Mike Wu

(858) 740-9967
wumike@stanford.edu
https://www.mikehwu.com

Education

Stanford University 2017 - Present
Ph.D., M.S. in Computer Science
Advisor: Noah Goodman
Select Courses: CS142 (Web Applications, Mendel Rosenblum), CS228 (Probabilistic Graphical Models, Stefano Ermon), CS428 (Computation and Cognition, Noah Goodman), CS242 (Programming Languages, Will Crichton), CS251 (Cryptocurrencies and Blockchain Technologies, Dan Boneh), CS255 (Introduction to Cryptography, Dan Boneh), Math115 (Functions of a Real Variable), Math120 (Group Theory, Persi Diaconis), Math171 (Fundamental Concepts of Analysis), Math175 (Elementary Functional Analysis, Yiran Wang), Math205a (Measure Theory, Brian White)

Yale University, Hopper College 2012 - 2016
B.S. with Distinction in Computer Science
Yale college council, science committee
Select Courses: CPSC202 (Discrete Math, James Aspnes), CPSC223 (Data Structures and Algorithms, Stanley Eisenstat), CPSC323 (Systems Programming and Computer Arch., Stanley Eisenstat), CPSC437 (Databases, Avi Silberschatz), CPSC467 (Cryptography and Computer Security, Michael Fischer)

University of Oxford, New College 2015
1st mark in three courses in Computer Science
Oxford computing society
Select Courses: Advanced Data Structures and Algorithms (Edith Elkind), Machine Learning (Nando de Freitas)

Awards and Honors

Botha-Chan Innovation Fellow	2021
Pear VC Fellow	2020
Educational Data Mining Best Paper Award	2020
Educational Data Mining Best Student Paper Runner-up	2020
AAAI Outstanding Student Paper Award	2019
IDEO CoLab Fellow	2019
AngelHack, Augmented Reality Category 1st place	2018
AMIA CRI Nominated for Informatics Award	2017
API World Hackathon, Telesign API 1st place	2017
Trueface.ai Hackathon, 1st place	2017
HackMIT Top 8 Hacks, Dropbox API 1st place	2015
Qualcomm QLiving Scholarship	2014
Intel ISEF Semifinalist	2012
Siemens Competition Semifinalist	2012
Intel ISEF Finalist, 3rd place in Computer Science	2011
XSEDE Best Student Poster	2011

Fellowships

Stanford Interdisciplinary Graduate Fellowship (Karr Family Fellow)	2020-Current
NSF Graduate Research Fellowship	2017-2020

Preprints

Mike Wu, Richard L. Davis, Benjamin W. Domingue, Chris Piech, Noah Goodman. Modeling Item Response Theory with Stochastic Variational Inference. In *ArXiv*, 2021.

Mike Wu, Chris Piech, Noah Goodman, Chelsea Finn. ProtoTransformer: A Meta-Learning Approach to Providing Student Feedback. In *ArXiv*, 2021.

Conference and Journal Proceedings

Mike Wu, Will McTighe, Kaili Wang, Istvan A. Seres, Nick Bax, Manuel Puebla, Mariano Mendez, Federico Carrone, Toms De Mattey, Herman O. Demaestri, Mariano Nicolini, Pedro Fontana. Tutela: An Open-Source Tool for Assessing User-Privacy on Ethereum and Tornado Cash. In *ArXiv*, 2022.

Mike Wu, Noah Goodman, Stefano Ermon. Improving Compositionality of Neural Networks by Decoding Representations to Inputs. In *Proc. 35th Annual Conference on Neural Information Processing Systems* (NeurIPS), 2021.

Ali Malik, **Mike Wu**, Vrinda Vasavada, Jinpeng Song, John Mitchell, Noah Goodman, Chris Piech. Generative Grading: Neural Approximate Parsing for Automated Student Feedback. In *Educational Data Mining* (EDM), 2021.

Mike Wu, Sonali Parbhoo, Michael C. Hughes, Ryan Kindle, Leo Celi, Maurizio Zazzi, Volker Roth, Finale Doshi-Velez. Regional Tree Regularization for Interpretability in Black Box Models. In *Journal of Artificial Intelligence Research* (JAIR), 2021.

Alex Tamkin, **Mike Wu**, and Noah Goodman. Viewmaker Networks: Learning Views for Unsupervised Representation Learning. In *Proc. 9th International Conference on Learning Representations* (ICLR), 2021.

Mike Wu, Chengxu Zhuang, Milan Mosse, Daniel Yamins, and Noah Goodman. Conditional Negative Sampling for Contrastive Learning of Visual Representations. In *Proc. 9th International Conference on Learning Representations* (ICLR), 2021.

Mike Wu and Noah Goodman. A Simple Framework for Uncertainty in Contrastive Learning. In *ArXiv*, 2021.

Mike Wu, Chengxu Zhuang, Milan Mosse, Daniel Yamins, Noah Goodman. On Mutual Information in Contrastive Learning for Visual Representations. In *ArXiv*, 2020.

Mike Wu, Richard L. Davis, Benjamin W. Domingue, Chris Piech, Noah Goodman. Variational Item Response Theory: Fast, Accurate, and Expressive. In *Educational Data Mining* (EDM), 2020. [**Oral Presentation (15 min).**] [**Best Paper Award.**]

Mike Wu, Sonali Parbhoo, Michael C. Hughes, Volker Roth, Finale Doshi-Velez. Optimizing for Interpretability in Deep Neural Networks with Simulable Decision Trees. In *Proc. 34rd AAAI Conference on Artificial Intelligence* (AAAI), 2020. [**Oral Presentation (20 min).**]

Mike Wu, Kristy Choi, Noah Goodman, Stefano Ermon. Meta-Amortized Variational Inference and Learning. In *Proc. 34rd AAAI Conference on Artificial Intelligence* (AAAI), 2020.

Mike Wu, Noah Goodman. Multimodal Generative Models for Compositional Rep-

resentation Learning. In *ArXiv*, 2019.

Judith Fan, Robert X.D. Hawkins, **Mike Wu**, Noah Goodman. Pragmatic inference and Visual Abstraction Enable Contextual Flexibility during Visual Communication. In *Computational Brain and Behavior* (COBB), 2019.

Mike Wu, Noah Goodman, Stefano Ermon. Differentiable Antithetic Sampling for Variance Reduction in Stochastic Variational Inference. In *Proc. 22nd International Conference on Artificial Intelligence and Statistics* (AISTATS), 2019.

Mike Wu, Milan Mosse, Noah Goodman, Chris Piech. Zero Shot Learning for Code Education: Rubric Sampling with Deep Learning Inference. In *Proc. 33rd AAAI Conference on Artificial Intelligence* (AAAI), 2019. [**Oral Presentation (12 min).**] [**Outstanding Student Paper Award.**]

Mike Wu, Noah Goodman. Multimodal Generative Models for Scalable Weakly-Supervised Learning. In *Proc. 32nd Annual Conference on Neural Information Processing Systems* (NeurIPS), 2018.

Mike Wu, Michael C. Hughes, Sonali Parbhoo, Maurizio Zazzi, Volker Roth, Finale Doshi-Velez. Beyond Sparsity: Tree Regularization of Deep Models for Interpretability. In *Proc. 32nd AAAI Conference on Artificial Intelligence* (AAAI), 2018. [**Spotlight Presentation (2 min).**]

Marzyeh Ghassemi, **Mike Wu**, Michael C. Hughes, Finale Doshi-Velez. Predicting Intervation Onset in the ICU with Switching Statespace Models. In *Proc. AMIA Summit on Clinical Research Informatics* (CRI), 2017. [**Nominated for Informatics Award.**]

Mike Wu, Marzyeh Ghassemi, Mengling Feng, Leo Anthony Celi, Peter Szolovitz, Finale Doshi-Velez. Understanding Vassopressor Intervention and Weaning: Risk Prediction in a Public Heterogeneous Clinical Time Series Database. In *Journal of the American Medical Informations Association, Volume 24, Issue 3, No. 1* (JAMIA), 2016.

Mike Wu, Madhu Krishnan. Edge-based Crowd Detection from Single Image Datasets. In *International Journal of Computer Science Issues, Volume 12, Issue 1, No. 1* (IJCSI), 2013.

Madhu Krishnan, **Mike Wu**, Young Kang, Sarah H. Lee. Autonomous Mapping and Navigation through Utilization of Edge-based Optical Flow and Time-to-Collision. In *ARPN Journal of Engineering and Applied Sciences, Volume 7, No. 12*, 2012.

Workshops

Oliver Zhang, **Mike Wu**, Jasmine Bayrooti, Noah Goodman. Temperature as Uncertainty in Contrastive Learning. In *NeurIPS 2021 Workshop on Self-Supervised Learning Theory and Practice*.

Ananya Karthik, **Mike Wu**, Noah Goodman, Alex Tamkin. Tradeoffs Between Contrastive and Supervised Learning: An Empirical Study. In *NeurIPS 2021 Workshop on Self-Supervised Learning Theory and Practice*.

Mike Wu, Jonathan Nafziger, Anthony Scodary, Andrew Maas. HarperValleyBank: A Domain-Specific Spoken Dialog Corpus. In *Workshop on Machine Learning in Speech and Language Processing* (MLSLP), 2021.

Mike Wu, Kristy Choi, Noah Goodman, Stefano Ermon. Meta-Amortized Variational Inference and Learning. *NeurIPS 2019 Workshop on Bayesian Deep Learning.* [**Spotlight Presentation (1 min).**]

Mike Wu, Sonali Parbhoo, Finale Doshi-Velez. Beyond Sparsity: Tree Regularization of Deep Models for Interpretability. *NeurIPS 2017 Workshop on Transparent and interpretable Machine Learning in Safety Critical Environments.* [**Contributed Talk (10 min).**]

Patents

Frank Wood, **Mike Wu**, Yura Perov, Hongseok Yang. Computing engine, software, system and method. US Patent App. 15/465,131, 2017.

Press

Can A.I. Grade Your Next Test? The New York Times (07/20/2021).

First-of-its-kind Stanford machine learning tool streamlines student feedback process for computer science professors. Stanford News (07/27/2021).

Teaching Experience

Teaching Assistant, Dept. of Computer Science, Stanford University Winter 2021
CS109: Probability for Computer Scientists (Chris Piech)

Teaching Assistant, Dept. of Engineering, Stanford University Fall 2021
ME208: Patent Law and Strategy for Innovators and Entrepreneurs (Jeffrey Schox)

Teaching Assistant, Dept. of Computer Science, Stanford University Spring 2020
CS224S: Spoken Language Processing (Andrew Maas)
Award for Outstanding Work by Course Assistants (Top 5%)

Teaching Assistant, Dept. of Computer Science, Stanford University Fall 2019
CS398: Computational Education (Chris Piech)

Teaching Assistant, Dept. of Computer Science, Yale University Spring 2016
CPSC437: Operating System Concepts (Avi Silberschatz)

Teaching Assistant, School of Management, Yale University Fall 2015
MGT656: Management of Software Development (Kyle Jensen)

Invited Talks

Multidisciplinary University Research Initiative (MURI) Visual Common-Sense Annual Meeting, 2020.

Berkeley Center for Human-Compatible AI Technical Seminar, 2020.

Stanford Computer Forum Annual Meeting, 2019.

Human-Centered Artificial Intelligence Institute Symposium, 2019.

Yale Technology Conference, Yale University, 2016.

Probabilistic Programming Workshop, University of Southampton, 2016.

Conference Abstracts

Jasmine Bayrooti, **Mike Wu**, Alex Tamkin, Noah Goodman. Gravitational Contrastive Learning: Inducing Structure During Instance Discrimination. *Stanford CS Summer Research Program* (CURIS), 2020. [**Outstanding Poster Award.**]

Judith Fan, Robert X.D. Hawkins, **Mike Wu**, Noah Goodman. Modeling contextual flexibility in visual communication. *Vision Sciences Society Annual Meeting* (VSS), 2018.

William Smith, **Mike Wu**, Yura Perov, Frank Wood, Hongseok Yang. Spreadsheet probabilistic programming. *Inaugural International Conference on Probabilistic Programming.* (PROBPROG), 2018.

Jessi Cisewski-Kehe, **Mike Wu**, Brittany Fasy, Wojciech Hellwing, Mark Lovell, Alessandro Rinaldo, Larry Wasserman. Investigating the Cosmic Web with Topological Data Analysis. *American Astronomical Society Meeting.* (AAS) 2018.

Industry Experience

Tutela 2021-2022
`https://www.tutela.xyz`
Co-founded an Ethereum and Tornado Cash anonymity detection tool, built as a response to a Tornado Cash community grant.

Co:Rise 2021-Present
Co-designed two new courses with Andrew Maas for the co:rise platform on Applied ML and MLOps. Courses are project-based and application focused.

Facebook Applied Machine Learning (AML) 2016-2017
Visiting engineer in Facebook research building tools and infrastucture for training computer vision models.

Lattice Data 2016
Software engineer building weakly supervised classifiers based on the DeepDive project. Lattice Data was acquired by Apple.

YHack 2013-2016
`https://www.yhack.org`
Co-founded an international collegiate hackathon. Raised 100-200k annual budget.

Ionis Pharmaceuticals 2013
Data science Intern building classifiers for drug design.