

Abhimanyu Pallavi Sudhir

AI researcher working on program markets in the context of AI and bounded rationality.

Formal education

- University of Warwick · PhD Computer Science · 2022-26 – supervisor: Long-Tran-Thanh
- Imperial College London · MSci Mathematics · 2018-22 – 1st class honors

Internships

- Goldman Sachs · AI Research Intern · Jan-Aug 2021, London – Developed and implemented novel methods in NLP and recurrent neural networks for financial forecasting

Research

Markets and AI (PhD-related)

My current work focuses on (a) developing a good enough algorithmic model of market dynamics in order to design AI agents with a market-based structure (b) developing prediction market mechanisms for latent space variables in order to elicit latent knowledge from AIs.

- Abhimanyu Pallavi Sudhir and Long-Tran Thanh (2024), “Betting on what is neither verifiable nor falsifiable”, arxiv.org/abs/2402.14021
- Abhimanyu Pallavi Sudhir (2021), “A mathematical definition of property rights in a Debreu economy”, arxiv.org/abs/2107.09651

Related write-ups and talks.

- LessWrong post (2023): “Betting on what is un-falsifiable and un-verifiable”
- Poster at the Co-operative AI Foundation (CAIF) summer workshop, 2023: abhimanyu.io/legacy_writing/PhD_presentations/caif.pdf
- LessWrong post (2022): “Meaningful things are those the universe possesses a semantics for”

Consistency checks and forecasting (Berkeley SPAR – spring 2024)

Ongoing collaboration with Daniel Paleka and others to develop a consistency benchmark for LLM forecasters, as part of the Berkeley Supervised Program for Alignment Research (Spring 2024).

General mathematics

Math publications from high-school days; no longer relevant to my work.

- Abhimanyu Pallavi Sudhir (2019), “Infinitesimal translations and a multivariate Grünwald-Letnikov calculus”, arxiv.org/abs/1904.02710
- Abhimanyu Pallavi Sudhir (2019), “Generalisations of the determinant to interdimensional transformations: a review,” arxiv.org/abs/1904.08097
- Abhimanyu Pallavi Sudhir (2018), “The generalized Cauchy derivative as a principal value of the Grünwald-Letnikov fractional derivative for divergent expansions,” arxiv.org/abs/1809.08051
- Abhimanyu Pallavi Sudhir (2014), “On the Determinant-like function and the Vector Determinant,” *Advances in Applied Clifford Algebras* (24-3: 805-807), [doi:10.1007/s00006-014-0455-3](https://doi.org/10.1007/s00006-014-0455-3)
- Abhimanyu Pallavi Sudhir (2013), “Defining the Determinant-like function for m by n matrices using the exterior algebra,” *Advances in Applied Clifford Algebras* (23-4: 787-792), [doi:10.1007/s00006-013-0416-2](https://doi.org/10.1007/s00006-013-0416-2)

Academic service

- *Teaching Assistant for CS141: Functional Programming (Warwick)* · 2023
- *Reviewer for Advances in Applied Clifford Algebras (Springer)* · 2020

Courses and workshops attended

- *Co-operative AI Foundation* · Jul 2023 · workshop on AI and cooperative game theory

Other projects

Equivariant learning (2021-22)

Final-year MSci project with Professor Jeroen Lamb at Imperial College London exploring equivariant learning and causal DAGs.

Report: abhimanyu.io/legacy_writing/Imperial_reports/m4r.pdf

Lie theory (2019)

Undergraduate research project with Professor Richard Thomas at Imperial College London on Lie groups and algebras.

Report: abhimanyu.io/legacy_writing/Imperial_reports/urop.pdf

Presentation: abhimanyu.io/legacy_writing/Imperial_presentations/lie_theory.pdf

Lean (2018-19)

Computerized formal proving in Lean with Kevin Buzzard at Imperial College London.

- Wrote the [FilterProduct.lean](#) and [Hyperreal.lean](#) modules for the Lean math library
- Formalized the first-year “Foundations of Analysis” module exam Blog post: xenaproject.wordpress.com/2019/05/06/m1f-imperial-undergraduates-and-lean/

PhysicsOverflow (2014-15)

Co-founded [PhysicsOverflow](#), a postgraduate-level physics Q&A site and open peer review system. See en.wikipedia.org/wiki/PhysicsOverflow for more details.

- Abhimanyu Pallavi Sudhir and Rahel Knoepfel (2015), “PhysicsOverflow: A postgraduate-level physics Q&A site and open peer review system,” *Asia-Pacific Physics Newsletter* (4-1: 53-55), doi:10.1142/S2251158X15000193

Links

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- Blog: TheWindingNumber.blogspot.com
- Google Scholar: scholar.google.com/citations?user=lb38BjYAAAAJ
- Github: github.com/abhimanyupallavisudhir
- LessWrong: lesswrong.com/users/abhimanyu-pallavi-sudhir