# PORTFOLIO

**Jungin Kim**
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# CONTENTS

# Experiences

## EDUCATION

Yonsei University
M.S. in Computer Science (2023.09 – 2025.08)
Theory of Computation Lab | Advisor: Professor Yo-Sub Han
GPA: 4.01/4.30 | Research Area: Code, NLP

Sangmyung University
B.S. in Computer Software (2017.03 – 2022.02)
Network Data Science Lab | Advisor: Professor Hyunchul Kim
GPA: 3.92/4.50 | Research Area: Hate Speech Detection

# Experiences

## CAREER

2023.08 – 2025.08 (2 years 1months)
Research Assistant | Theory of Computation Lab, Yonsei University
Advisor: Professor Yo-Sub Han

2022.03 – 2023.04 (1year 2months)
Data Analyst | Data Team, Alookso, Inc.

2020.08 – 2020.11 (4months)
Research Assistant | Statistical Artificial Intelligence Lab, KAIST
Advisor: Professor Jaesik Choi

2019.03 – 2020.07 (1year 5months)
Research Intern | Network Data Science Lab, Sangmyung University
Advisor: Professor Hyunchul Kim

2017.08 – 2017.08 (1month)
Data Analyst Intern | Kir Team (3on3 FreeStyle), Joycity, Inc.

# Experiences

## AWARDS & HONORS

2023.08 ADsP (Associate Data Analyst Certificate), Korea Data Agency

2020.09 – 2020.11 Awarded First Place, University Capstone Design Competition

2017.03 Awarded First Place, SK Future Industry Technology Startup Competition

## Training & Certifications

2021.12 – 2022.02 Completed AIFFEL AI Bootcamp, Modu Research Institute

2021.08 Completed, Recommender System Study, Modu Research Institute

2020.12 – 2021.06 Graduated, Alice AI Track (1st Cohort), Alice

# Experiences

## LANGUAGES

Korean (native)

English (conversational proficiency)
TOEIC 860, OPIC IM2

## PROGRAMMING SKILLS

Python, C, R, HTML, CSS, SQL,
Pytorch, Huggingface
Scikit-learn, Git, Redash

# Publications

**“Marking Code Without Breaking It: Code Watermarking for Detecting LLM-Generated Code”**

**Jungin Kim**, Shinwoo Park, Yo-Sub Han

Master’s Thesis, arXiv preprint arXiv:2502.18851, 2025 (Under Review).[paper]

**“K-ToPiC: Korean Dialect Toxicity Polishing with Curriculum Learning-based Span Detection”**

**Jungin Kim**, Soohan Lim, Hyeseon Ahn, Sang-Min Choi, Yo-Sub Han

Proceedings of the Korea Computer Congress: KCC 2025.[paper]

**“TCProF: Time-Complexity Prediction SSL Framework”**

Joonghyuk Hahn, Hyeseon Ahn, **Jungin Kim**, Soohan Lim, Yo-Sub Han

In the Association for Computational Linguistics: NAACL 2025.[paper]

# Publications

**“CodeComplex: A Time-Complexity Dataset for Bilingual Source Codes”**

Seung-Yeop Baik, Joonghyuk Hahn, **Jungin Kim**, Mingi Jeon, Yo-Sub Han, Sang-Ki Ko

In Findings of the Association for Empirical Methods in Natural Language Processing: EMNLP 2025.[paper]

**“SharedCon: Implicit Hate Speech Detection Using Shared Semantics”**

Hyeseon Ahn, Youngwook Kim, **Jungin Kim**, Yo-Sub Han

In Findings of the Association for Computational Linguistics: ACL 2024.[paper]

# Patents

**Code Watermarking Method and Apparatus that Preserves Syntax Application**

No. 10-2025-0021267 | Filed: Feb 19, 2025

**Code Complexity Prediction Method and Apparatus Using Semi-supervised Learning Application**

No. 10-2024-0150149 | Filed: Oct 29, 2024

# Research Projects

## PROJECT INFORMATION

| Project name | Period | Affiliation |
|---|---|---|
| STONE: Syntax-preserving Code Watermarking | 2024.09 ~ 2025.02 | Yonsei University |
| K-ToPiC: Korean Dialect Toxicity Polishing and Span Detection | 2025.04 ~ 2025.05 | Yonsei University |
| TCProf: Time-Complexity Prediction SSL Framework | 2024.03 ~ 2024.10 | Yonsei University |
| CodeComplex: A Time-Complexity Dataset | 2023.08 ~ 2024.07 | Yonsei University |
| SharedCon: Implicit hate speech detection using shared semantics | 2023.08 ~ 2024.03 | Yonsei University |

# Research Projects

## STONE: Syntax-preserving Code Watermarking

**#Code generation #Watermarking #LLM #Pytorch**

[GitHub, Paper]

- Addressed the issue where existing watermarking techniques caused execution or logic errors by modifying core grammatical elements of code (e.g., keywords, operators).
- Left grammatically important tokens untouched, and inserted watermarks only into non-syntax tokens.

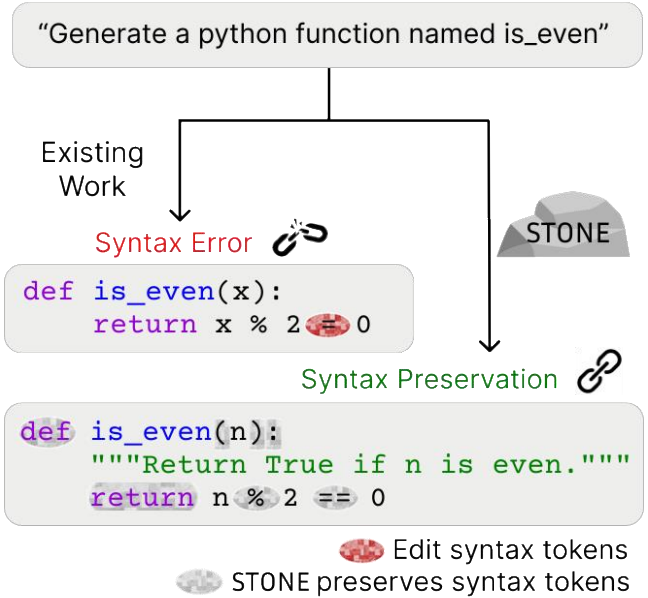



Illustration of syntax-aware watermarking techniques.

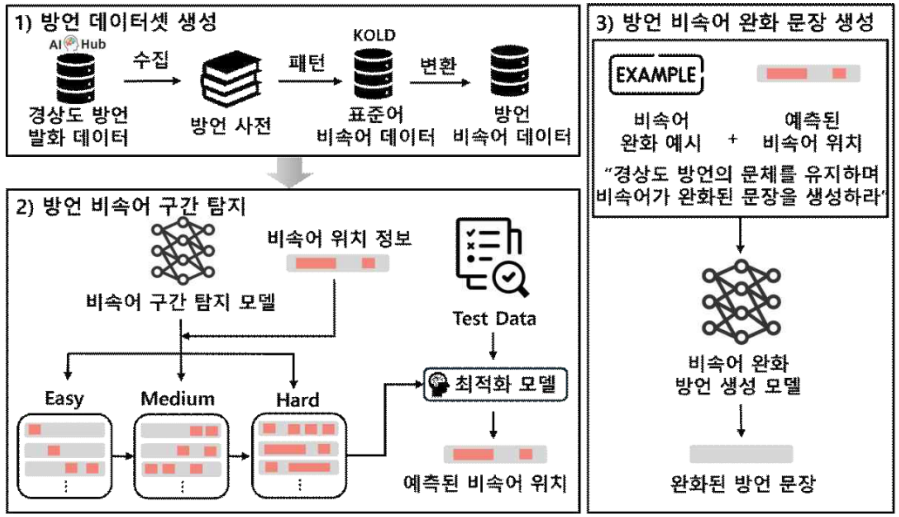
# Research Projects

## K-ToPiC: Korean Dialect Toxicity Polishing and Span Detection

#Dialect #ToxicityDetection #CurriculumLearning #LLM #Korean #Pytorch

[GitHub, Paper]

- Built a Gyeongsang-dialect toxicity dataset and applied curriculum learning to detect offensive spans by increasing task difficulty stepwise.
- Utilized detected spans to generate mitigated dialectal sentences, achieving 36.7%p higher detection and 13.3%p higher mitigation performance.




The overall framework of K-ToPiC.

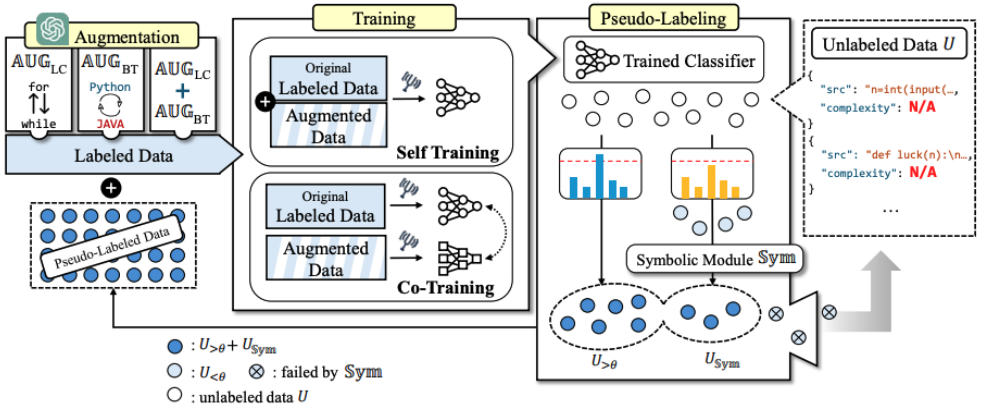
# Research Projects

## TCProF: Time-Complexity Prediction SSL Framework

#Code #LLM #SemiSupervisedLearning #CoTraining #Augmentation #Pytorch

[GitHub, Paper]

- Developed a semi-supervised framework that integrates symbolic analysis, co-training, and code augmentation for low-resource complexity prediction.
- Improved prediction accuracy by over 60% compared to self-training, demonstrating robust few-shot generalization across programming languages.




The overall framework of TCProF.

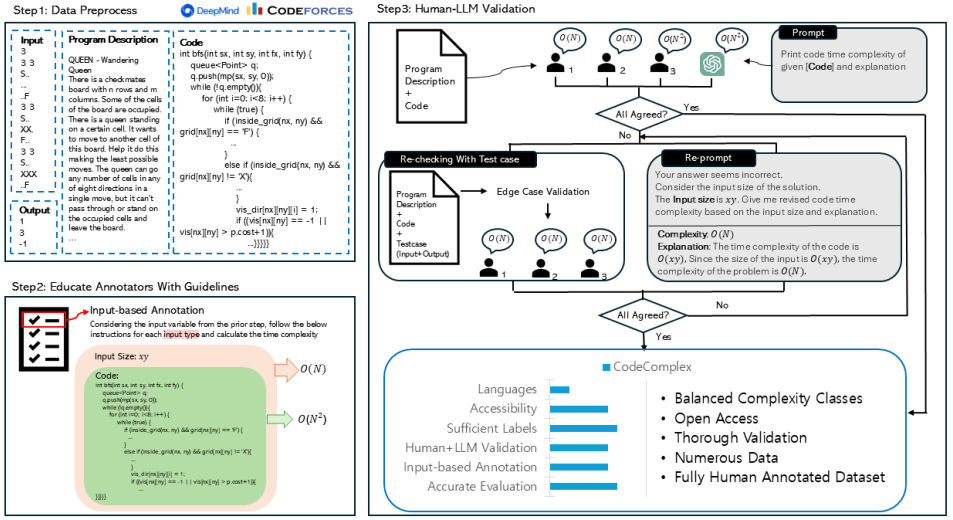
# Research Projects

## CodeComplex: A Time-Complexity Dataset

**#Dataset #CodeTimeComplexity #LLM #Pytorch**

**[GitHub, Paper]**

- Constructed a large-scale dataset containing 9,800 Java Python codes labeled with seven time-complexity classes.
- Defined labeling rules and benchmarked LLMs, establishing the first bilingual dataset for algorithmic complexity prediction.




The overall framework of CodeComplex.

# Research Projects

## SharedCon: Implicit Hate Speech Detection Using Shared Semantics

#NLP #ContrastiveLearning #Implicit #Pytorch #RepresentationLearning

[GitHub, Paper]

- Proposed a clustering-based contrastive learning method that leverages shared semantics without human-written implications.
- Enhanced in-dataset and cross-dataset detection F1 by 0.43%p and 1.43%p respectively, outperforming previous state-of-the-art approaches.

**Shared Semantics:**
White people built everything in this country.

| Posts | Implications |
|---|---|
| white people built everything in this country. | Whites are superior. |
| kkk alive and well white brother hood unite ku klux klan. | Minorities are inferior. |
| if it's white it's right. | Non-white people are wrong. |
| many whites are waking up to the wonder and pride of being white. | White people should be proud to be white. |

The highlighted portion represents the common meaning shared among these posts.

# Applied Projects

## PROJECT INFORMATION

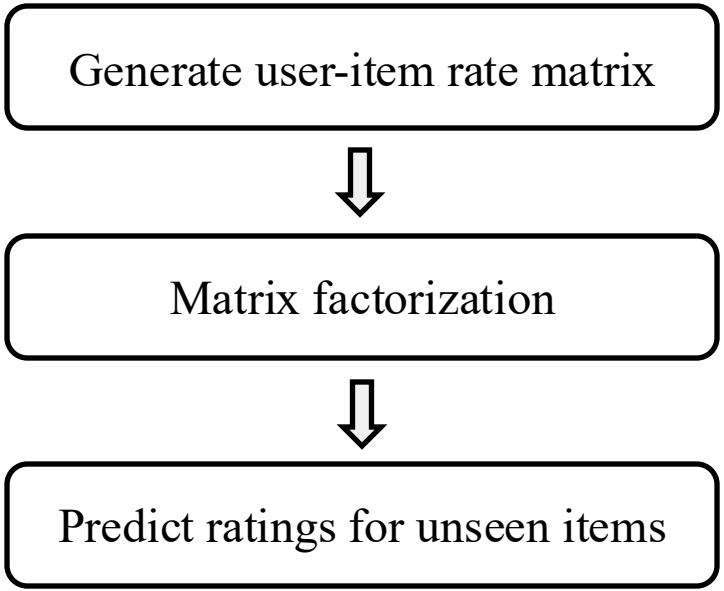
| Project name | Period | Affiliation |
|---|---|---|
| Personalized News Recommendation Algorithm | Jan 2023 ~ Mar 2023 | Alookso, Inc. |
| My Map: Personalized User Map | Mar 2022 ~ Jun 2022 | Alookso, Inc. |
| SmileSpeech: Explainable Hate Speech Chatbot | Jun 2019 ~ Jul 2020 | Sangmyung University |

# Applied Projects

## Personalized News Recommendation Algorithm

**#Python #SQL #Recommender System**

- Constructed a user-item rating matrix based on user behavior logs (e.g., read time)
- Applied matrix factorization to learn latent user/item vectors.
- Predicted unseen item ratings and ranked them for personalized recommendation.
- Conducted iterative A/B testing and log analysis, resulting in an 8% increase in average user retention time.



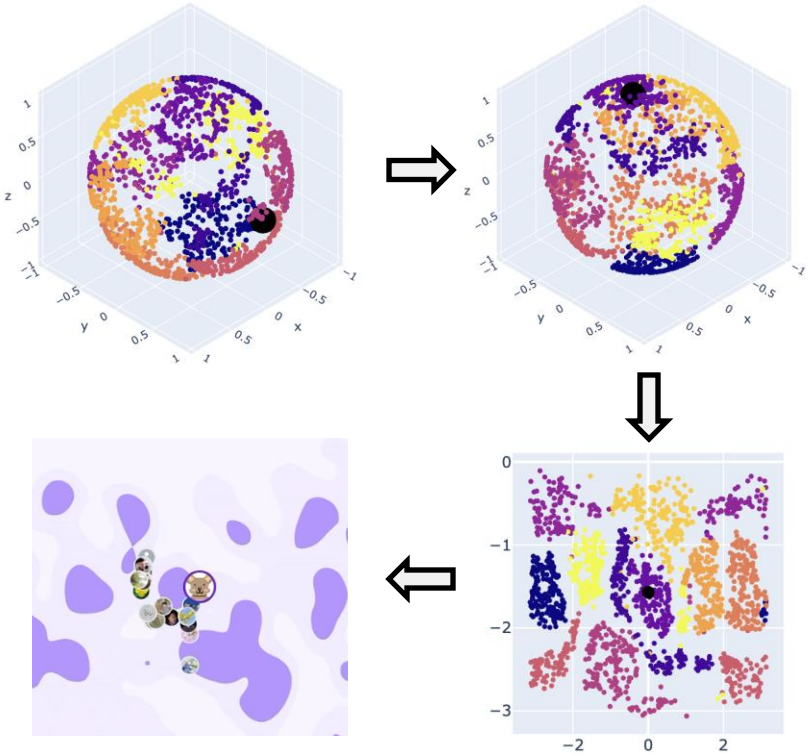

Workflow of the personalized recommendation algorithm using matrix factorization.

# Applied Projects

## My Map: Personalized User Map

#Python #SQL #UMAP

- User voting and interaction data are vectorized and projected onto a 3D sphere using UMAP.
- For each user, the sphere is rotated so that each user is positioned at the center and converted to 2D latitude-longitude coordinates for visualization.
- This process generates a personalized “My Map” for each user.



Personalized 2D map generated from 3D UMAP projection.

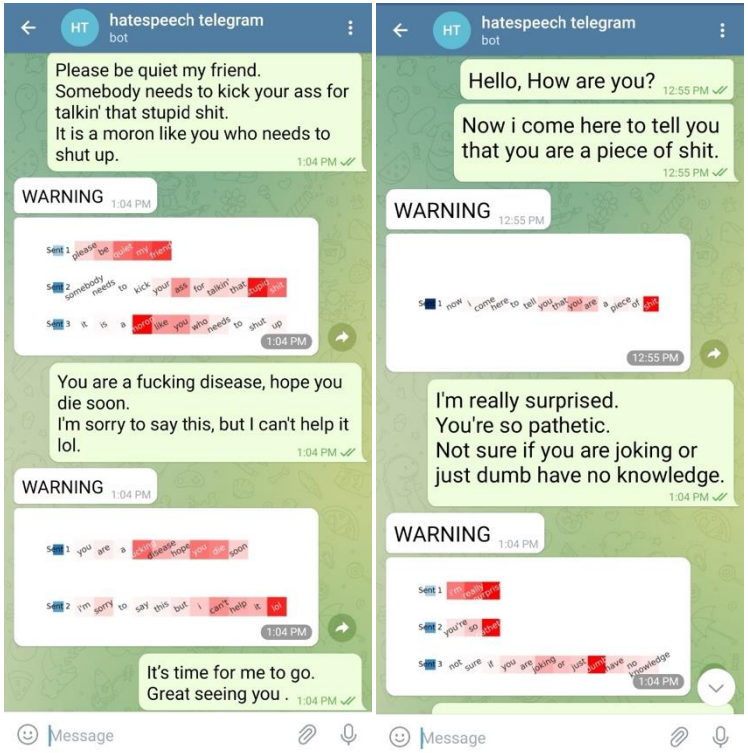
# Applied Projects

## SmileSpeech: Explainable Hate Speech Chatbot

**#NLP #Telegram bot API #Keras #Attention Mechanism**

[GitHub]

- Explainable Hate Speech Detection using HAN (Hierarchical Attention Network)
- Implemented a chatbot that issues warnings and highlights offensive words or sentences based on attention weights during hate speech detection.




Telegram chatbot for hate speech detection with highlighted toxic spans via attention weights.

# Thank You

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