DANIEL RITTER
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EDUCATION

May, 2021 BA in Computer Science, BA in Political Science, Brown University. Cumulative GPA: 4.0, graduated Magna Cum Laude and Phi Beta Kappa

November, 2022 MSc in Advanced Computer Science, The University of Oxford

WORK EXPERIENCE

Harvard Medical School | Boston, MA | 2022 – 2023

Research Assistant/Software Engineer in the Debbie Marks Lab *September 2022 – Present*

- Developed a hybrid approach to modeling protein fitness combining protein-family specific models with unsupervised large language models.
- Created a large scale benchmark for evaluating protein fitness models
- Applied protein fitness models to predict the likelihood of COVID19 viral escape.
- Currently working with the Boston Department of Veteran's Affairs on applying sequence models to medical record data for cancer risk prediction.

Brown University | Providence, RI | 2019 – 2021

Teaching Assistant *September 2019 – May 2021*

- Assisted in developing and grading course material slides and assignments
- Held weekly TA hours and labs to help students better understand the course material
- Managed undergraduate TA staff as a head teaching assistant

Kern Systems | Boston, MA | 2020 – 2020

Machine Learning Fellow *June 2020 – August 2020*

- Worked on machine learning compression systems for use in a DNA storage pipeline.

Perspectum Diagnostics | San Francisco, CA / Oxford, UK | 2019 – 2019

Image Analysis Intern *June 2019 – August 2019*

- Applied deep learning methods to problems in digital pathology
- Improved nuclei detection in biopsy slides significantly with novel CNN methods

UNDERGRADUATE/GRADUATE RESEARCH EXPERIENCE

Oxford University | 2021 – 2022

Master's Dissertation *October, 2021- October, 2022*

- Evaluated the effectiveness and validity of various interpretability methods for large language models. I was supervised by Yarin Gal and collaborated with Been Kim.

Brown University | September 2018 – 2021

Honors Thesis *September, 2020-2021*

- Advised by Michael Littman and in collaboration with Mark Ho. Proposed a method for scaling up multi-agent planning through planning in simplified sub-games.

DeepLTLf *September, 2019 - May 2021*

- Developed a specialized neural architecture for learning linear temporal logic formulae

PUBLICATIONS

- **Daniel Ritter**, Pascal Notin, Aaron Kollasch, Lood Van Niekerk [and 10 others], *ProteinGym: Large-Scale Benchmarks for Protein Fitness Prediction and Design*, NeurIPS 2023.
- Nicole Thadani, Sarah Gurev, Pascal Notin [and 6 others, including **Daniel Ritter**], *Learning from Prepandemic Data to Forecast Viral Escape*, Nature 2023
- Pascal Notin, [and 5 others, included **Daniel Ritter],** *TranceptEVE: Combining Family-specific and Family-agnostic Models of Protein Sequences for Improved Fitness Prediction,* NeurIPS Learning Meaningful Representations of Life Workshop 2022.
- **Daniel Ritter**, Lisa Schut, Andrew Jesson, Yarin Gal, Been Kim, *Assessing the Interpretability of Large Language Models*, University of Oxford MsC Thesis 2022.
- **Daniel Ritter**, Mark Ho, Michael Littman, *Multiagent Planning via Partial Coordination in Markov Games*, Brown University Honor's Thesis 2021.
- Homer Walke, **Daniel Ritter**, Carl Trimbach, Michael Littman, *Learning Finite Linear Temporal Logic Specifications with a Specialized Neural Operator*, ArXiv preprint, 2021.