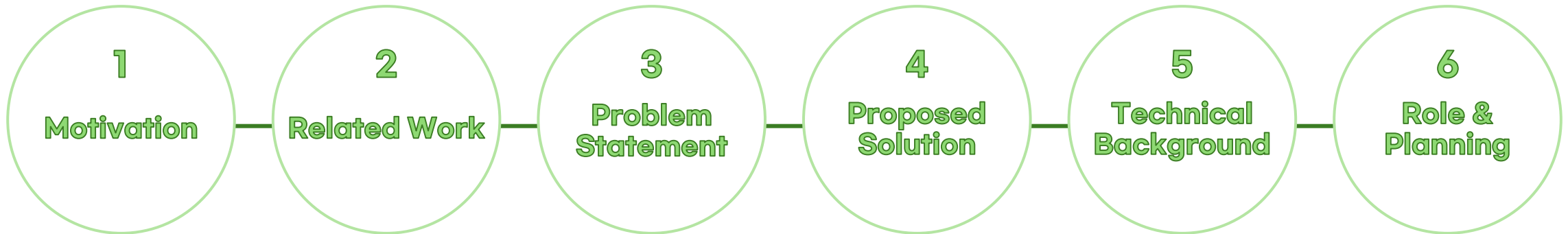


SKKU Lab Recommendation Service : FindMyLab

Team J (Last Lap) 김현진 송민석 장민석 조재희

Contents



1. Motivation

**“What are some ways to build
the competence of your field of interest?”**

1. Motivation

① Undergraduate Research Participation program (URP)

**2024-2학기
융합연구학점제 (URP III형)
지원자 모집**

제도소개 다양한 전공의 학생들이 모여 한 학기 동안 지도교수와 함께 연구를 수행하고, 이를 학점으로 인정(일반선택학점 3학점) 받는 제도

신청자격

- ① 대상: 2024학년도 2학기 재학 학부생
- ② 본인 수강가능학점 여유확보(3학점)
- ③ 지도교수 사전 승인 필수

연구방법

주제 선정 + 지도교수 선정 + 학생팀원 구성

자기주도적 주제 발굴 + 담당 1~2명 + 다양한 전공 3~4명 (동일 전공 학생 2명으로 제한)

주요일정

순번	내용	일정

- System that provides undergraduate students with opportunities to participate in research
- System that recognizes credits by performing individual research projects

② In-school Research Practice(Co-op)

[채용/모집] 2024-2학기 (학내)연구실습 모집 안내문(김규남, 김상민, 김종현, 김훈모, 문형필, 박두준, 정형모, 최재봉, 최학렬, 류고 로드리고 교수님)

기계공학부 | 조재희 | 2024-08-05

- 1. 2024-2학기 연구실습 모집 안내문(김규남P) 미래모빌리티및로봇텍스.pdf
- 2. 2024-2학기 연구실습 모집 안내문(김성민P) 열전달.pdf
- 3. 2024-2학기 연구실습 모집 안내문(김종현P) 재활-바이오메카트로닉스.pdf
- 4. 2024-2학기 연구실습 모집 안내문(김훈모P) 제어공학.pdf
- 5. 2024-2학기 연구실습 모집 안내문(문형필P) RISE.pdf
- 6. 2024-2학기 연구실습 모집 안내문(박성수P) 4D biomanufacturing.pdf
- 7. 2024-2학기 연구실습 모집 안내문(백승현P) 농동형연성소재및로봇.pdf
- 8. 2024-2학기 연구실습 모집 안내문(백승현P) 마이크로나노시스템.pdf
- 9. 2024-2학기 연구실습 모집 안내문(서종원P) 복합재료 및 구조해석.pdf
- 10. 2024-2학기 연구실습 모집 안내문(석지원P) 나노소재 및 나노공정.pdf
- 11. 2024-2학기 연구실습 모집 안내문(이원영P) 에너지변환.pdf
- 12. 2024-2학기 연구실습 모집 안내문(이준P) 차세대적층제조시스템.pdf

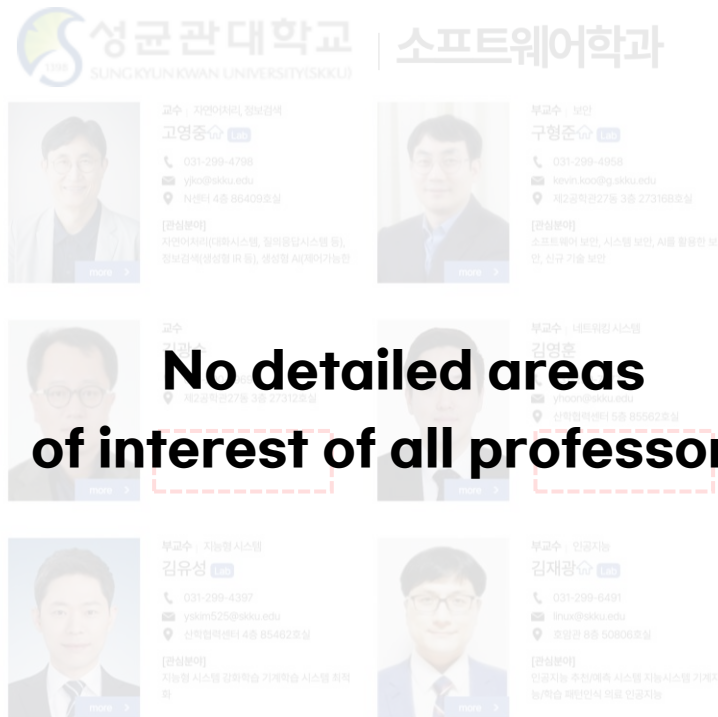
- Under the guidance of a professor, undergraduate students experience the research field of the supervisor at an understandable level in the short term.

③ Undergraduate Research Student



- As an undergraduate student, he/she participates in the research of the professor in charge and works with graduate students in a laboratory to gain research experience

1. Motivation



**No detailed areas
of interest of all professors.**



**Specific technology is not only used
in a single department laboratory.**

2. Related Work

In korea



PhD.KIM NET

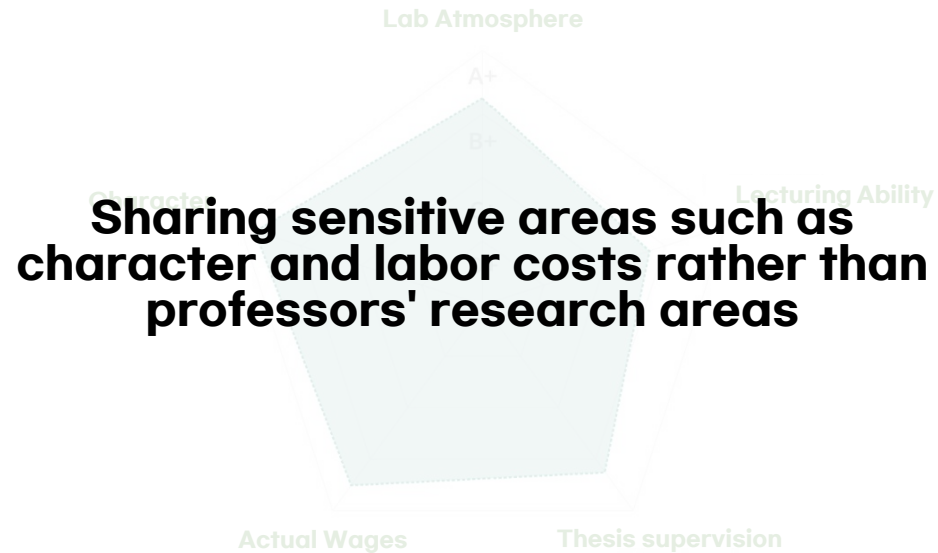
Abroad



RATE MY PROFESSORS

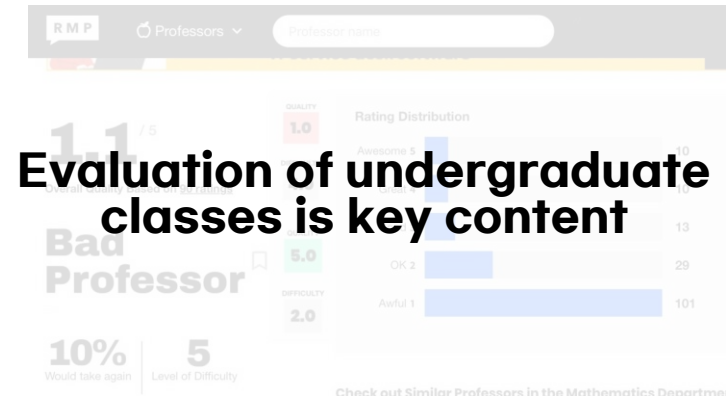
2. Related Work

In korea



PhD.KIM NET

Abroad



Evaluation of undergraduate classes is key content

RATE MY PROFESSORS

3. Problem Statement

1



Difficulty in understanding professor's research

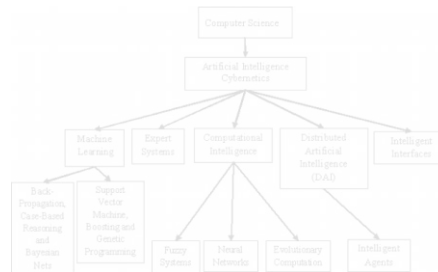
2



Limited access to professors' research papers

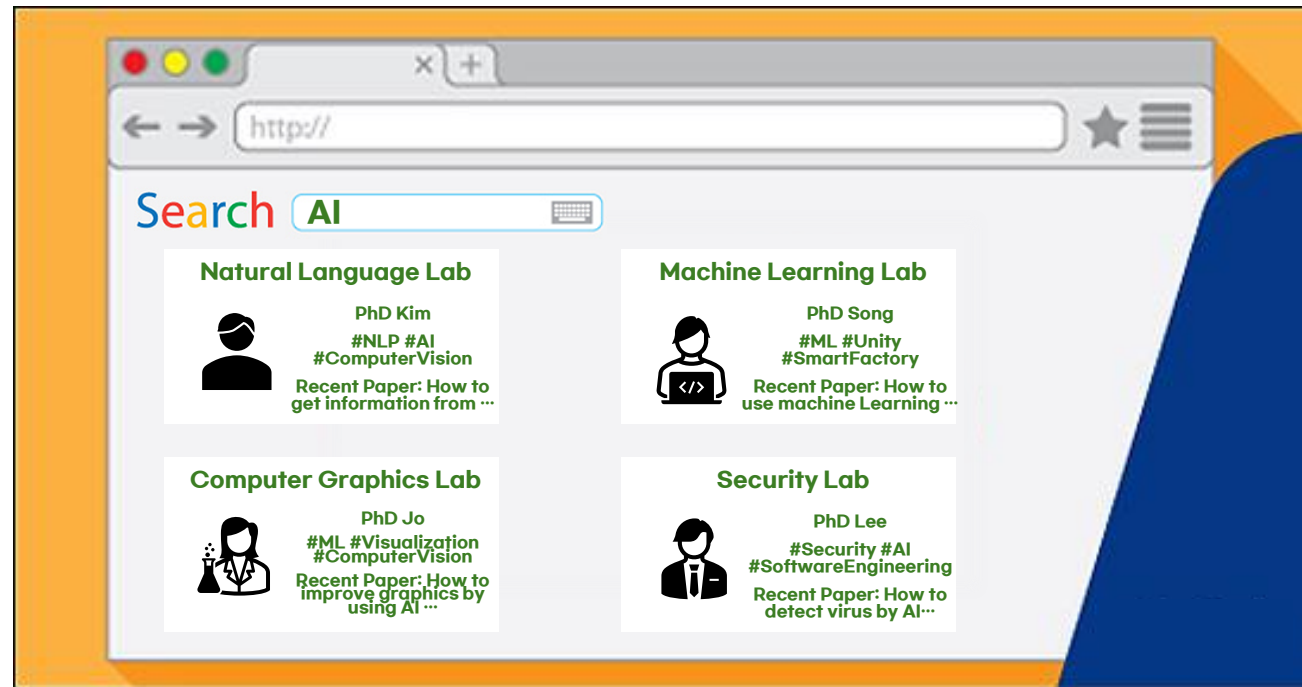
Develop a program that analyzes the professor's published papers to effectively identify the research areas of professor!

3

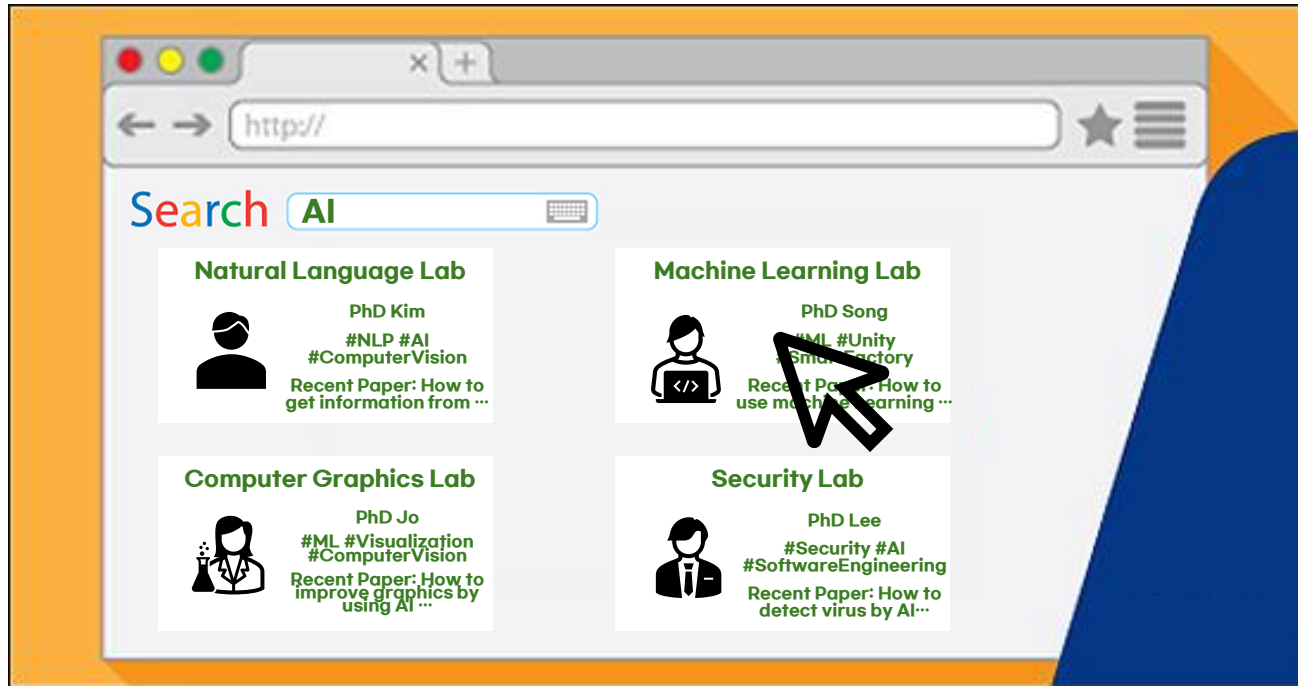


Need for specific research area information beyond general topics

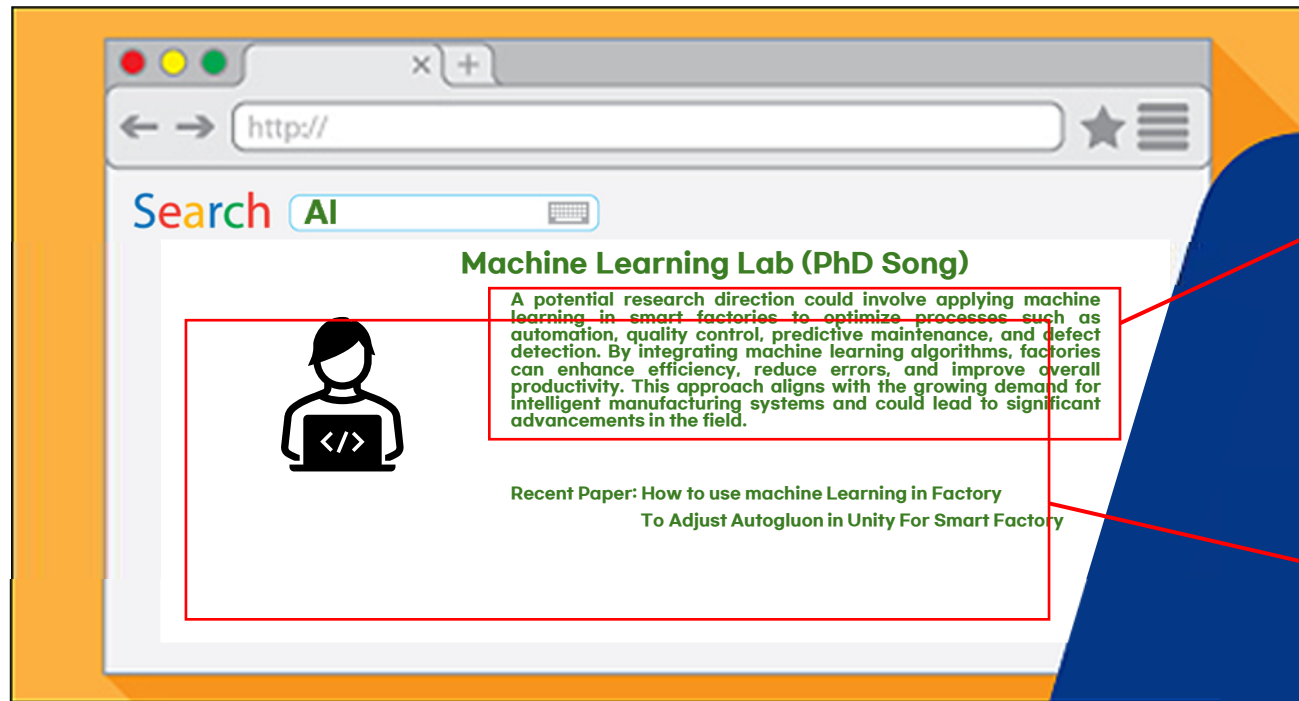
4. Proposed Solution



4. Proposed Solution



4. Proposed Solution



Detailed introduction and guidance on the field the professor is researching

Introduction to the laboratory conducting similar research with the professor

5. Technical Background

Prompt Engineering

Prompt engineering is the process of guiding generative AI solutions to produce the desired output. In prompt engineering, the most appropriate format, syntax, words, and symbols are selected to guide the AI to interact with users more meaningfully.



10.1109/TASLP.2023.3302238

Provide the keywords for the key technologies of the paper related to this DOI.



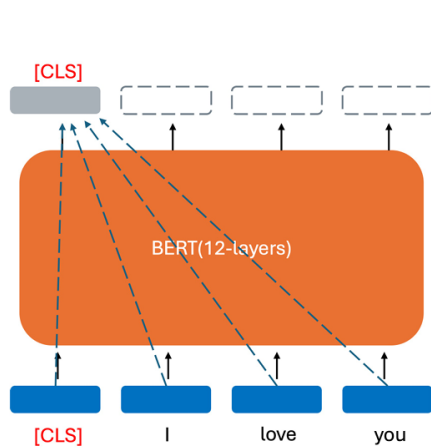
The paper titled "Two-Step Masked Language Model for Domain-Adapting Multi-Modal Task-Oriented Dialogue Systems" focuses on several key technologies, including:

1. **Masked Language Models (MLM)** - a technique used to train models by predicting missing parts of input data.
2. **Domain Adaptation** - methods to tailor models for specific domains, enhancing their performance in targeted applications.
3. **Multi-Modal Systems** - systems that process and integrate different types of data, such as text and images.
4. **Task-Oriented Dialogue Systems** - dialogue systems specifically designed to accomplish user-defined tasks.

5. Technical Background

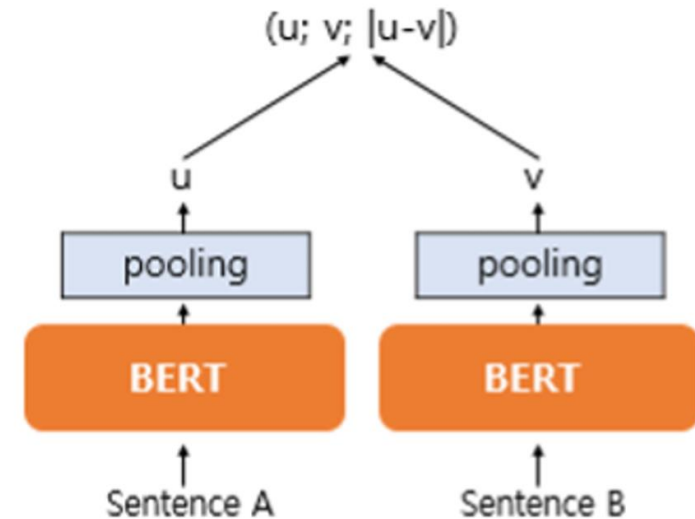
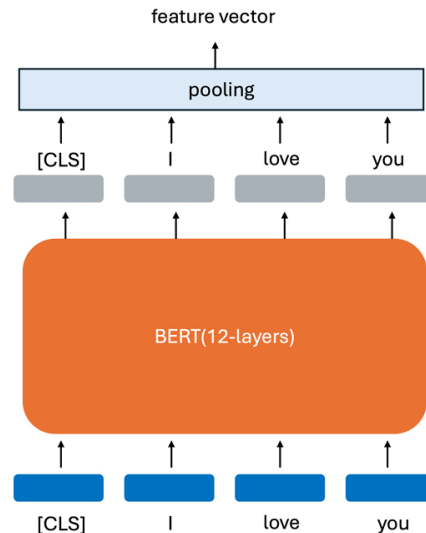
BERT

BERT is a bidirectional model that uses multiple layers of the transformer encoder, allowing attention to be applied to both past and future tokens.



SBERT

SBERT enhances BERT by adding a pooling layer to use embeddings and processes each sentence separately, unlike BERT, which uses a single Transformer for both.



5. Technical Background

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The Message returned by Crossref allows us to obtain the DOI through the work-list in the content section



10.1109/TASLP.2023.3302238

Provide the keywords for the key technologies of the paper related to this DOI.



The paper titled "Two-Step Masked Language Model for Domain-Adapting Multi-Modal Task-Oriented Dialogue Systems" focuses on several key technologies, including:

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Core keywords of technologies are extracted through DOI using GPT prompting

5. Technical Background

Column Name	Data Type	Description
professor_id	INT	professor ID
name	TEXT	professor Name
department	TEXT	department
lab_name	TEXT	labs
research_area	TEXT	interst of research (key workds extracted from paper abstract)
research_embedding	VECTOR	comprehensive embedding vector of the professor's research

Column Name	Data Type	Description
paper_id	INT	paper ID
professor_id	INT	professor ID (Foreign Key)
abstract	TEXT	paper abstract
title	TEXT	paper title
keywords	TEXT	key word
embedding	VECTOR	embedding vectors from paper abstract

Shape of the dataset after preprocessing



$$AP@K = \frac{1}{m} \sum_{i=1}^K Precision@i \cdot rel(i)$$

$$MAP@K = \frac{1}{|U|} \sum_{u=1}^{|U|} (AP@K)_u$$

Mean Average Precision @ K (mAP) as the evaluation metric, which takes the order of recommendations into account.

6. Role & Project Plan



Frontend
Data Collection



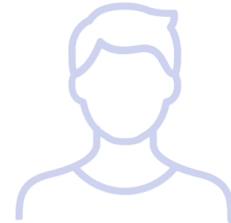
김현진



장민석



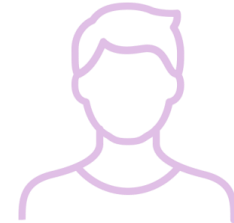
Backend,
Data Preprocessing



송민석



AI Model Design, Data
Preprocessing



조재희

6. Role & Project Plan

	weekly plan					
Week	2 3 4	5	6 7 8	9	10 11 12 13	14 15
Overall	Project Proposal	Proposal LaTeX		Midterm Presentation		Final Presentation
AI			data collection data preprocessing		Model implementation	Beta Test
Web/App			UI/UX design Database setting		frontend and backend work	Debugging

Q & A
