

# Patrick Lewis BA MSci PhD

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## Education

2018-22 University College London & Facebook AI Research: Ph.D.

Area: Natural Language Processing

Advisors: Sebastian Riedel, Pontus Stenetorp

2012-16 Queens' College Cambridge: BA MSci Natural Sciences (1<sup>st</sup> Class)

MSci: Physical & Theoretical Chemistry, & Data/NLP Project

BA: Chemistry, Statistical Mechanics, Mathematics, Computer Sciences, Materials Sciences.

2007-12 Epsom College, Epsom

A Level & EPQ: Maths (A\*) Further Maths (A) Physics (A\*) Chemistry (A\*) EPQ (A\*)

AS Level & GCSE: Philosophy (A) Critical Thinking (A) 10 A\* GCSEs including Maths, English & IT.

## Selected Publications (see [patricklewis.io](http://patricklewis.io) for full list)

- *Atlas: Few-shot Learning with Retrieval Augmented Language Models*, Lewis et al. Arxiv 2022 [[pdf](#)]
- *PAQ: 65 Million Probably-Asked Questions and What You Can Do With Them*, Lewis et al. TACL 2021 [[pdf](#)]
- *Question and Answer Test-Train Overlap in Open-Domain QA datasets*, Lewis et al. EACL 2021 [[pdf](#)] (Best Paper Award)
- *Retrieval-Augmented Generation for Knowledge-Intensive NLP Tasks*, Lewis et al. NeurIPS 2020 [[pdf](#)]
- *How Context Affects Language Models' Factual Predictions*, Petroni et al. AKBC 2020 [[pdf](#)] (Best Paper Award)
- *Language Models as Knowledgebases?*, Petroni et al. EMNLP 2019 [[pdf](#)]

## Work / Experience

2022- Cohere AI: Research Scientist: Research and Development of the next generation of NLP and generative AI for Natural Language. Focussed on the intersection of Large Language Models and Retrieval.

2022-22 Meta AI: AI Research Scientist: Researching and developing the next generation of AI. Focussing on the intersection of language and knowledge, based in the London Meta Fundamental AI Research (FAIR) Lab.

2018-22 FAIR PhD Student: Affiliated with UCL and Facebook AI Research, advised by Sebastian Riedel and Pontus Stenetorp. Focusing on how to represent, store and access knowledge and building more powerful, efficient and robust models for knowledge-intensive NLP tasks such as question answering.

2018-18 Bloomsbury AI: ML Engineer. Researching & developing cutting edge NLP techniques for question answering & knowledge dissemination. Translating & scaling world-leading AI research into production environments.

2016-18 Healx: NLP Engineer. Predicting drug repurposing candidates using deep learning for NER, relation extraction, semantic representation learning on structured & unstructured data, and KB completion.

2015-16 MSci Research project: Developing novel algorithm to recommend academic collaborations & demonstrate unsupervised scientific concept learning using web scraping, neural embeddings & network analysis.

2014 BAE Systems Applied Intelligence: 3 month internship prototyping the redesign of mission-critical software.

2013 BAE Systems Detica: 3 month internship research project developing software for more accurate circuit design.

2013 Credit Suisse Spring Program: Training program for a technical role within Credit Suisse I.T. department.

2010 Expedition to Zambia: Renovating village schoolhouse, substantial repair work & weatherproofing.

## Relevant Skills

Coding: Expert: Python (NumPy, Tensorflow, Pytorch, spaCy, JuPyTer, fairseq, HuggingFace Transformers)

Prior Experience: JS, JQuery, HTML+CSS, Java, MATLAB, C#, SML

Other:  $\LaTeX$ , Gephi, AWS, GCP, Amazon Mechanical Turk, SC clearance 2013 & 2014, UK Driving Licence

## Awards and Commendations

- Outstanding Reviewer Award at NeurIPS (2021)
- Best Paper Award at EACL 2021 for "Question and Answer Test-Train Overlap in Open-Domain QA datasets" (2021)
- Led the UCL-FAIR team to win 2 tracks of the EfficientQA NeurIPS competition (2020)
- Best Paper Award at AKBC 2020 for "How Context Affects Language Models' Factual Predictions" (2020)

- Healx AI developer of the year (2017)
- Cambridge University Department Prize for “Outstanding Master’s Project” (2016)
- Queens’ College Foundation Scholarship & Paul W Davies Prize for Chemistry (2016)
- Ranked 1<sup>st</sup> intern at Applied Intelligence (2014), EAL Certificate of “Commendable” performance at Detica (2013)
- School Debating & Public speaking teams, regional finalists & champions respectively. Extended Project & academic excellence awards (2008-2012)

## Research Community Activities and Teaching

- Keynote Speaker, Repl4NLP at ACL 2022
- Co-organizer for ACL workshop on Semiparametric Methods in NLP: Decoupling Logic from Knowledge (Spa-NLP 2022)
- Co-organizer for EMNLP workshop on Machine Reading for Question Answering (MRQA 2021)
- Co-organizer for ACL workshop Representation Learning for NLP (Repl4NLP 2020)
- Served as Area Chair for ARR 2022, EMNLP 2022
- Reviewer at EurNLP 2019, ICLR 2019, MRQA 2019, ACL 2020, AKBC 2020, EMNLP 2020, EACL 2021, NAACL 2021, ACL 2021, AKBC 2021, NeurIPS 2021, ICML 2022, TACL 2022, NeurIPS 2022, ARR 2022
- Teaching Assistant for UCL NLP Master’s degree course 2019, 2020, 2021
- Supervised UCL Machine Learning Masters’ Degree summer research project theses 2019, 2020.
- Invited talks: University of Cambridge LTT Lab (2019), University of Glasgow IR and ML Lab (2020), NY-NLP (2020), Amazon Alexa (2021), Guest lecture, NLP for Business Analytics, UCL (2021), G-Research (2021), NUS (2021), UC Santa Barbara (2022), EPFL (2022) University of Washington (2022), Keynote Repl4NLP (2022), NY-NLP (2022), Benevolent AI (2022)
- Organised UCL NLP reading group 2019-2020, regular presenter at Facebook London NLP and UCL NLP Reading groups.
- Contributor to HuggingFace Transformers codebase and community, including open-sourcing of Retrieval-Augmented Generation (RAG). Open-sourced data and code for 6 recent research projects.

## Other Teamwork, Leadership and Interests

- **Research Team Leadership:** Regularly lead complex research projects with large teams across different experience levels, institutions & locations, such as the UCL-FAIR EfficientQA (PAQ) and the Retrieval-Augmented Generation (RAG) projects.
- **College:** President of Milner Society (2014-15): Society for all science students at Queens’ College (130 students). Managed tutoring workshops, social events & worked closely with college staff. President of Queens’ Rugby Club (2014-15): Managed budget, training, social events, safety, kit & administrative duties.
- **School:** Head of House (2011-12): Responsible for welfare of 70 pupils, efficient running of house & managing prefect team. Epsom College YC President (2010-11): Led team running charity schemes including social events & selling calendars.
- Vietnam & Europe Backpacking (2015), Interrail (2012), Rafting & hiking Grand Canyon (2011), Zambia Expedition (2010)
- Occasionally play classical & electric guitar. Performed main parts in 4 plays. Enjoy Trivia Competitions and Pub Quizzes.