Sanghyun Byun

650-944-9749 | shbyun080@gmail.com | linkedin.com/in/sanghyun-byun | Los Angeles, CA (Flexible)

EXECUTIVE SUMMARY

Vision AI Researcher with 5 years of specialized experience in bleeding-edge computer vision.
Leveraged research capacity with customer discovery and engagement to lead impactful, user-centric projects.

3D Reconstruction - Pose Estimation - Scene Understanding - Generative AI - Applied ML

EXPERIENCE

AI Researcher May 2024 - Present
LG Electronics North America, Santa Clara
Spearheaded scene understanding and digital twin initiatives to develop advanced Vision AI pipelines.

- Led a pioneering scene-level digital twin research project, achieving **3D reconstruction in-the-wild** with PyTorch and CUDA (C++) modules to accelerate backpropagation.
- Conducted daily monitoring and comprehensive literature review of latest publications in CVPR topics.

Graduate Researcher Feb 2024 - Apr 2024
USC iLab, Los Angeles
Collaborated with PhD and MS students to create detailed 3D semantic maps of the USC campus.

- Developed propagation methods for projecting 2D semantic labels generated through **Grounded SAM onto dense 3D point clouds** with over 10 billion LiDAR points to form movable 3D assets in a large-scale scene simple camera-to-world transforms.

Undergraduate Researcher Nov 2021 - Jul 2023
University of California - Irvine, Irvine
Conducted research of cleft landmark detection under Prof. Majumder's mentorship.

- Designed a **lightweight detection network** enhanced with a novel preprocessing layer for identifying cleft facial landmarks, in cooperation with UCI Medical surgeons, achieving 39.3% error reduction.
- Implemented an online annotation tool for extensively labeling over 1000 patient images with 21 cleft craniofacial keypoints, enabling multiple annotators to work concurrently with live updates to prevent duplication.

Software Development Intern Jun 2021 - Aug 2022
OptumRx, Irvine
Worked in a cross-functional team to optimize internal data pipelines.

- Created a **portable virtual-machine benchmark** to evaluate server network and distributed computing performance, reaching 85% test-time decrease.
- Developed a SSL renewal monitor to continuously oversee and renew internal SSL certificates, reducing the risk of SSL outage by an estimated 95% compared to previous manual monitoring methods.
- 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.

EDUCATION

M.S. Computer Science - Artificial Intelligence, *University of Southern California (USC)* May 2025

B.S. Computer Science and Engineering, *University of California - Irvine (UCI)* Jul 2023

PUBLICATIONS

Byun, S., Ibrahim, M.T., Gopi, M. Majumder, A., Sayadi, L.R., Hamdan, U.S., and Vyas, R.M. "Automated Landmark Detection for AR Based Craniofacial Surgical Assistance System," *AIVR, 2023*.

- Introduced a novel rectification preprocessor to output surgical-accuracy estimation of key landmarks, achieving improved result over state-of-the-art methods.

PROJECTS

Co-Founder (Technical CFO) Nov 2021 - Jun 2022

Foodpool Inc., Irvine

Led a team of 13 to deliver cost-effective food delivery services to hundreds of customers.

- Launched a food delivery startup aimed at college student communities, utilizing a carpooled delivery model to achieve up to 80% cost savings compared to traditional services like Doordash and UberEats.
- Developed and deployed REST API on Heroku for AWS RDS-based web applications with Rust and MySQL.
- Secured 2nd place in Butterworth Product-Development Competition for an innovative and effective business model.

Controls Lead Aug 2022 - Jun 2024

UCI CanSat Team, Irvine

Collaborated with an interdisciplinary team to build a CanSat, a compact survey module for aerospace applications.

- Implemented robust flight software on an STM32 PCB in C, incorporating multiple fail-safes through sensor monitoring to ensure reliability in the event of signal disruptions.
- Designed a modular ground station using PyQt5 for efficient data analysis and control.

SKILLS

Tech Stack

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

Programming Languages

Python3	CUDA	C++	C	Java	Javascript	Rust
Bash	Powershell	R	Swift			

Languages

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