

Yao Qin

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Education

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| University of California, San Diego
Doctor of Philosophy, Department of Computer Science and Engineering
Advisor: Prof. Garrison Cottrell | 2015.09 - 2020.01 |
| University of California, San Diego
Master of Science, Department of Computer Science and Engineering
Advisor: Prof. Garrison Cottrell | 2015.09 - 2017.12 |
| Dalian University of Technology
Bachelor of Science, Department of Electrical Engineering
Advisor: Prof. Huchuan Lu | 2011.09 - 2015.06 |

Research Experience

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|--|-------------------|
| Assistant Professor , Department of ECE, University of California, Santa Barbara, USA | 2023.01 - present |
| Research Scientist , Google Research, New York, USA | 2020 - 2023 |

Publications (Note: * below denotes equal contribution)

[Google Scholar](#)

Preprints

7. L. Liu and **Y. Qin**. Detecting Out-of-Distribution through the Lens of Neural Collapse. *Under Review*, 2023.
6. A. Balashankar, X. Ma, A. Sinha, A. Beirami, **Y. Qin**, J. Chen and A. Beutel. Improving Few-shot Generalization of Safety Classifiers via Data Augmented Parameter-Efficient Fine-Tuning. *Under Review*, 2023.
5. J. Gu, A. Beirami, X. Wang, A. Beutel, P. Torr and **Y. Qin**. Towards Robustness of In-Context Learning on Vision-language Models. *Under Review*, 2023.
4. J. Gu, Z. Han, S. Chen, A. Beirami, B. He, G. Zhang, R. Liao, **Y. Qin**, V. Tresp and P. Torr. A Systematic Survey of Prompt Engineering on Vision-Language Foundation Models. *Under Review*, 2023.
3. M. Song, X. Wang, T. Biradar, **Y. Qin** and M. Chandraker. Acute Zero-Shot Imitation Learning with Task Prompting. *Under Review*, 2023.
2. **Y. Qin**, N. Frosst, C. Raffel, G. Cottrell and G. Hinton. Deflecting Adversarial Attacks. *Preprints*, 2019.
1. Ian Goodfellow, **Yao Qin**, David Berthelot. Evaluation Methodology for Attacks Against Confidence Thresholding Models. *Preprints*, 2018.

Conferences & Journals

20. L. Liu and **Y. Qin**. Fast Decision Boundary based Out-of-distribution Detection. *International Conference on Machine Learning (ICML)*, 2024.
19. A. Hua, J. Gu, Z. Xue, N. Carlini, E. Wong and **Y. Qin**. Initialization Matters for Adversarial Transfer Learning. *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024.

18. S. Niazi, N. Aadit, M. Mohseni, S. Chowdhury, **Y. Qin** and K. Camsari. Training Deep Boltzmann Networks with Sparse Ising Machines. *Nature Electronics*, 2024.
17. X. Zhang, S. Li, X. Yang, C. Tian, **Y. Qin** and L. Petzold. Enhancing Small Medical Learners with Privacy-preserving Contextual Prompting. *International Conference on Learning Representations (ICLR)*, 2024.
16. B. Puranik, A. Beirami, **Y. Qin**, U. Madhow. Improving Robustness via Tilted Exponential Layer: A Communication-Theoretic Perspective. *Artificial Intelligence and Statistics (AISTATS)*, 2024.
15. A. Balashankar, X. Wang, **Y. Qin**, N. Thain, B. Packer, E. Chi and A. Beutel. Improving Robustness through Pairwise Generative Counterfactual Data Augmentation. *Findings of Empirical Methods in Natural Language Processing (Findings of EMNLP)*, 2023.
14. Z. Shi, N. Carlini, A. Balashankar, L. Schmidt, C. Hsieh, A. Beutel and **Y. Qin**. Effective Robustness against Natural Distribution Shifts for Models with Different Training Data. *Advances in Neural Information Processing Systems (NeurIPS)*, 2023.
13. **Y. Qin**, X. Wang, B. Lakshminarayanan, E. Chi, A. Beutel. What are Effective Labels for Augmented Data? Improving Robustness with AutoLabel. *IEEE Conference on Secure and Trustworthy Machine Learning (SaTML)*, 2023.
12. J. Zhao, X. Wang, **Y. Qin**, J. Chen, K. Chang. Investigating Ensemble Methods for Model Robustness Improvement of Text Classifiers. *Findings of Empirical Methods in Natural Language Processing (Findings of EMNLP)*, 2022.
11. **Y. Qin**, C. Zhang, T. Chen, B. Lakshminarayanan, A. Beutel, X. Wang. Understanding and Improving Robustness of Vision Transformers through Patch-based Negative Augmentation. *Advances in Neural Information Processing Systems (NeurIPS)*, 2022.
10. J. Gu, V. Tresp, **Y. Qin**. Are Vision Transformers Robust to Patch-wise Perturbations? *European Conference on Computer Vision (ECCV)*, 2022.
9. **Y. Qin**, X. Wang, A. Beutel, E. Chi. Improving Uncertainty Estimates through the Relationship with Adversarial Robustness. *Advances in Neural Information Processing Systems (NeurIPS)*, 2021.
8. T. Wang, X. Wang, **Y. Qin**, B. Packer, K. Li, J. Chen, A. Beutel, E. Chi. CAT-Gen: Improving Robustness in NLP Models via Controlled Adversarial Text Generation. *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2020.
7. **Y. Qin***, N. Frosst*, S. Sabour, C. Raffel, G. Cottrell and G. Hinton. Detecting and Diagnosing Adversarial Examples with Class-Conditional Capsule Reconstructions. *International Conference on Learning Representations (ICLR)*, 2020.
6. **Y. Qin**, N. Carlini, I. Goodfellow, G. Cottrell and C. Raffel. Imperceptible, Robust and Targeted Adversarial Example for Automatic Speech Recognition. *International Conference on Machine Learning (ICML)*, 2019.
5. **Y. Qin**, S. Ancha, J. Nanavati, G. Cottrell, A. Criminisi and A. Nori. Autofocus Layer for Semantic Segmentation. *International Conference on Medical Image Computing & Computer Assisted Intervention (MICCAI)*, 2018. (**Oral presentation**, 4% acceptance rate)
4. **Y. Qin***, M. Feng*, H. Lu and G. Cottrell. Hierarchical Cellular Automata for Visual Saliency. *International Journal of Computer Vision (IJCV)*, 2017
3. **Y. Qin**, D. Song, H. Chen, W. Cheng, G. Jiang and G. Cottrell. A Dual- Stage Attention-Based Recurrent Neural Network for Time Series Prediction. *International Joint Conference on Artificial Intelligence (IJCAI)*, 2017

2. Q. Pan, **Y. Qin**, Y. Xu, M. Tong and M. He. Opinion Evolution in Open Community. *International Journal of Modern Physics C*, 1750003, 2016.
1. **Y. Qin**, H. Lu, Y. Xu and H. Wang. Saliency Detection via Cellular Automata. In *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2015

Patents

1. **Y. Qin**, X. Wang, B. Lakshminarayanan, E. Chi, A. Beutel. What are Effective Labels for Augmented data? Improving Robustness with AutoLabel.
2. D. Song, H. Chen, G. Jiang, **Y. Qin**. Dual Stage Attention based Recurrent Neural Network for Time Series Prediction.

Teaching & Mentoring

Instructor

1. ECE180: Introduction to Deep Learning (Spring 2024), UC Santa Barbara
2. ECE194: Adversarial Robustness in Machine Learning (Winter 2024), UC Santa Barbara
3. ECE594: Robustness in Machine Learning (Fall 2023), UC Santa Barbara
4. ECE594: Robustness in Machine Learning (Winter 2023), UC Santa Barbara

Teaching Assistant

1. CSE253: Neural Networks for Pattern Recognition (Winter 2019), UC San Diego
2. CSE190: Neural Networks and Deep Learning (Fall 2017), UC San Diego

Student Mentorship

* Current PhD Students

1. Mehak Dhaliwal (PhD at UCSB)
2. Andong Hua (PhD at UCSB)
3. Kenan Tang (PhD at UCSB)
4. Youngseok Yoon (PhD at UCSB)

* Previous Students/Interns

1. Zhouxing Shi (PhD at UCLA)
2. Jieyu Zhao (PhD at UCLA → Assistant Prof. at USC)
3. Ananth Balashankar (PhD at NYU → Research Scientist at Google)
4. Jindong Gu (PhD at University of Munich → Postdoc at University of Oxford)
5. Tianlu Wang (PhD at UVA → Research Scientist at FAIR)

Selected Awards

- * Regents' Junior Faculty Fellowship Award 2024
- * UCSB Faculty Research Grant Award 2023
- * Adobe Faculty Research Award 2023
- * AI2000 Most Influential Scholar Honorable Mention in AAAI/IJCAI 2022
- * Rising Star in EECS MIT, 2021
- * UCSD GSA Travel Grant UC San Diego, 2019
- * MICCAI Travel Award MICCAI, 2018
- * NIPS Women in Machine Learning Travel Award NIPS WiML, 2017, 2016
- * Departmental Fellowship UC San Diego, 2015
- * Outstanding Undergraduate Student Award Liaoning Province, China, 2015
- * HIWIN Elite Scholarship (*top 15 students university-wide*) China, 2014
- * Honorable Mention of Mathematical Contest in Modeling International, 2013
- * National Scholarship China, 2013, 2012

Selected Invited Talks

- * Data-Driven Machine Learning: Unlocking the Future of Closed-Loop Diabetes Care
@ Sansum Diabetes Research Institute/NIH-NIDDK Fifth Artificial Pancreas Workshop, 2023
- * Effective Robustness against Natural Distribution Shifts for Models with Different Training Data
@ UCSB Center of Responsible ML Summit, 2023
- * Improving Robustness through Safe Data Augmentation @ ITA Workshop, 2023
- * Invited panelist: Robustness in Machine Learning @ LatinX in AI Research at NeurIPS 2022, 2023
- * Leading a Breakout Session: Robustness of Machine Learning @ WiML Un-Workshop at ICML 2022, 2023
- * Improving Calibration through the Relationship with Adversarial Robustness @ ITA Workshop, 2022
- * Understanding and Improving Robustness of Machine Learning Models @ UCSB/CMU/USC/MPI, 2022
- * What are Effective Labels for Augmented Data? Improving Robustness with AutoLabel @ UCSD, 2020
- * Detecting, Diagnosing, Deflecting and Designing Adversarial Attacks @ Google/FAIR/Amazon/Apple, 2019
- * Imperceptible, Robust and Targeted Adversarial Example for ASR @ Salesforce, 2019

Professional Services

Area Chair/Workshop Organizer/Conference Reviewer

- * NSF Panelist (three different panels) 2023
- * (Summit Organizer) Department of ECE Summit at UCSB 2023
- * (Summit Organizer) Responsible Machine Learning Summit at UCSB 2023
- * (Workshop Organizer) Robustness of Zero/Few-shot Learning in Foundation Models at NeurIPS 2023
- * (Local Arrangement co-Chair) Knowledge Discovery and Data Mining (KDD) 2023
- * (Workshop Organizer) Southern California Data Science Day at KDD 2023
- * (Area Chair) International Conference on Machine Learning (ICML) 2024
- * (Area Chair) International Conference on Learning Representations (ICLR) 2023-2024
- * (Area Chair) International Conference on Computer Vision (ICCV) 2023
- * (Reviewer) International Conference on Learning Representations (ICLR) 2018-2021
- * (Reviewer) Advances in Neural Information Processing Systems (NeurIPS) 2020-2022
- * (Program Committee) AAAI Conference on Artificial Intelligence (AAAI) 2018-2022
- * (Reviewer) Conference on Computer Vision and Pattern Recognition (CVPR) 2020-2022
- * (Reviewer) International Conference on Computer Vision (ICCV) 2021
- * (Area Chair) Workshop for Women in Machine Learning (WiML) 2019-2022

Journal Reviewer

- * (Reviewer) IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- * (Reviewer) Transaction of the International Society for Music Information (TISMIR)

Fellowship & Proposal Reviewer

- * (Reviewer) Google PhD Fellowship in North America and Europe 2021-2022
- * (Reviewer) Google Award for Inclusion Research Program (Faculty proposal) 2021