

## Vu Dinh

CONTACT INFORMATION	Department of Mathematical Sciences University of Delaware Newark, Delaware, US.	Phone: 1-765-237-8876 Email: <a href="mailto:vucdinh@udel.edu">vucdinh@udel.edu</a> Website: <a href="https://vucdinh.github.io">vucdinh.github.io</a>
RESEARCH INTERESTS	Machine learning: statistical learning with correlated data; Bayesian methods; interpretable/explainable AI  Computational biology: statistical methods in evolutionary biology; uncertainty quantification, experimental design and control of biological systems	
EMPLOYMENT	<b>Assistant Professor</b> Department of Mathematical Sciences University of Delaware, Newark, Delaware, US. August 2017 – present  <b>Postdoctoral Research Fellow</b> Fred Hutchinson Cancer Research Center, Seattle, Washington, US. January 2015 – July 2017	
EDUCATION	2014 <b>Purdue University</b> , West Lafayette, Indiana, US Ph.D. in Mathematics  2009 <b>Université d'Orléans</b> , Orléans, France M.S. in Applied Mathematics, 2009  2008 <b>University of Science</b> , Ho Chi Minh City, Vietnam B.S. in Mathematics and Computer Science	
GRANTS	<b>NSF Award DMS-1951474</b> (07/31/2020 – 08/01/2022). <i>A statistical learning framework for phylogenetic inference: information, uncertainty, and geometry</i> . PI: Vu Dinh  <b>UDRF Strategic Initiatives Grant</b> (02/01/2022 – 01/31/2024). <i>Information-theoretical and geometric measures of phylogenetic diversity</i> . PIs: Vu Dinh and Mokshay Madiman	
PUBLICATIONS	<ol style="list-style-type: none"><li>Lam Si Tung Ho and Vu Dinh (2022). <a href="#">Searching for minimal optimal neural networks.</a> To appear on <b>Statistics and Probability Letters</b>.</li><li>Cuong V Nguyen, Lam Si Tung Ho, Huan Xu, Vu Dinh, Binh T Nguyen. <a href="#">Bayesian active learning with abstention feedbacks.</a> <b>Neurocomputing</b> 471 (2022): 242-250.</li><li>Vu Dinh and Lam Si Tung Ho. <a href="#">Convergence of maximum likelihood supertree reconstruction.</a> <b>AIMS Mathematics</b> 6 (8), 8870-8883. <i>Invited. Special issue of Mathematics in Science and Industry.</i></li></ol>	

4. Vu Dinh\* and Lam Si Tung Ho\*.  
Consistent feature selection for analytic deep neural networks.  
**Advances in Neural Information Processing Systems** (NeurIPS 2020)
5. Cheng Zhang\*, Vu Dinh\* and Frederick A. Matsen IV.  
Non-bifurcating phylogenetic inference via the adaptive lasso.  
**The Journal of the American Statistical Association** (2020): 1-16.
6. Lam Si Tung Ho, Binh T Nguyen, Vu Dinh, Duy Nguyen.  
Posterior concentration and fast convergence rates for generalized Bayesian learning.  
**Information Sciences** 538 (2020): 372-383.
7. Lam Si Tung Ho\*, Vu Dinh\*, Frederick A. Matsen IV and Marc A. Suchard.  
Consistency of the maximum likelihood estimator for the transition rate under a 2-state symmetric model.  
**The Journal of Mathematical Biology** 80.4 (2020): 1119-1138.
8. Lam Si Tung Ho, Vu Dinh and Cuong Nguyen.  
Multi-task learning improves ancestral state reconstruction in evolutionary biology.  
**Theoretical Population Biology** 126 (2019): 33-39.
9. David A. Shaw, Vu Dinh and Frederick A. Matsen IV.  
Joint maximum likelihood of phylogeny and ancestral states is not consistent.  
**Molecular Biology and Evolution** 36.10 (2019): 2352-2357.
10. Binh T. Nguyen, Duy M. Nguyen, Lam S. T. Ho and Vu Dinh.  
An active learning framework for set inversion.  
**Knowledge-Based Systems** 185 (2019): 104917.  
*Invited paper. A conference version of this paper wins the Best Paper Award at the 17th International Conference on Intelligent Software Methodologies, Tools and Techniques (SoMeT 2018, Granada, Spain).*
11. Vu Dinh\*, Lam Si Tung Ho\*, Marc A. Suchard and Frederick A. Matsen IV.  
Consistency and convergence of phylogenetic inference with species tree regularization.  
**The Annals of Statistics** 46.4 (2018): 1481-1512.
12. Vu Dinh, Aaron E. Darling and Frederick A. Matsen IV.  
Online Bayesian phylogenetic inference: theoretical foundations via Sequential Monte Carlo.  
**Systematic Biology** 67.3 (2018) 503–517.
13. Mathieu Fourment, Brian C. Claywell, Vu Dinh, Connor McCoy, Frederick A. Matsen IV and Aaron E. Darling.  
Effective online Bayesian phylogenetics via Sequential Monte Carlo with guided proposals.  
**Systematic Biology** 67.3 (2018) 490–502.
14. Owen G. Rehrauer, Vu Dinh, Bharat R. Mankani, Gregory T. Buzzard, Bradley Lucier and Dor Ben-Amotz.  
Binary-complementary compressive filters for Raman spectroscopy.  
**The Journal of Applied Spectroscopy** 72.1 (2018), 69-78.

15. Brian C. Claywell, Vu Dinh, Mathieu Fourment, Conner O. McCoy and Frederick A. Matsen IV.  
A surrogate function for one-dimensional phylogenetic likelihoods.  
**Molecular Biology and Evolution** 35.1 (2018), 242-246.
16. Vu Dinh\*, Arman Bilge\*, Cheng Zhang\* and Frederick A. Matsen IV.  
Probabilistic path Hamiltonian Monte Carlo.  
**International Conference on Machine Learning (ICML 2017)**.
17. Vu Dinh and Frederick A. Matsen IV.  
The shape of the one-dimensional phylogenetic likelihood function.  
**The Annals of Applied Probability** 27.3 (2017): 1646-1677.
18. Vu Dinh, Ann E. Rundell and Gregory T. Buzzard.  
Convergence of Griddy Gibbs sampling and other perturbed Markov chains.  
**Journal of Statistical Computation and Simulation** 87.7 (2017): 1379-1400.
19. Ankush Chakrabarty, Vu Dinh, Martin Corless, Ann E. Rundell, Stanislaw H. Zak and Gregory T. Buzzard.  
SVM-informed explicit nonlinear model predictive control using low-discrepancy sequences.  
**IEEE Transactions on Automatic Control** 62.1 (2017): 135-148.
20. Vu Dinh, Lam Si Tung Ho, Binh T. Nguyen and Duy Nguyen.  
Fast learning rates with heavy-tailed losses.  
**Advances in Neural Information Processing Systems (NIPS 2016)**.
21. Vu Dinh\*, Lam Si Tung Ho\*, Nguyen Viet Cuong, Duy Nguyen and Binh T. Nguyen.  
Learning from non-iid data: fast rates for the one-vs-all multiclass plug-in classifiers.  
**Theory and Applications of Models of Computation (TAMC 2015)**.
22. Vu Dinh, Ann E. Rundell and Gregory T. Buzzard.  
Experimental design for dynamic identification of cellular processes.  
**Bulletin of Mathematical Biology** 76.3 (2014): 597-626.
23. Vu Dinh, Ann E. Rundell and Gregory T. Buzzard.  
Effective sampling schemes for behavior discrimination for nonlinear models.  
**International Journal for Uncertainty Quantification** 4.6 (2014): 535-554.
24. Ankush Chakrabarty, Vu Dinh, Gregory T. Buzzard, Stanislaw H. Zak and Ann E. Rundell.  
Robust explicit nonlinear model predictive control with integral sliding mode.  
**American Control Conference (ACC 2014)**.
25. Nguyen Viet Cuong, Lam Si Tung Ho and Vu Dinh.  
Generalization and robustness of batched weighted average algorithm with V-geometrically ergodic Markov data.  
**Algorithmic Learning Theory (ALT 2013)**.
26. Jeffrey P. Perley, Judith Mikolajczak, Vu Dinh, Marietta L. Harrison, Gregory T. Buzzard and Ann E. Rundell.  
Systematically manipulating T-cell signaling dynamics via multiple model informed open-loop controller design.  
**IEEE Conference on Decision and Control (CDC 2012)**.

27. Nguyen Viet Cuong, Vu Dinh and Lam Si Tung Ho.  
 Mel-frequency cepstral coefficients for eye movement identification.  
**IEEE International Conference on Tools with Artificial Intelligence (ICTAI 2012).**

PROFESSIONAL  
SERVICES

- NSF Reviewer: 2019, 2020, 2021, 2022
- Reviewer (Machine learning and statistics):
  - Journal of Machine Learning Research
  - Journal of Computational and Graphical Statistics
  - Bayesian Analysis
  - Conference on Neural Information Processing Systems (NeurIPS)
  - International Conference on Machine Learning (ICML)
  - AAAI Conference on Artificial Intelligence (AAAI)
  - International Conference on Artificial Intelligence and Statistics (AISTATS)
  - International Conference on Learning Representations (ICLR)
- Reviewer (Computational biology):
  - Journal of Mathematical Biology
  - Bulletin of Mathematical Biology
  - Bioinformatics
  - Systematic Biology
  - IEEE/ACM Transactions on Computational Biology and Bioinformatics
  - IET Systems Biology
  - American Control Conference (ACC)

TALKS

- 2020 Consistent feature selection for analytic deep neural networks..  
 Conference on Neural Information Processing Systems (NeurIPS 2020)
- 2019 Statistical learning with evolutionary-related correlated random variables..  
 AMS Fall Central Sectional Meeting. University of Wisconsin-Madison.
- 2018 Inferring non-bifurcating phylogenies with the adaptive lasso.  
 Joint Statistical Meeting (JSM 2018).
- 2018 Regularized estimators for inferring non-bifurcating evolutionary trees.  
 AMS Fall Eastern Sectional Meeting. University of Delaware.
- 2017 Convergence of phylogenetic regularization.  
 Center for Applications of Mathematics in Medicine. University of Delaware.
- 2017 Online Bayesian phylogenetic inference via Sequential Monte Carlo.  
 11th International Conference on Monte Carlo Methods and Applications (MCM 2017).  
 University of Montreal.
- 2017 Next-generation methods for phylogenetic inference: a theoretical foundation.  
 Department of Mathematical Sciences. University of Delaware.

- 2016 Fast learning rates with heavy-tailed losses.  
2016 Conference on Neural Information Processing Systems (NIPS 2016), Barcelona.
- 2016 Hamiltonian Monte Carlo on the space of phylogenies.  
World Congress in Probability and Statistics.  
Fields Institute for Research in Mathematical Sciences.
- 2015 The shape of the one-dimensional phylogenetic likelihood function.  
Department of Genome Sciences.  
University of Washington.
- 2014 Experimental design for uncertainty reduction: a probabilistic approach.  
Sandia National Laboratories.
- 2014 Uncertainty quantification and experimental design of cellular processes.  
Fred Hutchinson Cancer Research Center.
- 2014 A probabilistic method for efficient behavior classification.  
SIAM Conference on Uncertainty Quantification.
- 2013 Effective sampling schemes for behavior discrimination in enzymatic reaction networks.  
NNSA Center for Prediction of Reliability, Integrity and Survivability of Microsystems.
- 2012 Experimental design for dynamics identification of biological systems.  
University of Notre Dame.