



HBNU UCSI

AI ChatBot

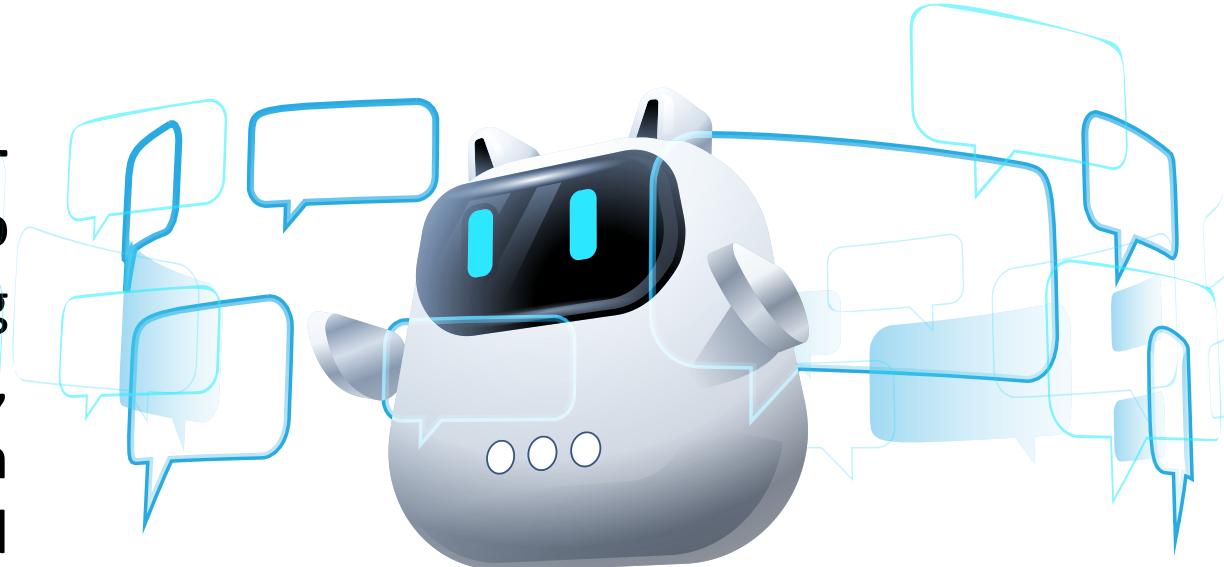
UCSI INTERNSHIP PROGRAM



1. PROJECT OVERVIEW



This project aims to develop a **Python-based AI Chatbot system** within **two weeks (40 total hours)** to supporting queries ranging from admission, programmes, and faculty information to academic records, results, and campus life services.



본 프로젝트는 **2주(총 40시간)** 내에 Python 기반 AI 챗봇 시스템을 개발하여, 입학, 학과 및 학부 정보부터 학적, 성적, 그리고 캠퍼스 생활 관련 서비스에 이르기까지 다양한 문의를 지원하는 것을 목표로 합니다.

1. PROJECT OVERVIEW



This project emphasizes:

1. Short development cycle (2 weeks/40 hours)
2. Team-based competition (2 parallel teams)
3. Integration with UCSI Database
4. An AI system with basic self-learning and continuous improvement capability



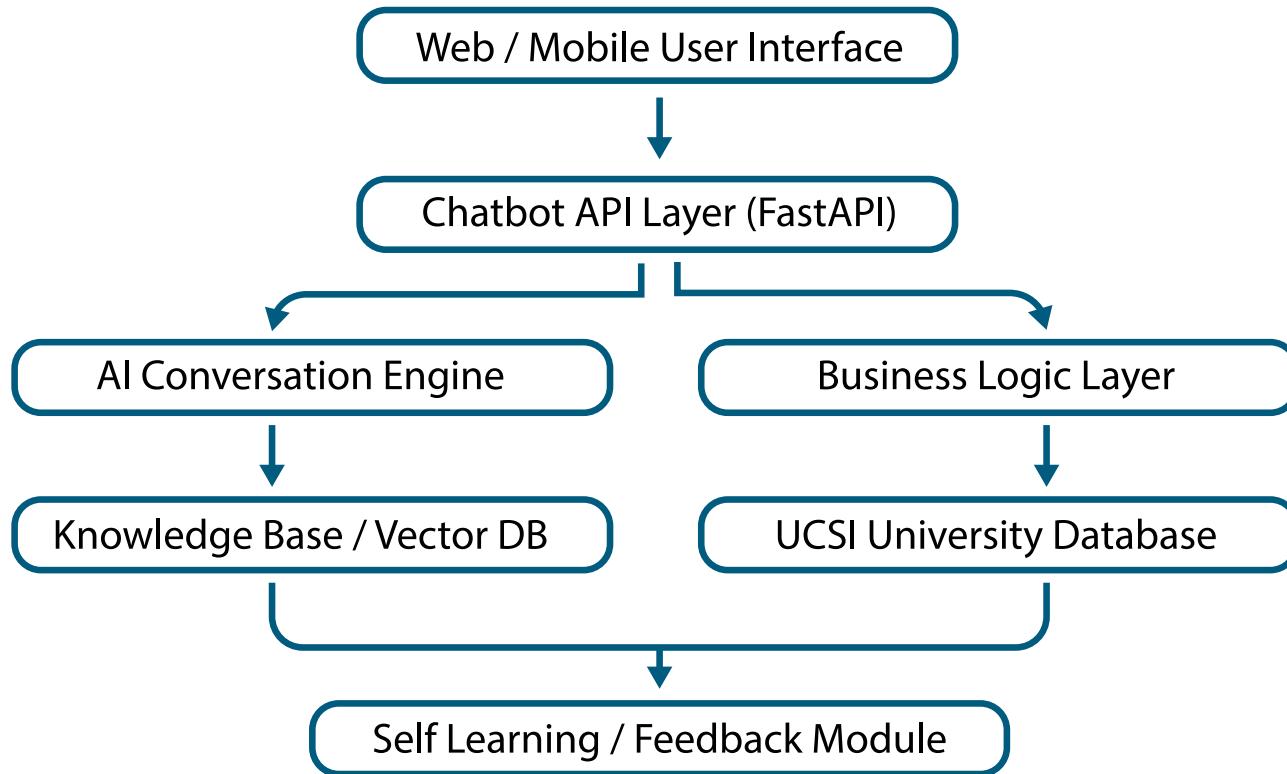
이 프로젝트는 다음 사항을 강조합니다:

1. 짧은 개발 주기 (2주/40시간)
2. 팀 기반 경쟁 (2개의 병렬 팀)
3. UCSI 데이터베이스와의 통합
4. 기본적인 자기 학습 및 지속적 개선 능력을 갖춘 AI 시스템

2. OVERALL SYSTEM ARCHITECTURE



HIGH-LEVEL SYSTEM LOGIC 상위 시스템 논리 흐름



The AI conversation engine handles interpretation and natural language expression, while the business logic layer enforces rules and guarantees factual correctness.

AI 대화 엔진은 사용자 의도를 이해하고 표현을 생성하며, 비즈니스 로직 계층은 규칙을 적용하고 사실의 정확성을 보장합니다.

2. OVERALL SYSTEM ARCHITECTURE



RECOMMENDED TECHNOLOGY STACK 추천 기술 스택

BACKEND

- Python 3.10 +
- FastAPI (API services)
- JWT / OAuth2 (authentication)



RECOMMENDED TECHNOLOGY STACK 추천 기술 스택

AI / NLP Module

- Large Language Model
(e.g. OpenAI API / local LLM such as LLaMA or Mistral)
- LangChain (conversation flow & tool orchestration)
- Vector Database (FAISS / Chroma)
- Embedding models (text vectorization)



RECOMMENDED TECHNOLOGY STACK 추천 기술 스택

Database

- UCSI Database (read-only / controlled access)
- Vector Database (FAISS / Chroma)

3. FUNCTIONAL MODULES



Query & Consultation Functions

질의 및 상담 기능

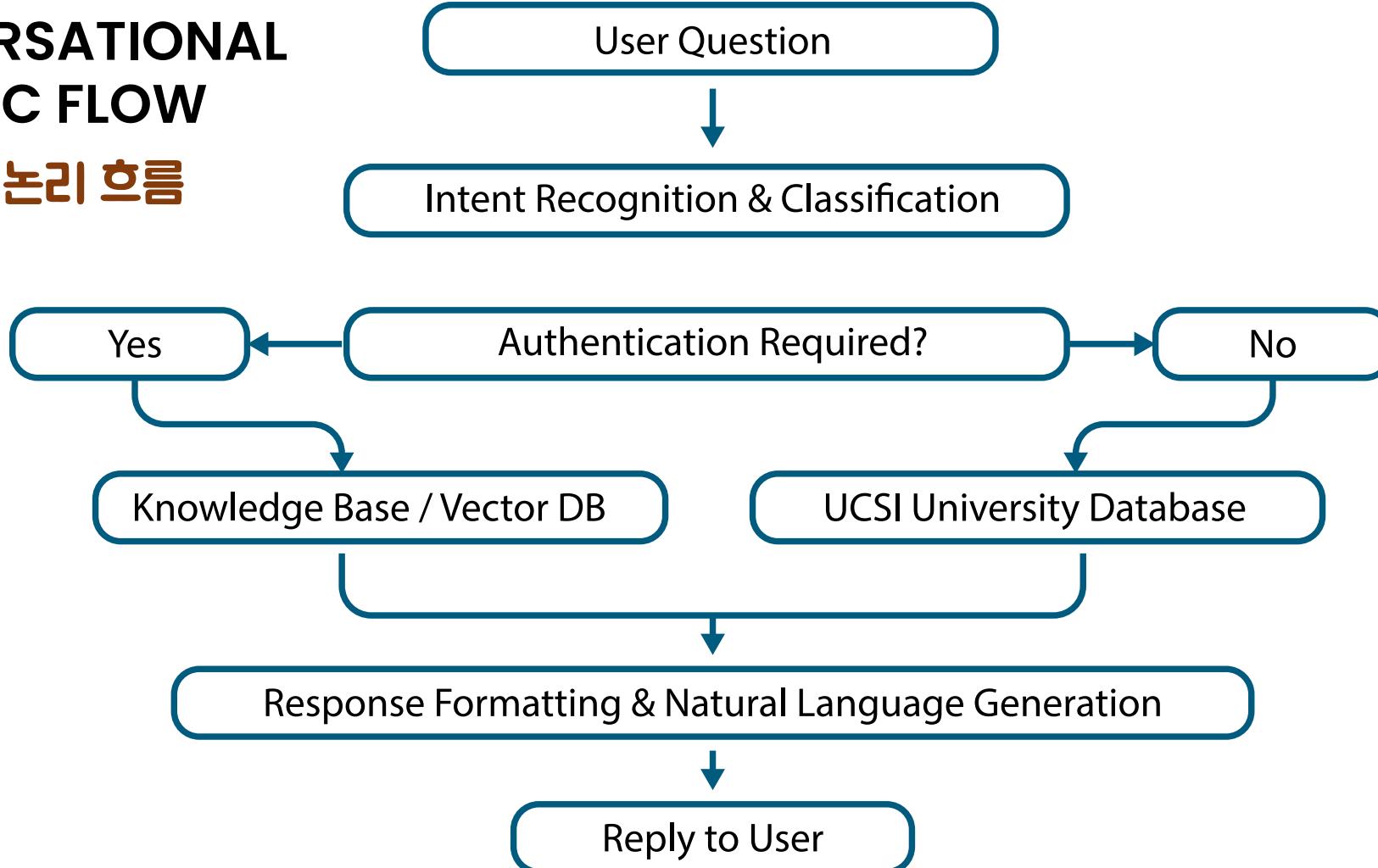
General Information Queries (No Authentication Required)	Student / Lecturer-Specific Queries (Authentication Required)
UCSI University general information	Student enrollment status
Faculty and school introductions	Registered programmes and semester status
Programme and course information	Academic results inquiry (Student ID & Password)
Campus facilities	
Hostel types, fees, and application guidance	

3. FUNCTIONAL MODULES



CONVERSATIONAL LOGIC FLOW

대화 논리 흐름



4. SELF LEARNING CAPABILITY



DEFINITION OF SELF-LEARNING (Within Project Scope) 자기 학습 정의 (프로젝트 범위 내)

Within the limited two-week timeframe, self-learning does not imply autonomous intelligence, but rather:

- Continuous ingestion of new knowledge
- Improvement of responses based on feedback
- Human-controlled knowledge management mechanisms



4. SELF LEARNING CAPABILITY



DEFINITION OF SELF-LEARNING (Within Project Scope)

자기 학습 메커니즘 구현

Admin Knowledge Management Panel

- Upload new documents
(PDF / Word / Text)
- Update program or policy information



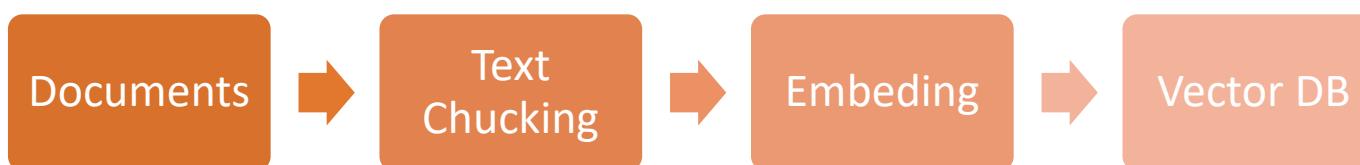
4. SELF LEARNING CAPABILITY



DEFINITION OF SELF-LEARNING (Within Project Scope)

자기 학습 메커니즘 구현

Vectorization Pipeline



4. SELF LEARNING CAPABILITY



DEFINITION OF SELF-LEARNING (Within Project Scope)

자기 학습 메커니즘 구현

Conversation Feedback Learning

- User satisfaction / dissatisfaction tagging
- Logging unanswered or low-confidence questions



4. SELF LEARNING CAPABILITY



DEFINITION OF SELF-LEARNING (Within Project Scope)

자기 학습 메커니즘 구현

Hybrid Rule-Based + AI Optimization

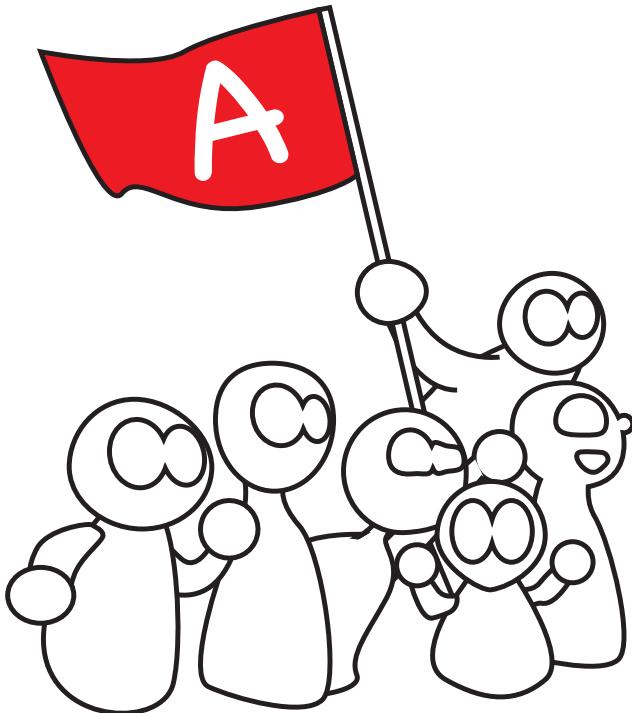
- Convert high-frequency questions into rule-based answers
- Use AI to handle long-tail or complex queries



5. Team Division & Role Allocation

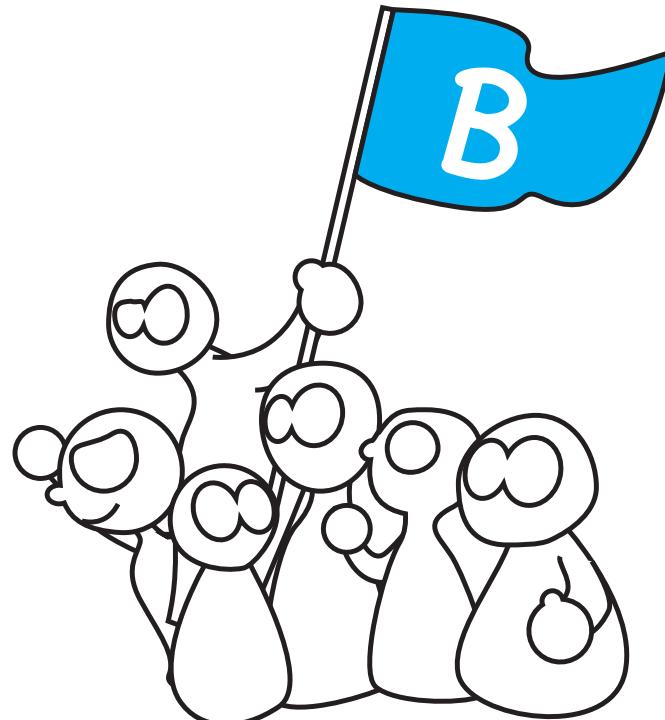


Team Formation Principles 팀 구성 원칙



Team A and Team B have
balanced and comparable
skill distributions

Each team is capable of AI
development, system logic,
and user experience design



5. Team Division & Role Allocation



TEAM A COMPOSITION

A팀 구성

3 Intelligent Media Engineering

UI/UX,
Chat Experience,
Frontend

2 AI Engineers

NLP,
Prompt Design,
Embeddings, RAG

1 Computer Engineer

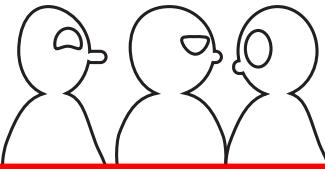
Architecture &
Security (Shared)

5. Team Division & Role Allocation



TEAM B COMPOSITION

B팀 구성



3 Intelligent Media Engineering

UI/UX,
Chat Experience,
Frontend



2 AI Engineers

NLP,
Prompt Design,
Embeddings, RAG



1 Intelligent Media Engineering

Assist Architecture &
Security and
Frontend (Share)

5. WORK SCHEDULE



Total Time Allocated
총 작업 시간

4 Hours × 10 Days

40 Hours



5. WORK SCHEDULE



Week 1 – Core Development

1주차 핵심 개발

Day 1

Project kickoff, architecture design, data field confirmation

Day 2

FastAPI setup, Basic conversation flow, Intent classification design

Day 3

Database connection, Programme & faculty queries, Initial UI prototype

Day 4

Vector knowledge base implementation

Day 5

Internal testing

5. WORK SCHEDULE



Week 2 – Enhancement & Demo 2주차 기능 개선 및 데모

- Day 6** Student authentication mechanism, Enrollment & registration status queries
- Day 7** Academic results query (access-controlled), security, logging & audit
- Day 8** Self-learning module implementation, Admin knowledge upload panel
- Day 9** Bug fixing and optimization, Demo scenario preparation
- Day 10** Final project demonstration, Q&A session

6. Security & Compliance Considerations

보안 및 준수 사항

- Dual authentication for result enquiries
성적 조회 시 이중 인증
- Read-only database access
읽기 전용 데이터베이스 접근
- Log anonymization
로그 익명화



7. FINAL Deliverables

최종 산출물

- Python AI Chatbot prototype
파이썬 AI 챗봇 프로토타입
- Admin knowledge feeding system
관리자 지식 투입 시스템
- Database-integrated demo
DB 연동 데모
- Live or recorded demonstration
실시간 또는 녹화 데모
- Technical documentation
기술 문서



7. Project Lead

UCSI University®
AI ChatBot

UCSI INTERNSHIP PROGRAM



Zan
The Manager

Rex Voon
The Supervisor



Thank You
감사합니다