

# Junsoo Kim

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## EDUCATION

### University of Southern California | Los Angeles, CA

2023 – Expected May 2027

#### Bachelor of Science in Computer Engineering Computer Science

GPA: 3.92/4.0

- **Relevant Coursework:** Principles of Software Development (Java), Data Structures and Object-Oriented Design (C++), Probability Theory

## EXPERIENCE

### University of Southern California, GVL Lab

Los Angeles, CA

#### Undergraduate Researcher

August 2025 – Present

- Managing data collections and preprocessing for large-scale robotic datasets, ensuring high-quality inputs for training machine learning models.
- Working with 6+ graduate students to develop robotics simulation platform, contributing to ongoing research projects.
- Capturing 100 videos per week, preprocessing, and segmenting for reconstruction inside a simulation, requiring deep understanding of system limitations and capabilities.

### University of Southern California, Robotic Embedded Systems Laboratory

Los Angeles, CA

#### Undergraduate Researcher

November 2024 – Present

- Working under the advisement of postdoctoral researcher Guangyao Shi to explore heuristics and optimization techniques for enhancing LLM-based task planning in robotic systems.
- Writing simple search algorithms including A\* to understand PDDL planners, improving knowledge of pathfinding and planning algorithms.
- Developing codebases to implement heuristics for VPR questions enabling more flexible and efficient planning with LLM chain-of-thought or DNN-based approaches.
- Implementing various VPR heuristic approaches from scratch to better understand the strengths and weaknesses of each method.

### University of Southern California, ICAROS Lab

Los Angeles, CA

#### Undergraduate Researcher

November 2024 – Aug 2025

- Collaborated with postdoctoral researchers to design and execute weekly human–robot interaction experiments, managing protocols from initial concept through implementation to streamline data collection and analysis.
- Wrote and optimized PDDL domain and problem definitions for the Overcooked environment in multiple agent settings; leveraged Llama 3.3 prompt engineering to iteratively refine 10+ functional planning scenarios.
- Built a comprehensive Python framework to facilitate systematic LLM chain-of-thought sanity checks, reducing integration errors and accelerating debugging cycles.
- Designed and integrated dynamic Neo4j knowledge graphs to support complex LLM planning, enhancing decision-making capabilities and improving query response times.

## PERSONAL PROJECTS

### MuseumGeek Ticketing System | Course Project

Java, JSON, CSV, Threading

- Engineered a multi-threaded Java application simulating a museum exhibit ticketing system with dynamic ticket agents
- Implemented synchronized resource management using locks and semaphores to coordinate concurrent operations
- Developed a parser for JSON exhibit data and CSV transaction schedules with input validation and error handling

### HandSignalCV | GitHub

OpenCV, Mediapipe, Tensorflow

- Created ML system to detect and translate American Sign Language (ASL) into spoken sentences using OpenCV and Mediapipe
- Collected and processed a dataset of 5,200 hand gesture images to ensure accuracy across diverse users
- Trained a CNN with ReLU activation functions using Adam optimizer, achieving 99.5% accuracy and integrated Cohere API

## SKILLS

**Languages:** Python, Java, OCAML, C/C++, HTML, CSS, Node.js, React.js, PostgreSQL, PDDL

**Developer Tools:** Git, Docker, Visual Studio, PyCharm

**Data Library:** NumPy, Pandas, Matplotlib, Scikit-learn, Tensorflow, Groq API, Cohere API, OpenCV, HDF5, Neo4j

**Awards:** USC Provost's Undergrad Research Fellowships, Engineering Mathematics Prize for outstanding performance in Calculus, J. Jayne Bissell Memorial Scholarship, 4 x Dean's List