

Taeyoon Kim

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EDUCATION

University of California, Davis
Bachelor of Science in Computer Science

Davis, CA
Jun 2024

De Anza College
Associate's in Computer Science

Cupertino, CA
Aug 2019 - May 2022

Art Center of Design College
Product Design

Pasadena, CA
Aug 2015 - May 2016

EXPERIENCE

Hug Your Skin (Korea Apparel Brand)
Freelancer Full-stack Engineer

Nov 2024 – Present
Remote

- Enhanced and maintained frontend features to improve user experience and functionality.
- Developed a dynamic page enabling users to customize and interact with a 3D character.
- Integrating 3D character data with existing user profiles for seamless updates and persistence.

UC Davis EcoCAR, Connected and Autonomous Vehicle Team
Cohda Radio/Simulation Engineer

Jun 2024 – Present
Davis, CA

- Utilized MATLAB, dSPACE, and AURELION to collect and modify data needed by the hardware, software, and scenario teams related to autonomous driving using RTMaps, enabling the simulation of each system.
- Configured data transfer using UDP Ethernet connections to ensure smooth interaction between various software and simulations required by each team.
- Enabled communication between vehicles and road environments(e.g traffic lights) using Cohda radios installed in each vehicle. Each vehicle was equipped with receiving and sending radios, and data transitions between the receiving and sending radios were configured to communicate via Ethernet cables and UDP.

PROJECTS

3D Character Generator | *React, TypeScript, Three.js, Node.js, GCS*

Jan 2025

- Developed a dynamic and interactive 3D character customization page, enhancing user engagement.
- Designed a scalable and maintainable architecture following best practices, including Atomic Design and Zustand.
- Built a RESTful API using Node.js to handle CRUD operations for efficient resource management.
- Implemented authentication and authorization using JWT tokens to ensure secure user access.
- Integrated PostgreSQL and Google Cloud Storage (GCS) for managing user data and file storage (PNG, SVG).

X Clone | *React, TypeScript, Firebase*

Aug 2024

- Developed a social media application X(Clone) user interaction application using React, TypeScript, Styled-component, and Firebase.
- Implemented key features such as Authentication, Post, Profile Management, Social Features, and Real-time updates.
- Optimized real-time updates using Firestore's onSnapshot, ensuring efficient data syncing with minimal impact on UI rendering.

"F1-Tenth" Autonomous Race Car Team | *C++, Python, ROS2, SLAM, Jetson Nano*

Jan 2024 – Jun 2024

- Developed self-driving algorithms for a one-tenth-scale autonomous race car, enabling adaptation to dynamically changing environments.
- Implemented critical functionalities and autonomous algorithms in C++ and Python, including emergency braking, SLAM-based mapping, optimal pathfinding (pure-pursuit), obstacle detection, and obstacle avoidance using the gap-following algorithm.
- Implemented an occurrence detection box for obstacle detection to activate gap following only when obstacles were detected, increasing the accuracy of obstacle avoidance from 60% to 90%. Additionally, ensured that the fastest path derived from an optimal path planning algorithm was followed when no obstacles were present.

Connect 4 AI | *Python, Pygame, numpy, threads*

May 2024

- Developed an AI agent for Connect 4 using the minimax algorithm (based on Q-Learning) to optimize game strategy and performance.
- Designed a graphical user interface (GUI) using Pygame, providing an interactive and user-friendly platform for playing Connect 4.
- Reduced computation time by 60% using hash-based caching of previously computed states and the alpha-beta pruning method.

YouTube Controller using Hand Gesture Recognition | *Python, Java, OpenCV, MediaPipe* Jan 2024

- Implemented hand gesture detection using Python, OpenCV, and MediaPipe, enabling real-time data collection through a camera. The ML model is built using TensorFlow, where an NN was constructed and trained using feedforward and backpropagation techniques.
- Developed a user interaction software using Java and connected it to a Python hand gesture detection software using ProcessBuilder. Utilized threads to enable real-time operation of both software simultaneously as separate processes.

Enigma Machine | *C, Memory Management* Jan 2024

- Created an Enigma machine using C programming language that can encrypt and decrypt given strings.
- Implemented stable data structures for each component and effectively managed memory to prevent leaks.

Big-num Calculator | *C, Memory Management* Jan 2024

- Implemented hand gesture detection using Python, OpenCV, and MediaPipe, enabling real-time data collection through a camera. The ML model is built using TensorFlow, where an NN was constructed and trained using feed-forward and backpropagation techniques.
- Developed a user interaction software using Java and connected it to a Python hand gesture detection software using ProcessBuilder. Utilized threads to enable real-time operation of both software simultaneously as separate processes.

TECHNICAL SKILLS

Languages: C/C++, Python, Java, JavaScript, HTML/CSS, R

Frameworks: React, Spring Boot, Next.js

Developer Tools: Git, Docker, ROS2, MATLAB, SLAM, Visual Studio, Node.js, PostgreSQL, GCS

Libraries: Pandas, NumPy, Matplotlib, OpenCV, MediaPipe

Courses: Operating Systems, Modern Programming, Software Engineering, Machine Learning, AI Introduction, Computer Networks, Computer Security, Classical Physics, Statistic Probability