

# clara wong-fannjiang

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## education

### University of California, Berkeley

2018 - 2023 (expected)

Ph.D., Electrical Engineering & Computer Sciences

Advised by Jennifer Listgarten and Michael I. Jordan

### Stanford University

2012 - 2016

B.S., Computer Science with Honors and Distinction

## publications

Asterisks denote equal contribution.

### preprints

1. Danqing Zhu\*, David H. Brookes\*, Akosua Busia\*, Ana Carneiro, Clara Fannjiang, Galina Popova, David Shin, Tomasz J. Nowakowski, Jennifer Listgarten, and David V. Schaffer. Optimal trade-off control in machine learning-based library design, with application to adeno-associated virus (AAV) for gene therapy. ([bioRxiv](#))
2. Akosua Busia, George E. Dahl, **Clara Fannjiang**, David H. Alexander, Elizabeth Dorfman, Ryan Poplin, Cory Y. McLean, Pi-Chuan Chang, and Mark DePristo. A deep learning approach to pattern recognition for short DNA. DOI: 10.1101/353474. ([bioRxiv](#))

### refereed conferences

1. Ghassen Jerfel\*, Serena Wang\*, **Clara Fannjiang**, Katherine Heller, Yian Ma, Michael Jordan. Variational refinement for importance sampling using the forward Kullback-Leibler divergence. Uncertainty in Artificial Intelligence (UAI) 2021. A previous version of this work appeared in Advances in Approximate Bayesian Inference (AABI) 2021. ([arXiv](#))
2. **Clara Fannjiang** and Jennifer Listgarten. Autofocused oracles for model-based design. Neural Information Processing Systems (NeurIPS) 2020. ([arXiv](#) | [proceedings](#) | [code](#))
3. David H. Brookes, Akosua Busia, **Clara Fannjiang**, Kevin Murphy, and Jennifer Listgarten. A view of estimation of distribution algorithms through the lens of expectation-maximization. Genetic and Evolutionary Computation Conference (GECCO) 2020. ([arXiv \(extended version\)](#) | [proceedings](#))

### journals

1. **Clara Fannjiang**, Stephen Bates, Anastasios Angelopoulos, Jennifer Listgarten, and Michael I. Jordan. Conformal prediction under feedback covariate shift for biomolecular design. 2022. *Proceedings of the National Academy of Sciences*, 119(43), e2204569119. ([arXiv](#) | [publication](#) | [code](#))
2. Chloe Hsu, Hunter Nisonoff, **Clara Fannjiang**, Jennifer Listgarten. Learning protein fitness models from evolutionary and assay-labelled data. 2022. *Nature Biotechnology*, <https://doi.org/10.1038/s41587-021-01146-5>. ([PDF](#) | [publication link](#))
3. I. Masmitja, J. Navarro, S. Gomariz, J. Aguzzi, B. Kieft, T. O'Reilly, K. Katija, P. J. Bouvet, **C. Fannjiang**, M. Vigo, P. Puig, A. Alcocer, G. Vallicrosa, N. Palomeras, M. Carreras, J. Del-Rio, J. B. Company. 2020. Mobile robotic platforms for the acoustic tracking of deep-sea demersal fishery resources. *Science Robotics*, Vol. 5, Issue 48, eabc3701. ([PDF](#) | [publication link](#))

4. **Clara Fannjiang**, T. Aran Mooney, Seth Cones, David Mann, K. Alex Shorter, and Kakani Katija. 2019. Augmenting biologging with supervised machine learning to study *in situ* behavior of the medusa *Chrysaora fuscescens*. *Journal of Experimental Biology*, 222, jeb207654. DOI: 10.1242/jeb.207654. ([PDF](#) | [publication link](#) | [code](#))
5. **Clara Fannjiang**. 2013. Optimal arrays for compressed sensing in snapshot-mode radio interferometry. *Astronomy & Astrophysics*, 559, A73. DOI: 10.1051/0004-6361/201321079. ([PDF](#) | [publication link](#))

## refereed workshops

1. Katherine Lee, Orhan Firat, Ashish Agarwal, **Clara Fannjiang**, and David Sussillo. Hallucinations in neural machine translation. Neural Information Processing Systems (NeurIPS) 2018 Workshop on Interpretability and Robustness for Audio, Speech, and Language. ([PDF](#))

## other conferences

1. Ivan Masmitja, Spartacus Gomariz, Joaquin Del Rio, Brian Kieft, Tom O'Reilly, Jacobo Aguzzi, Pierre-Jean Bouvet, **Clara Fannjiang**, and Kakani Katija. Area-only method for underwater object tracking using autonomous vehicles. IEEE OCEANS 2019. ([PDF](#) | [proceedings](#))
2. **Clara Fannjiang** and Kakani Katija. Using supervised machine learning to understand fine-scale *in situ* behavior of *Chrysaora fuscescens*. Society for Integrative and Comparative Biology (SICB) 2019 Annual Meeting. Oral, Marlene Zuk Best Student Paper Finalist.
3. **Clara Fannjiang**, Marius Cătălin Iordan, Diane M. Beck, and Fei-Fei Li. Pushing the boundaries of fine-grained object classification with fMRI decoding in human occipito-temporal cortex. Vision Sciences Society (VSS) 2015 Annual Meeting. Poster. DOI: 10.1167/15.12.1167. ([abstract](#))

## invited talks

1. Conformal prediction for the design problem. [Machine Learning for Protein Engineering Seminar Series](#). October 18, 2022.
2. Conformal prediction for the design problem. [AIDD Summer School on Advanced Machine Learning for Drug Discovery](#) (IDSIA, Lugano, Switzerland). May 13, 2022.
3. Autofocused oracles for model-based design. Debora Marks group (Harvard, Cambridge, MA), 2020.
4. Augmenting biologging with supervised machine learning to study *in situ* behavior of the medusa *Chrysaora fuscescens*. [Monterey Bay Aquarium Research Institute Seminar](#) (MBARI, Moss Landing, CA), 2018.

## professional experience

**Monterey Bay Aquarium Research Institute**, Research Assistant 2018 - 2019  
Designed and conducted biologging field experiments on jellyfish in Monterey Bay, CA. Developed supervised learning methods to characterize novel fine-scale *in situ* behavioral and movement patterns.

**Google**, Google Brain Resident 2016 - 2017  
Developed regularization schemes for suppressing chaotic dynamics in recurrent neural networks.  
Contributed to deep learning approach for taxonomic identification of genetic reads.

## teaching

**University of California, Berkeley**

STAT 102: Data, Inference, and Decisions (Graduate Student Instructor)

Fall 2020

STAT 102: Data, Inference, and Decisions (Graduate Student Instructor & Guest Lecturer)	Spring 2020
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### **Stanford University**

EE 364A: Convex Optimization (Teaching Assistant)	Winter 2016
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EE 103: Introduction to Matrix Methods (Teaching Assistant)	Fall 2015
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### **leadership & outreach**

Mentor for Berkeley AI Research Undergraduate Mentoring Program	2019 - present
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Coordinator for UC Berkeley WICSE	2019 - 2020
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Docent at Jasper Ridge Biological Preserve	2016 - present
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Co-Instructor for Stanford Splash! M4053: For the Love of Optimization	2014
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Co-Instructor for Stanford Splash! B4329: The Biology of Vision and Perception	2015
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Organizer for Stanford SAILORS (now Stanford AI4ALL)	2014
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### **honors & awards**

NSF Graduate Research Fellowship	2019
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SICB Marlene Zuk Best Student Paper Finalist	2019
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UC Berkeley Allen D. Wilson Fellowship ( <i>declined</i> )	2017
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UC Berkeley EECS Excellence Award ( <i>declined</i> )	2017
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Tau Beta Pi National Honor Society for Engineering	2016
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Stanford University President's Award for Excellence in the Freshman Year	2013
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