

# Jiezhi (Stephen) Yang

stephenyang@fas.harvard.edu | +1 5104955983 | Cambridge, MA | [Github](#) | [LinkedIn](#) | [Google Scholar](#)

## EDUCATION

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### Harvard University

Computational Science Engineering (CSE), M.S.

Cambridge, MA

Aug. 2023 - May 2025

- **Cross-registered** at Massachusetts Institute of Technology; Harvard VCG Research Fellow under Prof. Hanspeter Pfister.
- **Coursework**: MIT 6.S980: ML For Inverse Graphics, CS243 Distributed Computing, etc.

### University of California, Berkeley

Electrical Engineering and Computer Science (EECS) Honors Program, Cognitive Science, B.A.

Berkeley, CA

Aug. 2019 - May 2023

- **Major GPA**: 4.00/4.00; **Honors**: High Distinction; Sky Summer Research Fellowships, CS Honors Society, Term Honors, etc.
- **Research**: Worked at BAIR and RISE under Prof. Joseph E. Gonzales and Prof. Trevor Darrell.
- **Major Coursework**: Deep Learning, ML, CV, Graphics, Optimizations, AI, Algorithms, OS, Data Science, Architecture, etc.
- **Teaching**: TA'ed Deep Learning, AI, and Data Structures; led discussion/review sections, homework parties, etc.

## EXPERIENCE

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### Research Assistant, Berkeley Artificial Intelligence Research Lab (BAIR, [bair.berkeley.edu](http://bair.berkeley.edu))

Feb. 2023 - Present

Built *CARFF*: Conditional Auto-encoded Radiance Field for 3D Scene Forecasting

- Developed a Pose-Conditional VAE w/ PyTorch to encode view-invariant scene latent distributions from self-driving datasets.
- Designed mixture density model and NeRF Decoder, which forecasts and 3D reconstructs scenes accounting for uncertainty.
- Packaged into a GUI software that efficiently predicts future traffic flow under novel views from egocentric 2D view input.

### Research Fellow, Harvard Visual Computing Group (<https://vcg.seas.harvard.edu/>)

May. 2023 - Present

Built *SportsNerf*: A unified network for 3D reconstructing all involved players in monocular sports broadcasting.

- Estimated skeleton motion transformations via math and transposed CNN upsampling for many players using PyTorch.
- Developed re-id fine-tuned CLIP-feature-based multi-resolution grids for NeRF to improve few-shot ability and reduce 70% epochs without SSIM score regression. Used OpenCV, YOLOv8, sklearn, and 8 Tesla V100 CUDA GPUs for parallel training.

### Research Intern, Robert Bosch GmbH (Central Research Department) ([bosch.com](http://bosch.com))

May 2021 - Aug. 2021

Built *pred and viz of voxel-wise traffic visibility*, via ray-tracing from traffic LIDAR camera data for infrastructure-based self-driving.

- Implemented prediction algorithm in ROS2 C++, sped up 70% by OpenMP, cache blocking, and OcTree acceleration structure.
- Developed algorithms to model FOVs and reliability variances of LIDAR, Radar, and camera with OctoMap in C++.
- Created an interactive GUI on Rviz for algorithm configuration and testing with interactive marker, enabled the random placement and movement of target sensors and the real-time rendering of FOVs, reliability variance, and visibility prediction.

### Research Assistant, Berkeley RISE Lab ([rise.cs.berkeley.edu](http://rise.cs.berkeley.edu))

May 2022 - Sep. 2022

Built *360 Long*: Enabled wide-range video reconstructions for VR applications by devising efficient “multi-sphere images (MSIs)”.

- Improved scene capturing and model fitting to portable devices via redistributing MSIs' radii in NeRF MLPs, and interpolated multiple MSIs as a plenoptic tunnel for wider reconstruction. Achieved ~0.6 PSNR increase and faster convergence.

### Undergrad Project: **Face Recognition & Generation From Keypoints-based Modeling and Morphing** Oct. 2022 - Nov. 2022

- Detected pixel-wise facial key points by customized neural networks based on UNet and ResNet in PyTorch;
- Triangulated facial key points for face morphing, modeling, extrapolation, similar to Google ML Face Detection APIs.

## SKILLS

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**Languages**: Python, Java, C/C++, SQL, JavaScript, LaTeX, RISC-V Assembly, Markdown, etc.

**Libraries/Tools**: PyTorch, OpenCV, Scikit-learn, NumPy, Pandas, Seaborn, Git, OpenMP, ROS2, Docker, Azure, Amazon EC2, etc.

## PUBLICATIONS

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**Jiezhi Yang**, Khushi Desai, Harshil Bhatia, Charles Packer, Joseph E. Gonzalez. “*CARFF: Conditional Auto-encoded Radiance Field for 3D Scene Forecasting*”. *CVPR 2024 Submitted*. Link: <https://www.carff.website/>

Lisa Dunlap, Alyssa Umino, Han Zhang, **Jiezhi Yang**, Joseph E. Gonzalez, Trevor Darrell. “*Diversify Your Vision Datasets with Automatic Diffusion-based Augmentation*” *NeurIPS 2023 Accepted*. Link: [lisadunlap.github.io/alia-website/](https://lisadunlap.github.io/alia-website/).