



HKU Korean Coding Society

# Team Machine Learning

Second Team Presentation  
June 2, 2024

# Overview

## Overview of changes and activities for second semester



HKU Korean Coding Society

### Changes

- ✓ The team is structured into two **subgroups**, namely Natural Language Processing (NLP) and Computer Vision (CV) teams
- ✓ Several members were able to participate in the labs in HKU
- ✓ **Team Leader Change:** Sooah Kim → Dongjun Yeom (CV)
- ✓ **Project Topic Change:** CV scorer → Chatbot (NLP)

### Members

New HKU Lab Member



**Jinho Kwak**  
Project Manager



**Hyunsoo Seong**  
Member (CV)



**Minwoo Jeong**  
Member (NLP)



**Dongchan Shin**  
Project Manager



**Seungwoo Oh**  
Member (NLP)



**Heeyun Jung**  
Team Leader (NLP)



**Minju Kim**  
Member (NLP)



**Dongjun Yeom**  
Team Leader (CV)



**Haeju Kim**  
Member (CV)

### Overview of Activities

#### NLP Team

- ✓ Finalize and compile the **Cview project**
- ✓ Implementation of the **Chatbot project**
- ✓ Study on literature and implementation of **agent architecture**

#### Computer Vision Team

- ✓ Improvement of the **Student ID scanner project**
- ✓ Communication with school professor for ID scanning uses
- ✓ **Literature study & sharing** on deep learning for computer vision

#### Others

- ✓ **Compilation of activities** in sharable format (Github & Notion)
- ✓ Regular catch-up between team leader and PM
- ✓ **Communal Activities**

# NLP Team

## New Project: CMM Chatbot

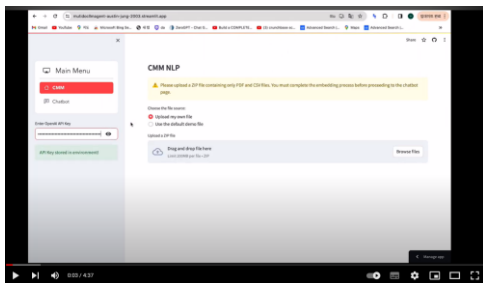
### Project Description

Tool to utilize LLM to understand the files provided

### Use Cases

- Literature Review
- Concurrent analysis of folders
- CSV file Analysis

### Demonstration



Link



HKU Korean Coding Society

### Features & tools used for the project

Aa Function Name	Aa Details	Aa Status
Document Keyword Search	Illuminate how specific keywords manifest across various pages	Completed
Document Page Search	Detail specific diagrams or images on pages.	Completed
CSV Query	Extract information by querying CSV files.	Completed
Memory	Recollect up to 5 past conversation records, enabling abstract inquiries based on prior discussions	Completed
Parallel Processing	Execute the above functions concurrently for enhanced efficiency	Completed

### Tools used

- Langgraph  
To build agent architecture
- Langchain  
For prompt templates
- Pydantic  
Response validation

# Computer Vision team

Updates on Student ID scanning project & others



HKU Korean Coding Society

## Convolutional Neural Network

- ✓ Detects whether the image is HKU Student ID or Not



Haeju Kim

- ✓ Member Responsible
- ✓ Progress: 100%



## Image Processing & Edge Detection

- ✓ Noise Removal & Thresholding
- ✓ Canny Edge Detection



## Perspectives Transformation

- ✓ Rectify the image for it to be easily processed by OCR model



Hyunsoo Seong

- ✓ Member Responsible
- ✓ Progress: 100%



## Optical Character Recognition

- ✓ Extract the character information from the processed image



Dongjun Yeom

- ✓ Member Responsible
- ✓ Progress: 100%



## Demonstration Link:

• [Link](#)

## Follow-ups:

- ✓ Consulting with the HKU professor for potential collaboration

## Literature Sharing



Haeju Kim

Member (CV)

Date: 4/21/2024

- ✓ Literature review on deep learning algorithms for CV

### Deep Learning for Computer Vision: A Brief Review

Athanasios Voulodimos,<sup>1,2</sup> Nikolaos Doulamis,<sup>2</sup> Anastasios Doulamis,<sup>2</sup> and Efthychios Protopapadakis<sup>2</sup>

More to come!

# Notion, Github, and Future Improvements

Outline of future direction of the team



HKU Korean Coding Society

## Future Improvements

### NLP Team

- ✓ PDF Viewer in multi-window for the documents (csv / pdf)
- ✓ **More supported file type** (current tool only supports pdf and csv)
- ✓ Enable chatbot tool to **update the dataset**
- ✓ Async calling feature

### Computer Vision Team

- ✓ Training model instead of given ones for OCR and Edge Detection
- ✓ Accuracy Improvement to enable business use

### Other Suggestions

- ✓ Selection of advisors to give suggestions on project
- ✓ Regular face-to-face meetings (both member & team leader and team leader & PM)
- ✓ Motivation of team leaders
- ✓ Emphasis on commitment rather than ability in recruiting
- ✓ Team bonding events
- ✓ Participation in competition

## ML team Notion & Github



### Includes

- ✓ Team Introduction
- ✓ Project Github
- ✓ Term Presentation
- ✓ Curriculum overview & materials
- ✓ Literature Study

• [Link](#)