

Yuan Shen

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Education

University of Illinois at Urbana-Champaign

PhD Candidate in Computer Science

Aug. 2019 - present

- Advisor: Prof. Shenlong Wang
- Research Interests: 3D generation, scene editing, feature representation and other 3D related downstream applications in self-driving vehicle.

B.S., Major in Computer Science; Minor in Mathematics

Jun. 2015 - May 2019

- Advisor: Prof. Ranjitha Kumar
- Senior Thesis: Fashion Data-Driven System
- Graduated with the Highest Honor (Top 5%)

Work Experience

Adobe

San Jose, CA

Research Scientist Intern

Aug. 2023 - Nov. 2023

mentored by Anna Frühstück, Zexiang Xu, Duygu Ceylan, Niloy Mitra

Amazon Web Services, AI Lab

Bellevue, WA

Applied Scientist Intern

May 2023 - Aug. 2023

mentored by Xiaohan Fei, Jianbo Ye and Chuhan Zou

Reconstruct Inc.

Champaign, IL

Computer Vision Engineer Intern

May 2020 - Aug. 2020

mentored by Derek Hoiem

Reconstruct Inc.

Champaign, IL

Advanced Software Engineer Intern

May 2019 - Aug. 2019

iOS Software Developer Part-time

Sept. 2017 - Nov. 2017

Yahoo!, Inc.

Sunnyvale, CA

iOS Software Engineer Intern

May 2017 - Aug. 2017

Wochacha, Inc.

Shanghai, China

Data Analyst Intern

June 2016 - Aug. 2016

Publications

Journal Paper

Sim-on-Wheels: Physical World in the Loop Simulation for Autonomous Driving

Yuan Shen*, Bhargav Chandaka*, Zhi-hao Lin, Albert Zhai, Hang Cui, David Forsyth, Shenlong Wang

(* denotes equal contribution)

IEEE Robotics and Automation Letters (RA-L)

Presentation at ICRA 2024

Conference Paper

SGAM: Building a Virtual 3D World through Simultaneous Generation and Mapping

Yuan Shen, Wei-Chiu Ma, Shenlong Wang

NeurIPS 2022

CoCAtt: A Cognitive-Conditioned Driver Attention Dataset

Yuan Shen, Niviru Wijayaratne and Pranav Sriram, Aamir Hasan, Peter Du, Katie Driggs-Campbell

ITSC 2022

Effectively Using Attributes for Visual Similarity

Samarth Mishra & Zhongping Zhang, **Yuan Shen**, Ranjitha Kumar, Venkatesh Saligrama, Bryan A

Plummer

ICCV 2021

AutoPreview: A Framework for Autopilot Behavior Understanding

Yuan Shen, Niviru Wijayaratne, Peter Du, Shanduojiang Jiang, Katie Driggs Campbell

CHI 2021 Late Breaking Work

Workshop Paper

To Explain or Not to Explain: A Study on the Necessity of Explanations for Autonomous Vehicles

Yuan Shen, Shanduojiang Jiang, Yanlin Chen, Katie Driggs-Campbell

Best Paper Award at Progress and Challenges in Building Trustworthy Embodied AI Workshop

NeurIPS 2022

Effectively Using Attributes for Visual Similarity

Samarth Mishra*, Zhongping Zhang*, **Yuan Shen**, Ranjitha Kumar, Venkatesh Saligrama, Bryan A Plummer

(* denotes equal contribution)

Fourth Workshop on Computer Vision for Fashion, Art and Design

CVPRW 2021

Building Mental Models through Preview of Robot Behaviors

Yuan Shen, Niviru Wijayaratne, Katie Driggs Campbell

The Road to a successful HRI: AI, Trust and ethicS Workshop

HRI 2021

Can AI decrypt fashion jargon for you?

Yuan Shen, Shanduojiang Jiang, Muhammad Rizky Wellyanto, Ranjitha Kumar

AI4HCI workshop at SIGCHI Conference on Human Factors in Computing Systems

CHI 2020

Pre-print

NeRF2Physics: Neural Physical Property Fields

Yuan Shen*, Albert J. Zhai*, Xinlei Wang, Sheng Wang, Kaiyu Guan, Shenlong Wang

(* denotes equal contribution)

Patents

Forsyth D., Kumar R., Dusad K., Li K., Vasileva M., Plummer B., **Shen Y.**, Rajpal S. *Search Engine Use of Neural Network Regressor For Multi-Model Item Recommendations Based on Visual Semantic Embeddings*. October 2020

Shen Y., Fei X., Ye, J., Zou C., *Scene-grounded 3D Object Generation with Text and Spatial Prompt*, August 2023 (in patent filling stage with Amazon)

Honors and Awards

- Graduate College Conference Presentation Award	2023
- Best Paper Award at Progress and Challenges in Building Trustworthy Embodied AI Workshop	
NeurIPS 2022	2022
- Saburo Muroga Endowed Fellowship	2019
- Meritorious Winner of Interdisciplinary Contest in Modeling (top 9%)	2017

Teaching Experience

Teaching Assistant

University of Illinois at Urbana-Champaign

- Computer Vision (CS543): Spring 2020, Fall 2021
- Computational Photography (CS445): Fall 2019, Fall 2020
- Robot Perception (CS498): Spring 2022
- Introduction to Computer Science (CS125): Fall 2016

Talks

- **Conference Talks:**

- Explanation Necessity for Autonomous Vehicle NeurIPS, 2022
- 3D Scene Generation with SGAM NeurIPS, 2022
- Driver Attention Modeling ITSC, 2022
- Mental Model Building through AutoPreview CHI, 2021
- Mental Model Building through AutoPreview HRI, 2021

- **Seminar Talks:**

- Sim-on-Wheel Simulation for Autonomous Vehicle Vision Mini-Conference, 2023
- Sim-on-Wheel Simulation for Autonomous Vehicle CSL Student Conference, 2023

Services

- **Organizer** for External Speaker Series at Vision Seminar at UIUC (Aug. 2023 to present)
- **Mentor** for Promoting Undergraduate Research in Engineering (PURE) at UIUC: Fall 2023

- **Conference Reviewer:**

- Neural Information Processing Systems (NeurIPS): 2023
- International Conference on Computer Vision (ICCV): 2023
- International Conference on 3D Vision (3DV): 2024
- Winter Conference on Applications of Computer Vision (WACV): 2022, 2024
- IEEE Robotics and Automation Letters (RA-L): 2023
- IEEE International Conference on Robotics and Automation (ICRA): 2022, 2024
- IEEE Intelligent Vehicles Symposium (IV): 2021 and 2022

- **Workshop Reviewer:**

- ACM/IEEE International Conference on Human-Robot Interaction (HRI): 2021

- **Other:**

- Administer for UIUC vision group computing cluster and lab cluster
- Session Chair for navigation poster session at IEEE International Intelligent Transportation Systems Conference (ITSC) 2022

Mentorship

Richard Jia	UIUC Undergrad student in ECE	
Zexian (Sean) Choo	UIUC Undergrad student in CS	
Sarthak Jain	UIUC Undergrad student in CS	
David Howard	UIUC Undergrad student in ECE	
Esther Hwang	UIUC Undergrad student in CS	
Niviru Wijayaratne	UIUC Undergrad student in MechE	Next Position: CMU MSCV
Pranav Sriram	UIUC Undergrad student in CS	Next Position: UIUC MCS
Yanlin Chen	UIUC Undergrad student in CS	Next Position: Apple ML Engineer
Shanduojiang Jiang	UIUC Undergrad student in CS	Next Position: Stanford MS in CS
Yuliang Fan	UIUC Undergrad student in CS	Next Position: UIUC MCS
Qixuan Jin	Caltech Undergrad student in CS	Next Position: MIT EECS PhD

Skills

Advanced / Experienced

Machine Learning: **PyTorch**, TensorFlow
Language: **Python**, **Swift**, C++, Java, Objective-C, C, Matlab
AWS: **EC2**, **S3**, ElasticSearch
Graphics: Blender, ModernGL, Unity, Mixamo, Maya
Cluster: Slurm, HTCondor
Simulator: **CARLA**, AirSim, LGSVL
Others: GEM car, ROS