Mrinank Sharma

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@MrinankSharma

Education

2019–present **DPhil Student, CDT in Autonomous Intelligent Machines and Systems**, *Department of Statistics, University of Oxford*, Oxford, UK.
In my first two years, I focused on applied Bayesian modelling of the COVID-19 pandemic, leading to first-author publications in *Science* and *NeurIPS*. My work has been presented to policy organisations like the Africa CDC, UK SAGE, appeared in *The Guardian*, and influenced policy. Following this, I focused on rethinking Bayesian Neural Networks. I hope my work contributes to the develop of safe, secure AI systems through reliable monitoring and improved alignment.
Supervisors: Tom Rainforth, Eric Nalisnick and Yee Whye Teh.

2015–2019 **MEng(Hons) Information and Computer Engineering**, *Pembroke College, University of Cambridge*, Cambridge, UK, *First Class with Distinction*.
Specialising in machine learning, I graduated top of my cohort (>250 students).

Experience

2020–present **DPhil Affiliate**, *Future of Humanity Institute*, Oxford, UK.

2019 **Research Assistant**, *Computational and Biological Learning Lab, Department of Engineering*, Cambridge, UK.
Research assistant under Dr Richard Turner working on probabilistic machine learning.

Invited Talks

2022 Heidelberg Institute of Global Health Jubilee Symposium
2021 ETH Zurich Modelling Group.
2020 NeurIPS 2020 COVID-19 Symposium.
2020 German Centre for Infection Research, University of Cologne.
2020 Africa CDC modelling group.

Service

2021-22 Reviewer, *Neural Information Processing Systems*.
2022 Highlighted Reviewer, *International Conference on Learning Representations*.
2020 Reviewer, *The Lancet*.

Recognition

• *MLPS Impact Award* (2022) • *Edward Chapman Research Prize* (2021) • *ESPRC DPhil Scholarship* (2019) • *Charles Lamb Prize* (2019) • *Ronald Wynn Prize for Engineering* (2019, 2018) • *IET Undergraduate Grant* (2018) • *Kilby Prize for the Best Undergraduate Performance* (2018) • *Winifred Georgina Holgate Pollard Memorial Prize* (2018, 2017) • *Foundress Scholarship* (2018, 2017) • *Foundress Prize* (2017, 2016) • *College Scholarship* (2016) • *Reece Foundation Arkwright Undergraduate Scholarship* (2015)

Publications

Mrinank Sharma, Sebastian Farquhar, Eric Nalisnick, and Tom Rainforth. Do bayesian neural networks need to be fully stochastic? *arXiv preprint arXiv:2211.06291*, 2022.

Tomáš Gavenčiak, Joshua Teperowski Monrad, Gavin Leech, **Mrinank Sharma**, Sören Mindermann, Samir Bhatt, Jan Brauner, and Jan Kulveit. Seasonal variation in sars-cov-2 transmission in temperate climates: A bayesian modelling study in 143 european regions. *PLoS computational biology*, 18(8):e1010435, 2022.

Sören Mindermann*, Jan M. Brauner*, Muhammed T. Razzak*, **Mrinank Sharma***, Andreas Kirsch, Winnie Xu, Benedikt Höltgen, Aidan N. Gomez, Adrien Morisot, and Sebastian Farquhar. Prioritized training on points that are learnable, worth learning, and not yet learnt. In *International Conference on Machine Learning*, pages 15630–15649. PMLR, 2022.

Gavin Leech*, Charlie Rogers-Smith*, Joshua Teperowski Monrad, Jonas B. Sandbrink, Benedict Snodin, Robert Zinkov, Benjamin Rader, John S. Brownstein, Yarin Gal, Samir Bhatt, **Mrinank Sharma**, Sören Mindermann, Jan M. Brauner, and Laurence Aitchison. Mask wearing in community settings reduces SARS-CoV-2 transmission. *Proceedings of the National Academy of Sciences*, 119(23):e2119266119, June 2022. Publisher: Proceedings of the National Academy of Sciences.

George Altman*, Janvi Ahuja*, Joshua Teperowski Monrad, Gurpreet Dhaliwal, Charlie Rogers-Smith, Gavin Leech, Benedict Snodin, Jonas B. Sandbrink, Lukas Finnveden, Alexander John Norman, Sebastian B. Oehm, Julia Fabienne Sandkühler, Jan Kulveit, Seth Flaxman, Yarin Gal, Swapnil Mishra, Samir Bhatt, **Mrinank Sharma**$^{+}$, Sören Mindermann^{+}, and Jan Markus Brauner^{+}. A dataset of non-pharmaceutical interventions on SARS-CoV-2 in Europe. *Scientific Data*, 9(1):145, April 2022. Number: 1 Publisher: Nature Publishing Group.

Mrinank Sharma*, Sören Mindermann*, Charlie Rogers-Smith, Gavin Leech, Benedict Snodin, Janvi Ahuja, Jonas B. Sandbrink, Joshua Teperowski Monrad, George Altman, Gurpreet Dhaliwal, Lukas Finnveden, Alexander John Norman, Sebastian B. Oehm, Julia Fabienne Sandkühler, Laurence Aitchison, Tomáš Gavenčiak, Thomas Mellan, Jan Kulveit, Leonid Chindelevitch, Seth Flaxman, Yarin Gal, Swapnil^{+} Mishra, Samir Bhatt^{+}, and Jan Markus Brauner$^{+,*}$. Understanding the effectiveness of government interventions against the resurgence of COVID-19 in Europe. *Nature Communications*, 12(1):5820, October 2021. Number: 1 Publisher: Nature Publishing Group.

Swapnil Mishra*, Sören Mindermann*, **Mrinank Sharma***, Charles Whittaker*, Thomas A Mellan, Thomas Wilton, Dimitra Klapsa, Ryan Mate, Martin Fritzsche, Maria Zambon, et al. Changing composition of sars-cov-2 lineages and rise of delta variant in england. *EClinicalMedicine*, 39:101064, 2021.

Gideon Meyerowitz-Katz, Samir Bhatt, Oliver Ratmann, Jan Markus Brauner, Seth Flaxman, Swapnil Mishra, **Mrinank Sharma**, Sören Mindermann, Valerie Bradley, Michaela Vollmer, et al. Is the cure really worse than the disease? the health impacts of lockdowns during covid-19. *BMJ Global Health*, 6(8):e006653, 2021.

Mrinank Sharma*, Sören Mindermann*, Jan Markus Brauner*, Gavin Leech, Anna B. Stephenson, Tomáš Gavenčiak, Jan Kulveit, Yee Whye Teh, Leonid Chindelevitch, and Yarin Gal. On the robustness of effectiveness estimation of nonpharmaceutical interventions against COVID-19 transmission. *Neural Information Processing Systems*, 2020. Accepted as a **Spotlight Talk** (top 4% of submissions).

Jan Markus Brauner*, Sören Mindermann*, **Mrinank Sharma***, Anna B Stephenson, Tomáš Gavenčiak, David Johnston, Gavin Leech, John Salvatier, George Altman, Alexander John Norman, Joshua Teperowski Monrad, Tamay Besiroglu, Hong Ge, Vladimir Mikulik, Meghan A. Hartwick, Yee Whye Teh, Leonid Chindelevitch, Yarin Gal, and Jan Kulveit. Inferring the effectiveness of government interventions against COVID-19. *Science*, 2020.

Mrinank Sharma*, Michael Hutchinson*, Siddharth Swaroop, Antti Honkela, and Richard E. Turner. Differentially private federated variational inference, 2019.

Note: $*$ denotes equal contribution.