# HEEYEON KOO

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## EDUCATION

**Yonsei University** **Seoul, Korea**
*Master of Artificial Intelligence* (GPA: 4.15/4.5) *Sept. 2023 – Present*
- Teaching Assistant, "Computer Programming" (Fall 2024)
- Teaching Assistant, "Ontology Engineering" (Fall 2024)

**Kyung Hee University** **Gyeonggi-Do, Korea**
*Bachelor of Computer Science and Engineering* (GPA: 3.91/4.5) *Mar. 2018 – Feb. 2023*
- Academic Excellence Scholarship (Spring 2018); Software Scholarship (Spring 2022)

## PUBLICATIONS

Choi, W. S., Lee, H., Han, D. S., Park, J., **Koo, H**, & Zhang, B. T. (2024, Mar.). "DUEL: Duplicate Elimination on Active Memory for Self-Supervised Class-Imbalanced Learning." In *Proceedings of the AAAI Conference on Artificial Intelligence* (Vol. 38, No. 10, pp. 11579-11587), Accepted.
Shim, M.D., Choi, H.J, **Koo, H.Y.,** & Um, K.H. "OmEGa (Ω): Ontology-based Information Extraction Framework for Constructing Task-centric Knowledge Graph from Manufacturing Documents with Large Language Model," *Advanced Engineering Informatics (ADVEI),* Accepted.

## RESEARCH EXPERIENCE

**Internet Computing Laboratory** | Yonsei University **Seoul, Korea**
*Graduate Research Student* *Aug. 2023 – Present*
- Collaborate on a corporate project with Hyundai to develop an ontology-based information extraction framework, aimed to improve data retrieval efficiency from large-scale datasets.
- Establish annotation guidelines for document data to facilitate Named Entity Recognition (NER) tasks, improving model accuracy; perform fine-tuning interactions approximately 10 times and evaluate the model's performance.

**Bio-Intelligence Laboratory** | Seoul National University **Seoul, Korea**
*Research Intern* *Jan. 2023 – Apr. 2023*
- Contributed to a paper on bioinformatics and AI applications for publication, assisting in drafting sections on methodology and results interpretation using LaTeX.

**Electronics and Telecommunications Research Institute** **Daejeon, Korea**
*Research Intern, Media Research Division* *Jul. 2022 – Aug. 2022*
- Analyzed the code of interference codecs, focusing on hologram data compression; identified key performance bottlenecks and proposed solutions to optimize data transmission efficiency.
- Prepared technical documents and presentation materials for internal meetings, explaining codec performance metrics and potential applications for hologram compression.
- Simulated JPEG, HEVC, and interference codecs using hologram data, analyzing compression quality and speed, and comparing results with industry-standard benchmarks.

**Visual Media Laboratory** | Kyung Hee University **Gyeonggi-do, Korea**
*Undergraduate Research Student* *Aug. 2021 – Dec. 2022*
- Researched and simulated video codecs such as HEVC and VVC using Python and MATLAB to assess performance and efficiency; developed custom simulations to compare compression techniques.
- Participated in a 'Deep Learning Seminar' during winter break, training various neural networks on real-world datasets focusing on optimization techniques and model accuracy.
- Attended graduate-level lecture 'Digital Holography,' reviewing its applications and challenges in modern media.

**Software Engineering Intern** | Myzzym **Gyeonggi-do, Korea**
*Dec. 2020 – Feb. 2021*
- Developed a storage platform using React.js, ensuring a responsive, user-friendly interface; worked with Redux for state management and integrated backend APIs for seamless data handling.
- Created test scenarios for user and admin modes to ensure functionality across varying access levels; led testing

processes, addressing key bugs to improve platform performance; studied object detection algorithms using YOLO.

## PROJECT ACTIVITIES

**Software Scholarship Program** | Kyung Hee University Spring 2022

- Organized a team and successfully conducted regular group learning activities, such as creating Python content, through platforms like Google Drive and Band.
- Monitored student attendance and issued certificates based on their participation.

**Algorithm Study** | Kyung Hee University 'D.COM' Club Fall 2020

- Solved various algorithm problems on Python, discussion solutions with club members on Zoom.

**Independent Projects** Spring 2020

- Developed the "Fish-Bread Game" using Java, where players bake fish-shaped bread over time and earn points.
- Created a project that displays movie rankings and additional details.

**Android Study** | Kyung Hee University 'D.COM' Club Spring 2022

- Participated in presentations on clean code, fragment, recycler view, etc.

## PROFICIENCY IN SKILLS

**Programming**: Python, C++, JavaScript, Java, MATLAB
**Libraries:** PyTorch, scikit-learn, Spacy, HuggingFace, Transformer, Pandas, NumPy
**Web & Mobile Development:** HTML, CSS, React, NodeJS, MySQL, Android