Mike Wu

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Education

Stanford University   2017 - Present
Ph.D. in Computer Science
Advisor: Noah Goodman
TA: CS398 (Computational Education), CS224S (Spoken Language Processing)
Select Courses: CS228 (Probabilistic Graphical Models), CS428 (Computation and Cognition), CS242 (Programming Languages), Math120 (Group Theory), Math115 (Functions of a Real Variable), Math171 (Fundamental Concepts of Analysis), Math175 (Elementary Functional Analysis), Math205a (Measure Theory)

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

University of Oxford, New College   2015
1st mark in three courses in Computer Science
Oxford computing society
Select Courses: Advanced Data Structures and Algorithms, Machine Learning

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, Noah Goodman, Stefano Ermon. Improving Compositionality of Neural Networks by Decoding Representations to Inputs. 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

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 Representation 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. *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   **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   **Teaching Assistant**, Dept. of Computer Science, Stanford University Spring 2020
Experience   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   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   **Facebook Applied Machine Learning** (AML)   2016-2017
Visiting engineer building tools in computer vision.

Lattice Data   2016
Software engineer building weakly supervised classifiers.

Invrea (Inverse Reasoning)   2015-2017
http://invrea.com
Co-founder building a probabilistic programming language in Excel.

YHack   2013-2016
https://www.yhack.org
Co-founder building an international collegiate hackathon.

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