

SUHWAN TCHA

Bundang-gu, Seongnam-si, Gyeonggi-do, 13588, Rep. of KOREA

✉ (+82) 10-9503-6670 | 📩 dndoehrk11@gmail.com | 🗂 suhwantcha.github.io/ | 🌐 suhwantcha | 📱 suhwantcha

Research Interests

My research is committed to developing **human-like and trustworthy Artificial Intelligence** that bridges computer vision and multimodal understanding. Recent primary interests have been building **robust and interpretable vision-language models**, with a focus on:

- (1) **Object Detection and Efficient Architectures** for real-time inference;
- (2) **Multimodal Fusion** of visual and linguistic cues for affective computing;
- (3) **Behavioral Analysis** from static and dynamic visual inputs;
- (4) **Trustworthy AI Systems** ensuring fairness, robustness, and real-world deployability.

Education

Sogang University (Transferred 2024)

B.S. IN COMPUTER SCIENCE

- Relevant Coursework: Deep Learning, Machine Learning, Big Data Computing

Seoul, South Korea

Expected Aug. 2026

Hankuk University of Foreign Studies (HUFS)

INFORMATION & COMMUNICATION ENGINEERING

- Transferred to Sogang University in 2024

Seoul, South Korea

2020 – 2023

Projects

CONVENIENCE STORE CHAIN DATABASE SYSTEM

2025

- The Convenience Store Chain Database System is a project implementing a database management solution for store and online purchases, using MySQL database and C++ application. It includes inventory management, sales transactions, loyalty status updates (VIP/VIP), and support for 7 sample queries covering business needs like stock inquiries, sales analysis, and purchase pattern analysis. The system is designed with an E-R diagram-based logical schema normalized to **BCNF** for data integrity and query performance.

GitHub: github.com/suhwantcha/Convenience-Store-Chain-Database-System

YOLO-PSYCHO-ANALYSIS (PSYCHOLOGICAL ANALYSIS FROM HOUSE SKETCHES)

2025

- The AI House Drawing Psychological Analysis Model is a **YOLOv8**-based project that diagnoses psychological characteristics by detecting and quantifying elements like doors, windows, sun, and chimney in user-drawn sketches. It converts data into psychological scores and provides customized analysis scripts grounded in HTP test theory and art therapy.

GitHub: github.com/suhwantcha/YOLO-Psycho-Analysis

SEOUL REAL ESTATE PRICE PREDICTION TEAM PROJECT (4 MEMBERS)

2025

- This project predicts transaction prices for properties in Seoul using official data, involving preprocessing, feature engineering (e.g., building age, floor categories), encoding, and log transformation of the target variable (house_price). It employs multiple ML models including Random Forest, **XGBoost**, CatBoost, and KNeighbors.

GitHub: github.com/suhwantcha/Seoul-Housing-Price-Prediction

EFFICIENTNET DOG & CAT CLASSIFICATION TEAM PROJECT (4 MEMBERS)

2024

- This project implements image classification on the Oxford-IIIT Pet Dataset, utilizing transfer learning with **EfficientNet-B0** and systematically optimizing factors like data augmentation and regularization, using CutMix and achieving **88.08% validation accuracy**.

GitHub: github.com/suhwantcha/efficientnet-Image-classification

CAT-TRANSLATOR

2025

- The Cat Meow Translator & Meme Generator analyzes uploaded cat meow audio (WAV, MP3) using the **Gemini API** to translate them into humorous human-like phrases, then generates a corresponding meme image via **Stable Diffusion** on Hugging Face. It features dual versions: a Python-based Streamlit app and a simple React frontend.

GitHub: github.com/suhwantcha/Cat-translator

YOLO OBJECT DETECTION (YOLOv5, YOLOv7, AND YOLOv11)

2024

- This project demonstrates training and evaluating YOLO models (**YOLOv5, YOLOv7, and YOLOv11**) for object detection using the PASCAL VOC dataset, including data preprocessing (XML to .txt format), model retraining via transfer learning, and performance evaluation (mAP). Optimized for real-time object detection.

GitHub: github.com/suhwantcha/yolo-object-detection

SYSTEM PROGRAMMING PROJECTS

2025

- This repository covers four projects from the System Programming course: MyLib (kernel data structures), MyShell (custom shell with I/O redirection and job control), Concurrent Stock Server (multi-client server using POSIX threads, handling **10K+ clients**), and Allocator (custom dynamic memory allocator). Technologies include C, system calls, and concurrency libraries.

GitHub: github.com/suhwantcha/System-Programming

SELF-EVOLVING MULTIMODAL CS AGENT FOR SMART STORE OPERATIONS TEAM PROJECT (5 MEMBERS)

Sep 2025 – Present

- Built **Multimodal RAG** with GPT-4o Vision/Whisper and ChromaDB for text, image, and voice customer data.
- Implemented **self-correction logic** using PostgreSQL logs and dynamic prompting to enforce owner policies.
- Enabled **autonomous tool generation**: CS replies, BI reports, marketing tools. FastAPI + LLaMA/Mistral backend. GitHub: github.com/suhwantcha/CS-Agent

PINTOS OS

Sep 2025 – Present

- Pintos OS is an educational operating system kernel implementation in C, focusing on core features. Completed: **argument passing, memory protection and file system management** (Projects 1 & 2). In progress: thread scheduling, and virtual memory systems. GitHub: github.com/suhwantcha/OS-Pintos-Project

Experience

Teaching Assistant, Understanding Artificial Intelligence

Seoul, South Korea

SOGANG UNIVERSITY

Sep 2025 – Dec 2025

- Assisted in an Introduction to Artificial Intelligence course for over 50 students supporting attendance and Q&A.
- Conducted **PyTorch**-based labs on core deep learning architectures, including CNNs and Transformers.
- Guided hands-on implementation of deep learning models and graded assignments.

Teaching Assistant, Computer Architecture

Seoul, South Korea

SOGANG UNIVERSITY

Mar 2025 – Jun 2025

- Assisted in the overall progress of the Computer Architecture course.
- Supported 40+ students in understanding computer systems fundamentals.

Mentor, Parrot Data Science Club

Seoul, South Korea

SOGANG UNIVERSITY

Mar 2025 – Jun 2025

- Guided 5 junior members in data analysis projects and CNN-based computer vision projects.
- Organized internal Kaggle-style ML competitions and technical workshops.

Runner-up, Sogang AI Data Analysis Runnertthon

Seoul, South Korea

SOGANG UNIVERSITY

Jan 20 – Feb 14, 2025

- Built real estate price forecasting model in a team of 4.
- Secured 2nd place among 15 competing teams with XGBoost-based solution.

Teaching Assistant, English & Mathematics

Seoul, South Korea

MEASTUDY RUSSEL & YESUM ACADEMY

Feb 2024 – Present

- Tutored 30+ students in analytical problem-solving and critical thinking.
- Assisted in classroom management and lesson preparation for middle/high school students.

Satellite Operation Squad Leader

South Korea

REPUBLIC OF KOREA ARMY

Jan 2022 – Jul 2023

- Supported stable communication across different military branches by operating the Military Satellite Communication System.
- Demonstrated mission stability and rapid response capabilities in real-world combat readiness operations, ensuring uninterrupted communication services.
- As a Squad Leader, managed and led a team of 7 members, overseeing the maintenance, inspection, and operation of all satellite equipment, enhancing mission readiness.

Activities

Autonomous Taxi Design Project

Seoul, South Korea

SOGANG UNIVERSITY

Jul 2025 – Aug 2025

- Designed autonomous taxi systems, focusing on the integration of AI for navigation and safety protocols.
- Prioritized the development of cost-effective methodologies for sensor fusion and environmental perception in the design.

Member, Parrot Data Science Club

Seoul, South Korea

SOGANG UNIVERSITY

Sep 2024 – Present

- Active member in data science and AI study group.
- Regularly participated in projects involving advanced data analysis and deep learning frameworks.

2023 Military Personnel Software and AI Competency Enhancement Training Program

South Korea

REPUBLIC OF KOREA ARMY

Jan 2023 – May 2023

- Completed intensive training in software development and AI applications.
- Executed a weather forecasting project using real-world data and machine learning models.

Completed English Training Program

HANKUK UNIVERSITY OF FOREIGN STUDIES (HUFS)

- Participated in university-hosted intensive English language program.
- Improved fluency in academic and technical English communication.

Seoul, South Korea

Oct 2021 – Dec 2021

Member, English Conversation Club

SHALLA, SEOUL UNIVERSITY STUDENT UNION CLUB

- Engaged in weekly English conversation practice and cultural exchange.
- Developed confidence in real-time spoken English with peers.

Seoul, South Korea

2021

Technical Skills

ML/DL Frameworks, PyTorch, TensorFlow, Hugging Face, LangChain, scikit-learn

Languages, Python, C/C++, SQL, R

Tools, Git, Linux, VS Code, Google Colab, MySQL, Jupyter Notebook, CLion, Notion

Data/Vision, Pandas, Numpy, Seaborn, OpenCV, Pillow, Cutmix

Languages

Korean, Native

English, Fluent

Japanese, Basic (Studying)