**Batuhan Yildirim**
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## Education

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|---|---|---|---|
| University of Cambridge | Cambridge, UK | Physics | PhD, 2018-22 |
| Queen Mary University of London | London, UK | Data Science | MSc, 2018 |
| University of Manchester | Manchester, UK | Materials Science | MEng, 2017 |

## Employment Experience

- **Quantitative Researcher (Freelance) - Numer.ai (05/20 - Present)**
  - I participate in the "hardest data science tournament on the planet", where I submit weekly predictions of the residual returns of stocks (top 100 out of ~13000 users).
  - Developing machine learning-based time-series models; performing statistical/hypothesis test-driven feature selection to empirically select important features; and reducing a model's exposure to volatile features, resulting in stable performance over time.
- **Data Scientist (Intern) - StatusToday (06/18 - 10/18)**
  - 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.
- **Materials and Process Engineer (Intern) - Rolls-Royce Motor Cars (06/15 - 06/16)**
  - Development of automotive components by failure analysis and functional testing.
  - Collected and analysed data to provide detailed technical forensic reports on damaged components.

## Publications

1. B. Yildirim, A. Washington, J. Doutch, and J. M. Cole, "Calculating small-angle scattering intensity functions from electron microscopy images," *RSC Advances (accepted; awaiting publication)*.
2. B. Yildirim and J. M. Cole, "Bayesian particle instance segmentation for electron microscopy image quantification," *Journal of Chemical Information and Modeling*, vol. 61, no. 3, pp. 1136–1149, 2021.
3. B. Yildirim, C. J. Court, A. Jain, and J. M. Cole, "3-d inorganic crystal structure generation and property prediction via representation learning," *Journal of Chemical Information and Modeling*, vol. 60, no. 10, pp. 4518–4535, 2020.
4. K. T. Mukaddem, E. J. Beard, B. Yildirim, and J. M. Cole, "Imagedataextractor: A tool to extract and quantify data from microscopy images," *Journal of Chemical Information and Modeling*, vol. 60, no. 5, pp. 2492–2509, 2020.

## Honours and Awards

- College Senior Scholarship 2019 (£350) and 2020 (£350) - Fitzwilliam College, University of Cambridge - awarded on the basis of excellent work (2019) and in recognition of significant research progress made during COVID-19 (2020).

- Rolls-Royce/Tin-Plate Workers Award 2017 (£250) - University of Manchester - awarded for achieving first-class honours and finishing top of my class (3rd year).

**Open Source Projects and Contributions**

- **Core Developer**
  - ImageDataExtractor - A Python framework for electron microscopy image quantification.
  - rdfpy - A Python library for fast computation of 2D and 3D radial distribution functions.
- **Contributer**
  - TorchEnsemble - A unified ensemble framework for PyTorch. Extended API by implementing the capability to use arbitrary loss functions in ensemble models.

**Fun**

- **Generative Art**: I enjoy creating generative art which exploits randomness, motion and colour to produce diverse sets of examples. I have sold many of my pieces and have created a Twitter bot that randomly generates and posts several times a day.