

Sanghyun Byun

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MAIN RESEARCH INTERESTS

Computer Vision - 3D Reconstruction - Scene Understanding - Foundational AI - Edge AI

RESEARCH EXPERIENCE

AI Researcher

May 2024 - Present

Silicon Valley Emerging Tech, CTO Office - LG Electronics (*Supervisor: Woo Seong Chung*)

Santa Clara, CA, USA

- Led single-view indoor-scene 3D reconstruction research for accurate metric measurement and refinement.
- Worked on compression of LLM models for streamlined edge deployment of larger models.
- Designed an audio-video synchronization pipeline involving streaming audio translation, real-time pose estimation, and video blending on edge devices through hybrid AI systems.
- Collaborated with professors Song Han, Antonio Torralba, Mohamed Abdelfattah, Yann LeCun, Kyunghyun Cho, and Lerrel Pinto to discuss and develop next-generation AI applications.

Graduate Research Assistant

Feb 2024 - Apr 2024

University of Southern California

Los Angeles, CA, USA

- Implemented ICP-based propagation algorithm projecting 2D Grounded SAM labels onto dense point clouds of the USC campus with 10 billion COLMAP-calibrated points from 360 drone footage to form movable 3D assets.

Undergraduate Researcher

Nov 2021 - Jul 2023

University of California - Irvine (*Supervisor: Prof. Aditi Majumder*)

Irvine, CA, USA

- Designed a novel rectification preprocessing layer for predicting cleft facial landmarks given a few images in cooperation with UCI Medical surgeons, achieving a 39.3% error reduction.
- Deployed an online annotation tool for labeling images with 21 craniofacial cleft key points.

PUBLICATIONS

S. Byun, K. Shah, A. Gang, C. Apton, J. Song, and W.S. Chung, “OneNet: A Channel-Wise 1D Convolutional U-Net,” *arXiv preprint arXiv:2411.09838*, November 2024. (in submission to CVPR 2025) [[Link](#)]

S. Byun, J. Song, and W.S. Chung, “MultiDepth: Multi-Sample Priors for Refining Monocular Metric Depth Estimations in Indoor Scenes,” *arXiv preprint arXiv:2411.01048*, November 2024. (in submission to IEEE TIP) [[Link](#)]

W.S. Chung, J. Song, C. Lee, and **S. Byun**, “AI based Auto Dubbed Lip Synchronizations Generation,” U.S. Patent Application No. 63/711,659, filed October 2024. (Patent Pending)

W.S. Chung, J. Song, C. Lee, and **S. Byun**, “AI based Unified System for Customized Retail Experience,” U.S. Patent Application No. 63/711,671, filed October 2024. (Patent Pending)

W.S. Chung, J. Song, C. Lee, and **S. Byun**, “AI based Reconstruction of Indoor Scenes from Single Image,” U.S. Patent Application No. 63/711,663, filed October 2024. (Patent Pending)

S. Byun, M. T. Ibrahim, M. Gopi, A. Majumder, L. R. Sayadi, U. S. Hamdan, and R. M. Vyas, “Automated Landmark Detection for AR Based Craniofacial Surgical Assistance System,” *International Conference on Artificial Intelligence and Virtual Reality (AIVR)*, July 2023. [[Link](#)]

EDUCATION

M.S. Computer Science - Artificial Intelligence

May 2025

University of Southern California (USC)

B.S. Computer Science and Engineering

Jul 2023

University of California - Irvine (UCI)

OTHER EXPERIENCE

Controls Lead

Aug 2022 - Jun 2024

UCI CanSat

Irvine, CA, USA

- Implemented robust flight software on STM32 PCB, incorporating multiple fail-safes through monitoring numerous sensors to ensure reliability in the event of signal disruptions given an estimated max height of 1km.

Software Development Intern

Jun 2021 - Aug 2022

OptumRx

Irvine, CA, USA

- Created a portable VM benchmark for network and distributed computing evaluation, reducing test time by 85%.
- Built automatic renewal for internal SSL, reducing the risk of an outage by 95% from a manual system.
- Enhanced the information-update pipeline by implementing a lightweight React web service, handling over 100 daily updates related to significant regional legal changes and customer practice modifications.

Co-Founder (Technical CFO)

Nov 2021 - Jun 2022

Foodpool

Irvine, CA, USA

- Managed a team of 13 to deliver nightly deployment, review site analytics, and grow social media.
- Founded a food delivery startup aimed at college communities, leveraging carpooled delivery to cut up to 80% of costs compared to mainstream services like Doordash and Uber Eats.
- Deployed REST API with Rust/AWS RDS backend to Heroku for storefront web applications.

HONORS / AWARDS / AFFILIATION

9x Dean's Honor List, University of California - Irvine

Sep 2019 - Jun 2023

2nd Place in Butterworth Design Competition, University of California - Irvine

May 2022

IEEE HKN Zeta-Omega (Graduate Student Member)

Jan 2020 - Present

SKILLS

Tech Stack (Main)

PyTorch	CUDA	Tensorflow	ONNX	AWS Lambda	OpenCV	React
REST API	React	STMCube	XCode	Android Studio		

Programming Languages (Main)

Python3	CUDA	C++	C	Javascript	Rust	R
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Languages

English (Native)	Korean (Native)	Japanese (Conversational)
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