

Minh Hoang | Curriculum Vitae

Lewis-Sigler Institute for Integrative Genomics, Princeton University
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Research Interests

Machine Learning and Computational Biology

Automated Algorithm Design, Sequence Sketching, Sequence Compression, and Protein Language Models

Education

Carnegie Mellon University	School of Computer Science
<i>Ph.D. in Computer Science, Advisor: Carl Kingsford</i>	2018–2023
Thesis: <i>Practical Methods for Automated Algorithm Design in Machine Learning and Computational Biology</i>	
National University of Singapore	School of Computer Science
<i>B.Comp. (First Class Honor)</i>	2012–2017
Thesis: <i>A Probabilistic Approach for Protein Function Prediction with Hierarchical Structured Outputs</i>	

Honor and Awards

Ian Lawson Van Toch Memorial Award for Outstanding Student Paper at ISMB, 2025

Lee Kwan Yew Gold Medal for Outstanding Graduates, 2017

Professional Experience

Princeton University	
<i>Postdoctoral Research Associate</i>	2023–Present
Developing efficient computational frameworks for proteomics applications.	
Co-Lecturer of [IW-04] Machine Learning and Algorithms for Medicine.	
Carnegie Mellon University	
<i>Teaching Assistant</i>	2021–2022
Courses: [07-300] Research and Innovation (Wehbe, Vasilescu), [10-716] Advanced Theory in Machine Learning (Ravikumar)	
Amazon Web Services (AWS)	
<i>Applied Scientist Intern</i>	2020
Developed deep ensemble methods for supervised learning with tabular data, contributing to AWS SageMaker ML services.	
Conference Program Committee	
<i>ICML, NeurIPS, AAAI, ICLR, ICCV, IJCAI (Senior PC)</i>	2018–Present
Singapore-MIT Alliance for Research and Technology	
<i>Research Assistant</i>	2017–2018
Developed large-scale probabilistic optimization frameworks for urban traffic monitoring (Singapore Smart City Initiative).	
A*STAR Singapore, Bioinformatics Institute	
<i>Research Intern</i>	2016
Curated hand gesture dataset and developed classification algorithm for structured data with biomedical applications.	

Selected Publications

[1]: Minh Hoang and Mona Singh (2025). *Locality-aware pooling enhances protein language model performance across varied applications*. 33rd International Conference on Intelligent Systems for Molecular Biology (ISMB). Ian Lawson Van Toch Memorial Award for Outstanding Student Paper.

- [2]: Pei-Yau Weng, **Minh Hoang**, and Trong Nghia Hoang (2024). *Probabilistic Federated Prompt-Tuning in Data Imbalance Settings*. 41st Conference on Neural Information Processing Systems (NeurIPS).
- [3]: **Minh Hoang**, Azza Fadhel, Aryan Deshwal, Janardhan Rao Doppa, and Trong Nghia Hoang (2024). *Learning Surrogates for Offline Black-Box Optimization via Gradient Matching*. 41st International Conference on Machine Learning (ICML).
- [4]: **Minh Hoang** and Carl Kingsford (2024). *Efficient Heterogeneous Meta-Learning via Channel Shuffling Modulation*. 12th International Conference on Learning Representations (ICLR).
- [5]: C. S. Elder, **Minh Hoang**, Mohsen Ferdosi, and Carl Kingsford (2024). *A Scalable Optimization Algorithm for Solving the Beltway and Turnpike Problems with Uncertain Measurements*. 28th International Conference on Research in Computational Molecular Biology (RECOMB).
- [6]: **Minh Hoang** and Nghia Hoang (2024). *Few-Shot Learning via Repurposing Ensemble of Black-Box Models*. 38th AAAI Conference on Artificial Intelligence (AAAI).
- [7]: **Minh Hoang**, Guillaume Marçais, and Carl Kingsford (2023). *Density and Conservation Optimization of the Generalized Masked-Minimizer Sketching*. Journal of Computational Biology (JCB).
- [8]: **Minh Hoang**, Hongyu Zheng, and Carl Kingsford (2022). *Differentiable Learning of Sequence-Specific Minimizer Schemes with DeepMinimizer*. Journal of Computational Biology (JCB).
- [9]: **Minh Hoang**, Hongyu Zheng, and Carl Kingsford (2022). *DeepMinimizer: A Differentiable Framework for Optimizing Sequence-Specific Minimizer Schemes*. 26th International Conference on Research in Computational Molecular Biology (RECOMB).
- [10]: **Minh Hoang** and Carl Kingsford (2020). *Optimizing Dynamic Structures with Bayesian Generative Search*. 37th International Conference on Machine Learning (ICML).
- [11]: **Minh Hoang**, Nghia Hoang, Hai Pham, and David P. Woodruff (2020). *Revisiting the Sample Complexity of Sparse Spectrum Approximation of Gaussian Processes*. 34th Conference on Neural Information Processing Systems (NeurIPS).
- [12]: **Minh Hoang**, Nghia Hoang, Brian Kian Hsiang Low, and Carl Kingsford (2019). *Collective Model Fusion for Multiple Black-box Experts*. 36th International Conference on Machine Learning (ICML).
- [13]: Nghia Hoang, **Minh Hoang**, and Brian Kian Hsiang Low (2019). *Collective Online Learning via Decentralized Gaussian Processes in Massive Multi-Agent Systems*. 33rd AAAI Conference on Artificial Intelligence (AAAI).
- [14]: Nghia Hoang, **Minh Hoang**, Ruofei Ouyang, and Brian Kian Hsiang Low (2018). *Decentralized High-Dimensional Bayesian Optimization with Factor Graphs*. 32nd AAAI Conference on Artificial Intelligence (AAAI).
- [15]: **Minh Hoang**, Trong Nghia Hoang, and Kian Hsiang Low (2017). *A Generalized Stochastic Variational Bayesian Hyperparameter Learning Framework for Sparse Spectrum Gaussian Process Regression*. 31st AAAI Conference on Artificial Intelligence (AAAI).
- [16]: Nghia Hoang, **Minh Hoang**, and Brian Kian Hsiang Low (2016). *A Distributed Variational Inference Framework for Unifying Parallel Sparse Gaussian Process Regression Models*. 33rd International Conference on Machine Learning (ICML).
- [17]: Nghia Hoang, **Minh Hoang**, and Brian Kian Hsiang Low (2015). *A Unifying Framework of Anytime Sparse Gaussian Process Regression Models with Stochastic Variational Inference for Big Data*. 32nd International Conference on Machine Learning (ICML).

References

- Prof. Mona Singh:** Princeton University, mona@cs.princeton.edu
- Prof. Carl Kingsford:** Carnegie Mellon University, carlk@cs.cmu.edu
- Prof. David P. Woodruff:** Carnegie Mellon University, dwoodruf@cs.cmu.edu
- Prof. Bryan K. H. Low:** National University of Singapore, lowkh@comp.nus.edu.sg