SEBASTIAN W. OBER

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EDUCATION

Ph.D. in Machine Learning, University of Cambridge 2018 - 2023
Ph.D. student & Gates Cambridge Scholar in the Computational and Biological Learning Lab under Professor Carl E. Rasmussen.
Thesis: Towards Improved Variational Inference for Deep Bayesian Models, https://doi.org/10.17863/CAM.102025.

MEng and BA in Engineering, University of Cambridge 2014 - 2018
First Class Honours with Distinction
Specialized in information and computer engineering. Master's project with Professor Simon J. Godsill: "Application of Non-negative Matrix Factorizations to Audio Analysis." 2nd percentile (third year), 1st in College (Gonville & Caius) in first and third years.

EMPLOYMENT

AstraZeneca May 2023 - Present
Senior Scientist, Machine Learning *Bioinformatics, Biologics Engineering*

· I develop machine learning solutions to help accelerate research in protein engineering in collaboration with wet lab scientists. My work centers particularly on deep generative modeling and active learning. I also conduct research on active learning approaches for protein engineering.

Secondmind
Senior Machine Learning Researcher Feb. 2023 - March 2023
Machine Learning Researcher (Part time) Feb. 2022 - Nov. 2022
Research Intern Aug. 2021 - Nov. 2021

· I conducted research on high-dimensional Bayesian optimization and improved modeling for Bayesian optimization; contributed to open source packages maintained by Secondmind (Trieste, GPflux); and helped with client projects as needed.

CONFERENCE PAPERS

- **(Oral) Sebastian W. Ober**, Ben Anson, Edward Milsom, Laurence Aitchison. An improved variational approximate posterior for the deep Wishart process. *UAI*, 2023.
- **(Oral)** Henry B. Moss, **Sebastian W. Ober**, Victory Picheny. Inducing point allocation for sparse Gaussian processes in high-throughput Bayesian optimisation. *AISTATS*, 2023.
- Vincent Fortuin, Adrià Garriga-Alonso, **Sebastian W. Ober**, Florian Wenzel, Gunnar Rätsch, Richard E. Turner, Mark van der Wilk, Laurence Aitchison. Bayesian neural network priors revisited. *ICLR*, 2022.
- Pola E. Schwöbel, Martin Jørgensen, **Sebastian W. Ober**, Mark van der Wilk. Last layer marginal likelihood for invariance learning. *AISTATS*, 2022.

- **Sebastian W. Ober**, Laurence Aitchison. A variational approximate posterior for the deep Wishart process. *NeurIPS*, 2021.
- **Sebastian W. Ober**, Carl E. Rasmussen, Mark van der Wilk. The promises and pitfalls of deep kernel learning. *UAI*, 2021.
- Laurence Aitchison, Adam X. Yang, **Sebastian W. Ober**. Deep kernel processes. *ICML*, 2021.
- **Sebastian W. Ober**, Laurence Aitchison. Global inducing point variational posteriors for Bayesian neural networks and deep Gaussian processes. *ICML*, 2021.
- Ziwei Zhu, **Sebastian W. Ober**, Roozbeh Jafari. Modeling and detecting student attention and interest level using wearable computers. In *IEEE International Conference on Wearable and Implantable Body Sensor Networks*, 2017.

WORKSHOP PAPERS & PREPRINTS

- Victor Picheny, Joel Berkeley, Henry B. Moss, Hrvoje Stojic, Uri Granta, **Sebastian W. Ober**, Artem Artemev, Khurram Ghani, Alexander Goodall, Andrei Paleyes, Sattar Vakili, Sergio Pascual-Diaz, Stratis Markou, Jixiang Qing, Nasrulloh R.B.S. Loka, Ivo Couckuyt. Trieste: Efficiently exploring the depths of black-box functions with TensorFlow. *arXiv preprint arXiv:2302.08436*, 2023.
- **Sebastian W. Ober**, David R. Burt, Artem Artemev, Mark van der Wilk. Recommendations for baselines and benchmarking approximate Gaussian processes. In *NeurIPS Workshop on Gaussian Processes, Spatiotemporal Modeling, and Decision-making Systems (GPSMDMS)*, 2022. Updated version at *arXiv:2402.09849*.
- Henry B. Moss, **Sebastian W. Ober**, Victor Picheny. Information-theoretic inducing point placement for high-throughput Bayesian optimisation. In *ICML Workshop on Adaptive Experimental Design and Active Learning in the Real World (ReALML)*, 2022.
- David R. Burt, **Sebastian W. Ober**, Adrià Garriga-Alonso, Mark van der Wilk. Understanding variational inference in function-space. In *Symposium on Advances in Approximate Bayesian Inference (AABI)*, 2021.
- **Sebastian W. Ober**, Carl E. Rasmussen. Benchmarking the neural linear model for regression. In *Symposium on Advances in Approximate Bayesian Inference (AABI)*, 2019.

REVIEWING

· Journal of Machine Learning Research (2021 - present)
· International Conference on Learning Representations (2022; Highlighted Reviewer)
· Neural Information Processing Systems (2021; Outstanding Reviewer Award)
· International Conference on Machine Learning (2021; Best Reviewer Award)

ADDITIONAL EXPERIENCE

Department of Computing, Imperial College London 2021-2023
Visitor

· Visiting researcher to the research group of Dr. Mark van der Wilk: `https://mvdw.uk/people/`

Cambridge University Engineering Department 2018 - 2020
Teaching Assistant

· Teaching assistant (grading coursework) for the fourth year course 4F13: Probabilistic Machine Learning.

Wolfson College, University of Cambridge 2018-2019
Undergraduate Supervisor

· Taught first year undergraduates in small group teaching for the first year mathematics and structural mechanics courses.

Texas A&M University Summers 2015- 2017
Undergraduate Research Intern

· Worked with Prof. Steven Wright (2015) and Prof. Roozbeh Jafari (2016-2017).

AWARDS AND SCHOLARSHIPS

Gates Cambridge Scholarship 2018-2023
Competitive scholarship for PhD funding ($>$ 5000 applicants for ca. 90 places).

NSF Graduate Research Fellowship Awardee 2018
Competitive research fellowship for PhD studies; declined to study at Cambridge.

Keysight Technologies Prize 2017
Award for top third year student in instrumentation and control engineering.

G-Research Third Year Computer-Based Project Prize 2017

Sir David L. Salomons Prize for Engineering 2017
Gonville & Caius College prize for top third year engineering student.

Willis Prize 2015
Gonville & Caius College prize for top first year engineering student.

CODING LANGUAGES & OPEN SOURCE CODING

· Python (PyTorch, TensorFlow 2, JAX)
· Contributor to Trieste: `https://github.com/secondmind-labs/trieste`
· Contributor to GPflux: `https://github.com/secondmind-labs/GPflux`

REFERENCES

Available upon request.