

SHI CHEN

Email: shichen@berkeley.edu, chen4595@umn.edu

EDUCATION

University of California, Berkeley

Aug. 2023 - Now

Post-doc in Neuroscience

Advisor: Dr. Doris Tsao

University of Minnesota, Twin Cities

Sep. 2018 - Jun. 2023

P.h.D in Computer Science

Advisor: Dr. Qi (Catherine) Zhao

University of Minnesota, Twin Cities

Sep. 2015 - Jun. 2017

M.S. in Computer Science

Wuhan University

Sep. 2011 - Jun. 2015

B.S. in Computer Science

RESEARCH INTEREST

Computer Vision, Visual Neuroscience, Machine Learning, Human Vision, Nature Language Processing

PUBLICATION

- Shi Chen, Ming Jiang and Qi Zhao. Deep Learning to Interpret Autism Spectrum Disorder Behind the Camera. IEEE Transactions on Cognitive and Developmental Systems (TCDS), 2024.
- Xianyu Chen, Jinhui Yang, Shi Chen, Louis Wang, Ming Jiang and Qi Zhao. Every Problem, Every Step, All In Focus: Learning to Solve Vision-Language Problems with Integrated Attention. In IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2024.
- Shi Chen, Ming Jiang and Qi Zhao. What Do Deep Saliency Models Learn about Visual Attention? Conference on Neural Information Processing Systems (NeurIPS), 2023.
- Yifeng Zhang, Shi Chen and Qi Zhao. Toward Multi-Granularity Decision-Making: Explicit Visual Reasoning with Hierarchical Knowledge. In IEEE International Conference on Computer Vision (ICCV), 2023.
- Shi Chen and Qi Zhao. Divide and Conquer: Answering Questions with Object Factorization and Compositional Reasoning. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2023.
- Shi Chen, Nachiappan Valliappan, Shaolei Shen, Xinyu Ye, Kai Kohlhoff and Junfeng He. Learning from Unique Perspectives: User-aware Saliency Modeling. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2023.
- Shi Chen and Qi Zhao. REX: Reasoning-aware and Grounded Explanation. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2022.
- Jinhui Yang*, Xianyu Chen*, Ming Jiang, Shi Chen, Louis Wang and Qi Zhao. VisualHow: Multimodal Problem Solving. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2022.
- Shi Chen and Qi Zhao. Attention to Action: Leveraging Attention for Object Navigation. In British Machine Vision Conference (BMVC), 2021.
- Shi Chen*, Ming Jiang*, Jinhui Yang, and Qi Zhao. Attention in Reasoning: Dataset, Analysis, and Modeling. In IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2021.

- Shi Chen*, Ming Jiang*, Jinhui Yang, and Qi Zhao. AiR: Attention with Reasoning Capability. In European Conference on Computer Vision (ECCV), pp 91-107, 2020. (**Oral Paper, 2% acceptance rate**)
- Ming Jiang*, Shi Chen*, Jinhui Yang, and Qi Zhao. Fantastic Answers and Where to Find Them: Immersive Question-directed Visual Attention. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), pp. 2977-2986, 2020.
- Shi Chen and Qi Zhao. Attention-based Autism Spectrum Disorder Screening with Privileged Modality. In IEEE International Conference on Computer Vision (ICCV), pp. 1181-1190, 2019.
- Shi Chen and Qi Zhao. Shallowing Deep Networks: Layer-wise Pruning based on Feature Representations. In IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), vol. 41, no. 12, pp. 3048-3056, 2019.
- Shi Chen and Qi Zhao. Boosted Attention: Leveraging Human Attention for Image Captioning. In European Conference on Computer Vision (ECCV), pp 72-88, 2018.

TALK

- “Attention with Reasoning Capability”, presented at the European Conference on Computer Vision (ECCV), 2020.
- “Where to Look at: Visual Attention in Computer Vision and Mental Health”, presented at the UMN department of computer science & engineering 50th anniversary research exhibit, 2019.
- “Towards Efficient Deep Neural Networks”, presented at UMN visual computing & AI seminar, 2018.

SERVICE

Reviewer:

CVPR (2019-2023); ICCV (2019-2023); ECCV (2018-2022); NeurIPS (2022-2023); AAAI (2020-2024); ICLR (2022-2024); ICML 2023; WACV (2021-2024); TNNLS (2019-Now); TMM (2021-Now); IJCV (2023-Now).

ACADEMIC EXPERIENCE

Tsao Lab, University of California, Berkeley
Visual Neuroscience

Aug. 2023 - Now

- Understanding the functional correlation between visual perception and spatial representation with an embodied search task for macaques.

Visual Information Processing Lab, University of Minnesota
Computer Vision, Machine Learning, Human Vision, Vision and Language

May. 2017 - Jun. 2023

- Proposed new methods for modeling visual attention throughout the continuous decision-making process.
- Designed and conducted human experiments to study the visual behavioral patterns during visual reasoning tasks with perspective and 360° immersive views.
- Designed a novel deep learning algorithm for interpretable and generalizable autism spectrum disorder screening with multi-modal visual behavioral data.
- Developed new methods that incorporate human attention with machine attention for enhanced multi-modal understanding.
- Designed a new family of multi-modal explanations for estimating machines’ visual reasoning capabilities.
- Developed a new method for reducing the computational overhead of deep neural networks with feature diagnosis and layer-wise pruning.

- Developed visual navigation agents that generate action planning based on attention patterns.

Autonomous Driving Lab, Wuhan University
Computer Vision in Intelligent Transportation System

Sept. 2013 - Apr. 2015

- Built an advanced driver assistance system with pedestrian recognition and lane departure warning. The self-driving car equipped with the system is displayed at Auto China 2014.
- Designed a new road marking recognition system based on geometric features.

INDUSTRIAL EXPERIENCE

Google Research

May. 2022 - Aug. 2022

- Research Intern. Mentor: Junfeng He

TEACHING EXPERIENCE

Guest Lecturer

- Machine Learning Fundamentals, Fall 2022.
- Introduction to Machine Learning, Spring 2021.

Teaching Assistant

- Machine Learning Fundamentals, Fall 2021/Spring 2022.
- Introduction to Machine Learning, Fall 2019/Fall 2020/Spring 2021.
- Algorithms and Data Structures. Spring, 2019.

SKILL

Programming Language: Python, Matlab, Linux shell

Tools: Pytorch, Tensorflow, Keras, Opencv, Unix/Linux, Git, Atom, Scikit-Learn.