

# Bumku Choi

SOFTWARE ENGINEER · STUDENT DEVELOPER

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“Life is not a grid, but an optimization algorithm.”

## Education

### DAU(Dong-A University of Science and Technology)

B.S. IN COMPUTER SCIENCE AND ENGINEERING

Busan, S.Korea

Mar. 2019 - PRESENT

## Skills

**Programming** Python, C/C++, JAVA, JavaScript

**Artificial intelligence** Pytorch, TensorFlow, Pandas, Numpy, Matplotlib

**Database** Neo4j, Mysql

**Languages** Korean, English

## Experience

### DAU Data Science Labs

SOFTWARE ENGINEER & AI&BIGDATA RESEARCHER (UNDERGRADUATE RESEARCH)

Busan, S.Korea

Feb. 2023 - Aug. 2024

- Developed a system (CONREC) that recommends videos for continuous growth based on users' understood concepts.
- Researched PageRank and Sentiment analysis for product review video content in collaboration with Samsung researchers.
- Developed a framework for more efficient access to Bigdata provided by Busan Smart City.
- Studied various Graph Neural Networks (GNNs), read related papers, and also engaged in development.

### Dong-A University

SOFTWARE ENGINEER & AI ENGINEER (UNDERGRADUATE)

Busan, S.Korea

Mar. 2019 - PRESENT

- Developed and researched a POI recommendation system using the Yelp dataset.
- Developed a traffic signal optimization framework based on AI-powered traffic prediction.
- Enhanced AI skills through hands-on development with MLP, CNN, RNN, and Transformers.

### DAU GDSC(Google Developer Student Clubs)

SOFTWARE ENGINEER & CORE MEMBER

Busan, S.Korea

Sep. 2022 - PRESENT

- Conducted Hackathons and projects on topics addressing the UN's Sustainable Development Goals (SDGs).
- Research and development of fake audio detection technology.
- Developed an LLM-based diary web application that reads users' emotions.
- Developed an AI framework for classifying causes based on baby crying sounds.
- Developed a TOEIC vocabulary matching game based on Word2Vec.
- Conducted various studies (Big data processing and visualization, JavaScript, React, etc.).

### Artificial Intelligence & Big Data Grand Challenge

STUDENT

Busan, S.Korea

Jul. 2023 - Sep. 2023

- Studied core AI fields including machine learning, focusing on supervised and unsupervised algorithms.
- Studied computer vision, exploring image processing and CNN techniques.
- Studied knowledge graphs and developed AI models utilizing relational data.

## Honors & Awards

### INTERNATIONAL

2023.09 **Paper Publish**, KaRS - RecSys 2023 Workshop

*Singapore*

### DOMESTIC

2024.12 **Grand Prize**, College Student Idea Contest 2024 in Busan Technopark

*Busan, S.Korea*

2024.11 **Grand Prize**, Dong-A Hackathon 2024 in Dong-A University

*Busan, S.Korea*

2024.11 **Excellence Prize**, FairDay 2024 (Graduation work) in Dong-A University

*Busan, S.Korea*

2024.11 **Paper Publish**, KIPS Transactions on Software and Data Engineering

*S.Korea*

2024.08 **Corporate Sponsored Award**, SW University Digital Contest: Detection and Identification of Fake Voices in Generative AI

*Seoul, S.Korea*

2024.04 **Encouragement Prize**, Spring Conference 2024 (Undergraduate Presentation Section) in The Korea Institute of Intelligent Transport Systems

*Jeju, S.Korea*

2023.11 **Grand Prize**, DevDay 2023 (Upper Grade Track) in Dong-A University

*Busan, S.Korea*

2023.08 **Encouragement Prize**, DevDay 2023 (AI/SW track) in Dong-A University

*Busan, S.Korea*

## Presentation

### The Korea Institute of Intelligent Transport Systems (Spring Conference 2024)

*Jeju, S.Korea*

PRESENTER FOR <DEVELOPMENT AND EVALUATION OF AI-BASED TRAFFIC SIGNAL OPTIMIZATION TECHNIQUES>

*Aug. 2023*

- Introduced AI-based traffic signal optimization techniques.

### DevDay (AI/SW track)

*Busan, S.Korea*

PRESENTER FOR <CONREC>

*Aug. 2023*

- Introduced on the CONREC system, which recommends educational videos tailored to the user's level.

## Writing

### POI Recommender System Using Review Data

*KIPS Transactions on Software and Data Engineering*

SECOND AUTHOR

*Mar. 2024 - Nov. 2024*

- Proposed a POI recommendation system that improves accuracy by leveraging user review data.
- Combined BERT-based text embeddings with collaborative filtering models (BPR-MF, LightGCN).
- Assisted in model design, hyperparameter experiments, and supported the writing of the paper.

### Improving Busan's Intersection Traffic Signal System Based on Deep Learning

*The 90th Spring Conference - Korean Society of Transportation 2024*

SECOND AUTHOR

*Dec. 2023 - Feb. 2024*

- Designed an AI and ITS-based intelligent traffic signal control system to address traffic congestion issues in Busan.
- Combined LSTM, DNN, and genetic algorithms to derive optimal real-time signal timing.
- Developed a traffic signal optimization framework using traffic prediction at Yeonsan Intersection in Busan and authored a related paper.

### CONREC Continuous Recommendation of Online Learning Videos Based on Concept Maps

*KaRS - RecSys 2023 Workshop*

CO-AUTHOR

*Jul. 2023 - Sep. 2023*

- Developed CONREC, a learning video recommendation system based on individual learning experiences.
- Represented the concepts learned by the learner using Concept Maps to recommend the next video.
- After developing the CONREC web service, wrote a paper based on it and presented it at the KaRS-RecSys 2023 Workshop.