JIAYU YAO

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RESEARCH INTERESTS

Machine Learning Applications in Healthcare, Deep Bayesian Learning, Interpretability in Reinforcement Learning, Transfer Learning in Reinforcement Learning,

EDUCATION

Harvard University, School of Engineering and Applied Sciences　　　　**Cambridge, MA**
Doctor of Philosophy, Major in Computer Science　　　　　　　　　　Dec 2022 (Expected)
Cumulative GPA: 3.83/4.00

Emory University, College of Arts and Science　　　　　　　　　　　　**Atlanta, GA**
Bachelor of Science, Double Major in Applied Mathematics & Computer Science　　May 2017
Cumulative GPA: 3.99/4.00

Hong Kong Baptist University, Business School　　　　　　　　　**Hong Kong, China**
Undergraduate Coursework, Concentration in Finance　　　　　　　　　　　May 2014
Cumulative GPA: 3.66/4.00

HONORS AND AWARDS

Dean's List of Emory College of Arts and Science　Fall 2014, Spring 2015, Fall 2015, Spring 2016, Fall 2016 and Spring 2017

Certificates of Distinction in Teaching for Teaching Fellows, Harvard, CS282R　Fall 2018

Phi Beta Kappa Member

EXPERIENCE

The Duke Institute for Health Innovation (DIHI)　　　　　　　　　Jun 2022-Sep 2022
Research Internship　　　　　　　　　　　　　　　　　　　　　　　　*Durham, NC*

- Developed early sepsis detection model to mitigate mortality in pediatric sepsis patients
- Designed an evaluation metrics for pediatric sepsis early detection algorithms

PUBLICATIONS

1. Mark Penrod*, Harrison Termotto*, Varshini Reddy*, **Jiayu Yao**, Finale Doshi-Velez, Weiwei Pan. *Success of Uncertainty-Aware Deep Models Depends on Data Manifold Geometry.* Responsible Decision Making in Dynamic Environments, International Conference on Machine Learning, ICML 2022.

2. **Jiayu Yao**, Sonali Parbhoo, Weiwei Pan, Finale Doshi-Velez. *Policy Optimization with Sparse Global Contrastive Explanations.* Workshop on Interpretable ML in Healthcare, International Conference on Machine Learning, ICML 2022.

3. **Jiayu Yao**, Emma Brunskill, Weiwei Pan, Susan Murphy, Finale Doshi-Velez. *Power-Constrained Bandits.* Machine Learning for Healthcare, MLHC 2021.

4. Javier Antorán*, **Jiayu Yao***, Weiwei Pan, José Miguel Hernández-Lobato, Finale Doshi-Velez. *Amortised Variational Inference for Hierarchical Mixture Models.* Workshop on Uncertainty & Robustness in Deep Learning, International Conference on Machine Learning, ICML 2020.

5. **Jiayu Yao**, Weiwei Pan, Soumya Ghosh, Finale Doshi-Velez. *Quality of uncertainty quantification for Bayesian neural network inference.* Workshop on Uncertainty & Robustness in Deep Learning, International Conference on Machine Learning, ICML 2019.

6. Wanqian Yang, Lars Lorch, Moritz A Graule, Srivatsan Srinivasan, Anirudh Suresh, **Jiayu Yao**, Melanie F Pradier, Finale Doshi-Velez. *Output-Constrained Bayesian Neural Networks.* Workshop on Uncertainty & Robustness in Deep Learning, International Conference on Machine Learning, ICML 2019.

7. Soumya Ghosh, **Jiayu Yao**, Finale Doshi-Velez. *Model Selection in Bayesian Neural Networks via Horseshoe Priors.* Journal of Machine Learning Research, 2019.

8. Melanie F Pradier, Weiwei Pan, **Jiayu Yao**, Soumya Ghosh, Finale Doshi-Velez. *Latent projection bnns: Avoiding weight-space pathologies by learning latent representations of neural network weights.* Workshop on Bayesian Deep Learning, Neural Information Processing Systems, NeurIPS 2018.

9. Soumya Ghosh, **Jiayu Yao**, Finale Doshi-Velez. *Structured variational learning of Bayesian neural networks with horseshoe priors.* International Conference on Machine Learning, ICML 2018.

10. Omer Gottesman, Fredrik Johansson, Joshua Meier, Jack Dent, Donghun Lee, Srivatsan Srinivasan, Linying Zhang, Yi Ding, David Wihl, Xuefeng Peng, **Jiayu Yao**, Isaac Lage, Christopher Mosch, Li-wei H Lehman, Matthieu Komorowski, Aldo Faisal, Leo Anthony Celi, David Sontag, Finale Doshi-Velez. *Evaluating reinforcement learning algorithms in observational health settings.* arXiv preprint arXiv:1805.12298.

11. **Jiayu Yao**, Taylor Killian, George Konidaris, Finale Doshi-Velez. *Direct Policy Transfer via Hidden Parameter Markov Decision Processes.* Workshop on Lifelong Learning, International Conference on Machine Learning, ICML 2018.

12. Tanachat Nilanon, **Jiayu Yao**, Junheng Hao, Sanjay Purushotham, Liu Yan. *Normal / Abnormal Heart Sound Recordings Classification Using Convolutional Neural Networks.* Computing in Cardiology, Vancouver, Canada, CinC 2016.

TEACHING EXPERIENCE

Stochastic Methods for Data Analysis, Inference and Optimization   Sep 2020-Dec 2021
Graduate Teaching Assistant   *Harvard University*

- Held weekly office hours and supervised course research projects.

Topics in Machine Learning: Deep Bayesian Models   Sep 2018-Dec 2018
Graduate Teaching Assistant   *Harvard University*

- Assisted in course design including assignments, projects and topic selection.

- Created solutions for and graded students submissions of course assignments.

- Held weekly office hours and sections.

- Supervised course research projects.

Computer Architecture and Assembly Programming   Jan 2016-May 2017
Undergraduate Teaching Assistant   *Emory University*

- Assisted in assignment design and grading.

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*Equal Contribution

- Held regular office hours to review or expand on course materials.

TOEFL and IELTS Tutoring   Jun 2015-Aug 2015
English Tutor   *Ningbo E-Bang Student Service Center, China*

- Helped students improve TOEFL and IELTS reading and listening skills.

- Enhanced student writing skill by revising essays and providing instruction on grammar and essay structure.

PROFESSIONAL SERVICE

Machine Learning for Health   ML4H 2022
New Orleans, LA   *Reviewer*

Bridging the Gap: from Machine Learning Research to Clinical Practice NeurIPS 2021
Virtual   *Organizer*

LEADERSHIP AND COMMUNITY ENGAGEMENT

Global China Connection IT Committee   Feb 2015-May 2017
Vice President

- Designed a website to provide a platform for information change about the latest activities, including a China Summit annual event aiming to bridge between Chinese and non-Chinese students and professionals through networking opportunities.

Mountaineering Association   Dec 2013-May 2014
Secretary   *Hong Kong Baptist University*

- Organized networking, community building and outreach activities for student mountaineering-enthusiasts.

- Participated in meeting planning, agenda setting and organization.

- Designed and implemented recruitment campaigns.

TECHNICAL SKILLS

Computer Languages   Python, Java, C/C++, R, MATLAB, SQL, JavaScript, CSS, HTML