

# Shinhyeok Oh

NLP RESEARCH SCIENTIST - ALTERNATIVE MILITARY SERVICE (JUL 2021 - JUL 2024)

Seoul, Republic of Korea

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## Summary

I obtained a master's degree in computer and communications engineering from the Kangwon National University, under the guidance of Prof. Harksoo Kim. I am currently working at Riiid as Research Scientist (NLP), and enjoy discussing topics related to transfer learning and knowledge distillation. Specifically, I find pleasure in exploring ways, such as self-supervised learning, domain adaptation, and multi-modality, to extract value from other tasks, domains, or previously overlooked resources for the intended objective.

## Education

### Kangwon National University

M.S. IN DEPARTMENT OF COMPUTER AND COMMUNICATIONS ENGINEERING, GPA 4.31 / 4.5

Chuncheon, Republic of Korea

Sep 2019 - Feb 2021

### Kangwon National University

B.S. IN DEPARTMENT OF COMPUTER AND COMMUNICATIONS ENGINEERING, GPA 3.86 / 4.5

Chuncheon, Republic of Korea

Mar 2016 - Feb 2021

## Work Experience

### Riiid

NLP RESEARCH SCIENTIST

Seoul, Republic of Korea

Dec 2022 - Present

- Large Language Model
  - research for Riiid's educational purpose LLM (13b, 70b), proficient in both English and Korean
  - single-node & multi-node training using DeepSpeed and FSDP
- Automated Essay Assessment
  - research on alleviating performance degradation in scoring long-text
  - designing self-consistency methods (e.g. prompt decomposition) for in-context learning pipeline
  - successful execution of PoC related to AP World History and Bar Exam
- Question Generation & Evaluation
  - research on robust QG evaluation approaches for Riiid's AI product (Quizium)
  - published in ACL 2023 (1st author; findings)
- Question Auto-tagging (Japanese)
- TOEIC Writing Scoring

### Netmarble

NLP RESEARCHER & ENGINEER

Seoul, Republic of Korea

Apr 2021 - Dec 2022

- Game NMT Service
  - providing machine translation service for the global release of new games
  - maintenance on Magellan Machine Translation (MaMT) system (springboot + docker + jenkins)
  - research on glossary modeling
- Automatic Post-editing
  - research on automatic post-editing task (en-de)
  - 1st place, automatic post-editing task @WMT, EMNLP 2021
- Text-to-Speech Synthesis
  - research on multi-modal modeling using dependency parsing feature
  - published in AAAI 2023 (1st author; oral)
- Chatbot
  - research on persona chatbot, generative chatbot w/ passage retrieval

### Kakao Enterprise

NLP RESEARCHER (RESEARCH INTERNSHIP)

Seongnam, Republic of Korea

Sep 2020 - Feb 2021

- Aspect-based Sentiment Analysis
  - research on aspect-based sentiment analysis using self-supervised and multi-task learning
  - published in ACL 2021 (1st author; oral)

## Selected Publications from Industry

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### Evaluation of Question Generation Needs More References

*Shinhyeok Oh\**, Hyojun Go\*, Hyeongdon Moon, Yunsung Lee, Myeongho Jeong, Hyun Seung Lee and Seungtaek Choi

(\*equal contribution)

ACL 2023 (Findings, short) - @Riiid

### RWEN-TTS: Relation-aware Word Encoding Network for Natural Text-to-Speech Synthesis

*Shinhyeok Oh\**, HyeongRae Noh\*, Yoonseok Hong, Insoo Oh

(\*equal contribution)

AAAI 2023 (Oral Presentation) - @Netmarble

### Netmarble AI Center' s WMT21 Automatic Post-Editing Shared Task Submission

*Shinhyeok Oh\**, Sion Jang\*, Hu Xu\*, Shounan An, Insoo Oh

(\*equal contribution)

WMT @EMNLP 2021 (1st place) - @Netmarble

### Deep Context- and Relation-Aware Learning for Aspect-based Sentiment Analysis

*Shinhyeok Oh\**, Dongyub Lee\*, Taesun Whang, IlNam Park, Gaeun Seo, EungGyun Kim, Harksoo Kim

(\*equal contribution)

ACL 2021 (Oral Presentation, short) - @Kakao Enterprise

## Honors & Awards

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OCT 2023 **1st Place**, Open LLM Leaderboard (as of Oct 4, 2023) @Huggingface

Nov 2021 **1st Place**, Automatic Post-Editing shared task @WMT, EMNLP 2021

Oct 2020 **Special Prize**, Korean Language Information Processing Competition - Chatbot @HCLT 2020

Oct 2020 **Special Prize**, Korean Language Information Processing Competition - Sentiment Analysis @HCLT 2020

Oct 2019 **Bronze Prize**, Korean Language Information Processing Competition - Dependency Parsing @HCLT 2019

Sep 2019 **Gold Prize**, Kangwon SW Festival - @National Program of Excellence in Software

Oct 2018 **Grand Prize**, Korean Language Information Processing Competition - Dependency Parsing @HCLT 2019

Jul 2016 **1st Place**, Department of Computer and Communications Engineering (Rank: 1/97), Spring Semester 2016

## Teaching Experience

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2023 **Instructor**, Special Lecture for Junior (Guidance on career path) @Kangwon National University

*Republic of Korea*

2023 **Instructor**, Special Lecture for Freshman (AI Foundation Models) @Kangwon National University

*Republic of Korea*

2022 **Instructor**, Special Lecture for Junior (Career in Artificial Intelligence) @Kangwon National University

*Republic of Korea*

2020 **Teaching Assistant**, Natural Language Processing @LG Uplus

*Republic of Korea*

2018-2019 **Teaching Assistant**, Java Programming, C Programming, App Programing @Kangwon National University

*Republic of Korea*

2017 **Instructor**, Java Programming (Supplementary classes supported by Kangwon National University)

*Republic of Korea*

## Academic Activities

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- Reviewer of ACL, NAACL, EACL, and ARR
- Reviewer of IEEE Transactions on Audio, Speech and Language Processing

## Skills

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- Languages: Python, Java, C, C#, HTML/CSS/JS, Android
- Deep Learning Libs: PyTorch, Tensorflow
- Etc.: Springboot, Gnuboard, Google Cloud Platform, Deepspeed, ...

## Certificate

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### Certificate of Engineer Information Processing

*Republic of Korea*

HUMAN RESOURCES DEVELOPMENT SERVICE OF KOREA

2019

## Experience as a Student

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### NLP Lab (Konkuk University)

STUDENT (ADVISOR: PROF. HARKSOO KIM)

- Research on Persona-based Chatbot
- Development of Korean Language Model

Seoul, Republic of Korea

Mar 2020 - Sep 2020

### NLP Lab (Kangwon National University)

STUDENT (ADVISOR: PROF. HARKSOO KIM)

- Research on Persona-based Chatbot
- Development of Web, Demo, Annotation tool, GPUbot, etc...

Chuncheon, Republic of Korea

Aug 2018 - Mar 2020

### Self-employed (using freelancer platform)

DEVELOPER

- Development of Web, Android, Application Software
- 30+ Projects

Republic of Korea

2018

## Other Publications

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### Multi-Architecture Multi-Expert Diffusion Models

Yunsung Lee\*, Jin-Young Kim\*, Hyojun Go\*, Myeongho Jeong, Shinhyeok Oh, Seungtaek Choi

(\*co-first author)

Arxiv Preprint (Under review)

### Addressing Negative Transfer in Diffusion Models

Hyojun Go\*, JinYoung Kim\*, Yunsung Lee\*, Seunghyun Lee, Shinhyeok Oh, Hyeongdon Moon, Seungtaek Choi

(\*co-first author)

NeurIPS 2023 (Accepted)

### Cross Encoding As Augmentation: Towards Effective Educational Text Classification

Hyun Seung Lee\*, Seungtaek Choi\*, Yunsung Lee, Hyeongdon Moon, Shinhyeok Oh, Myeongho Jeong, Hyojun Go, Christian

(\*equal contribution)

Wallraven

ACL 2023 (Findings, short)

### Improving Document-Level Sentiment Classification Using Importance of Sentences

Gihyeon Choi, Shinhyeok Oh, Harksoo Kim

Entropy, 2020 (SCIE)

### Multi-Turn Chatbot Based on Query-Context Attentions and Dual Wasserstein Generative Adversarial Networks

Jintae Kim, Shinhyeok Oh, Oh-Woog Kwon, Harksoo Kim

Appl. Sci., 2019 (SCIE)

### Method of Reflecting Various Personas in a Chatbot

Shinhyeok Oh, Seokwon Jung, Harksoo Kim

Journal of KIISE, 2021 (KCI)

### Movie Reviews Sentiment Analysis Considering the Order in which Sentiment Words Appear

HongJin Kim, Damrin Kim, Boeun Kim, Shinhyeok Oh, Harksoo Kim

HCLT 2020

### Korean Named Entity Recognition Using ELECTRA and Label Attention Network

HongJin Kim, Shinhyeok Oh, Harksoo Kim

HCLT 2020

### Korean Generative Chatbot using Topic Embedding

Shinhyeok Oh, Harksoo Kim

HCLT 2020

### Personal Characteristics Classifier for Persona Chatbot Research

Shinhyeok Oh, Harksoo Kim, Jeong-Eom Lee, Seona Kim, Youngmin Park, Myungho Noh

KSC 2019

### **Personalized Multi-Turn Chatbot Based on Dual WGAN**

Shinhyeok Oh, Jintae Kim, Harksoo Kim, Jeong-Eom Lee, Seona Kim, Youngmin Park, Myungho Noh

HCLT 2019

### **Multi-head Attention and Pointer Network Based Syllables Dependency Parser**

HongJin Kim, Shinhyeok Oh, Damrin Kim, Boeun Kim, Harksoo Kim

HCLT 2019

### **Persona Reflection Method for Generative Chatbot System**

Shinhyeok Oh, Jintae Kim, Youngmin Park, Seona Kim, Jeong-Eom Lee, Harksoo Kim

KCC 2019

### **Korean Dependency Parsing Using ELMo and Multi-head Attention**

Seongsik Park, Shinhyeok Oh, Hongjin Kim, Sihyung Kim, Harksoo Kim

HCLT 2018

### **Korean Dependency Parsing using Multi-head Attention and Pointer Network**

Seongsik Park, Shinhyeok Oh, Hongjin Kim, Harksoo Kim

HCLT 2018