

William Harvey

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Education

- 2018 - Present** **PhD, Computer Science**
University of British Columbia, Canada
Supervised by Dr Frank Wood
- 2014 - 2018** **MEng, Engineering Science** (graduated with first-class honours)
University of Oxford, UK
Supervised by Dr Frank Wood

Awards and scholarships

- 2018** **Four Year Fellowships tuition award**
Awarded by the University of British Columbia to “the best doctoral applicants.”
- 2018** **Head of department’s prize for excellent performance in examinations**
Awarded by Oxford’s Department of Engineering Science for performance in final undergraduate exams (top 3 in year).
- 2017** **Gibbs prize proxime accessit**
Awarded for performance in 2nd and 3rd year undergraduate exams (top 3 in year).
- 2015** **Gibbs prize proxime accessit**
Awarded for performance in 1st year undergraduate exams (top 3 in year).

Experience

- 2021** **Guest lecture in UBC CS532W Probabilistic Programming**
Lectured on “Reparametrization and Normalizing Flows” for graduate-level course.
- 2021** **Reviewer for Thirty-seventh International Conference on Machine Learning**
Top 10% of reviewers.
- 2021** **Reviewer for Thirty-fourth Conference on Neural Information Processing Systems**
Outstanding reviewer award (given to top 8% of reviewers).
- 2018-2019** **Organised my research group’s (UBC PLAI group) weekly reading group**
Arranged exchanges with other research groups and talks from researchers in related fields.
- 2018** **Contributed to the Pyro open-source probabilistic programming language**
Added an implementation of the “inference compilation” algorithm.
- 2017** **Research intern at the University of Oxford (supervised by Dr Frank Wood)**
Contributed to DARPA’s Data-Driven Discovery of Models (D3M) program. I carried out the software engineering to integrate new research with the D3M system, and represented the Oxford team in a 4-week project coordination and planning workshop.

Technical skills

Python - Taught myself Python while at school, and have used it heavily since.

PyTorch - Over 4 years of experience using PyTorch in research projects.

SLURM/TORQUE - Over 4 years of experience with high-performance computing tools including SLURM and TORQUE.

MATLAB - Used MATLAB heavily during my undergraduate degree in engineering.

C++ - Experience using C in personal projects including a Sudoku solver.

Clojure - Used Clojure for projects including writing a compiler for a first-order probabilistic programming language as part of a graduate-level course.

Julia - Used Julia for projects including implementing a distributed SMC algorithm for a graduate-level course project.

Publications in proceedings

Frank Wood, Andrew Warrington, Saeid Naderiparizi, Christian Weilbach, Vaden Masrani, William Harvey, Adam Scibior, Boyan Beronov, Duncan Campbell, John Grefenstette, and Ali Nasser. Planning as inference in epidemiological models. 2021. Accepted to Frontiers in Artificial Intelligence

Andreas Munk, William Harvey, and Frank Wood. Assisting the adversary to improve gan training. In *2021 International Joint Conference on Neural Networks (IJCNN)*. IEEE, 2021

Christian Weilbach, Boyan Beronov, William Harvey, and Frank Wood. Efficient inference amortization in graphical models using structured continuous conditional normalizing flows. 2020. In the 23rd International Conference on Artificial Intelligence and Statistics (AISTATS 2020)

Under review

William Harvey, Saeid Naderiparizi, and Frank Wood. Conditional image generation by conditioning variational auto-encoders. 2021. Under review at the Tenth International Conference on Learning Representations (ICLR 2022)

Workshop publications

William Harvey, Andreas Munk, Atılım Güneş Baydin, Alexander Bergholm, and Frank Wood. Attention for inference compilation, 2020. Extended abstract at the PROBPROG 2020 conference

William Harvey, Michael Teng, and Frank Wood. Near-optimal glimpse sequences for improved hard attention neural network training, 2019. Poster at the NeurIPS 2019 Bayesian Deep Learning workshop

Mitar Milutinovic, Atılım Güneş Baydin, Robert Zinkov, William Harvey, Dawn Song, Frank Wood, and Wade Shen. End-to-end training of differentiable pipelines across machine learning frameworks, 2017. Poster at the NeurIPS 2017 Autodiff workshop