contributing Developer — *Oct. 2018 - PRESENT*

- Maintaining and pushing features to my research group's open source machine learning based chemical information extraction software.

University of Manchester *Manchester, UK*

Peer Assisted Study Sessions (PASS) Leader *Sep. 2016 - Jun. 2017*

- Awarded an outstanding contribution to peer support award by the University of Manchester, in recognition of my ”commitment, innovation and leadership” within the peer support scheme.
- Facilitated second- and third-year international students in finding processes and learning methods beneficial to their individual learning styles.

Publications

- C. J. Court*, B. Yildirim*, A. Jain, J. M. Cole, ”3-D Inorganic Crystal Structure Generation and Property Prediction via Representation Learning”, J. Chem. Inf. Model. (**2020**) (Recently Accepted)
  ** - equal contribution*
- K. T. Mukaddem, E. J. Beard, B. Yildirim, J. M. Cole, ”ImageDataExtractor: A Tool to Extract and Quantify Data from Microscopy Images”, J. Chem. Inf. Model. (**2019**)
  https://doi.org/10.1021/acs.jcim.9b00734