SEGWANG KIM

SW Engineer at Immersive SW Group, Mobile eXperience Division, Samsung Electronics
E-mail: ksk5693@snu.ac.kr, Github, SegwangKim, Google Scholar

My goal is to develop innovative products at the intersection of mathematics and computer science, bridging theory and practical solutions to make a meaningful impact on society.

EDUCATION

Doctor of Philosophy Mar 2016 - Fall 2022
Department of Electrical and Computer Engineering, Seoul National Univ. Seoul, Korea
Advisor: *Kyomin Jung*

Bachelor of Science (Cum Laude) Mar 2012 - Feb 2016
College of Liberal Studies, Seoul National Univ. Seoul, Korea
Major: Mathematics, Minor: Statistics

WORK EXPERIENCE

SW Engineer Sep 2022 -
Immersive SW group, Mobile eXperience Division, Samsung Electronics Suwon, Korea

- Primary responsibilities include the development and evaluation of SLAM (Simultaneous Localization and Mapping) for AR (Augmented Reality) devices.
- In the development phase, I manage the reliability of Samsung's in-house robotics library by maintaining documentation and creating unit tests. Additionally, I implement new SLAM features, such as pose prediction, and optimize their performance for upcoming AR devices.
- During the evaluation phase, I monitor SLAM's input pipeline, including camera/IMU inputs, and key performance indicators (KPIs) such as absolute trajectory error and computational resource usage. This is accomplished by analyzing logs and automating sanity check tools.

INTERNSHIPS

Undergraduate Research Internship Summer 2014
Numerical Computing and Image Analysis Lab, Seoul National Univ. Seoul, Korea
Driven Cavity Problem with 5th WENO Method - I implemented a C++ numerical solution of Navier-Stokes equations to describe fluid dynamics in a 2D rectangle with obstacles.
Advisor: *Myeongju Kang*

HONORS AND AWARDS

AI Specialist (paper) Sep 2022
Mobile eXperience division, Samsung Electronics Suwon, Korea

SNU AIIS Spring Retreat Best Poster Award (3rd place) April 2021
Artificial Intelligence Institute Seoul (AIIS) National University Seoul, Korea

PUBLICATIONS

Conference Proceedings

- Dongryeol Lee*, **Segwang Kim***, Minwoo Lee, Hwanhee Lee, Joonsuk Park, Sang-Woo Lee, Kyomin Jung, Asking Clarification Questions to Handle Ambiguity in Open-Domain QA, Findings of the Association for Computational Linguistics: EMNLP 2023 (Findings of EMNLP) - Dec 2023, Singapore, Singapore [code, poster, slides]
- Kangil Lee, **Segwang Kim**, Kyomin Jung, Weakly Supervised Semantic Parsing with Execution-based Spurious Program Filtering, The 2023 Conference on Empirical Methods in Natural Language Processing: EMNLP 2023 (EMNLP) - Dec 2023, Singapore [poster, slides]
- **Segwang Kim**, Hyoungwook Nam, Joonyoung Kim, and Kyomin Jung, Neural Sequence-to-grid Module for Learning Symbolic Rules, AAAI Conference on Artificial Intelligence (AAAI) - 2021, A Virtual Conference [code, poster, slides]
- Hyoungwook Nam, **Segwang Kim**, Kyomin Jung, Number Sequence Prediction Problems for Evaluating Computational Powers of Neural Networks, AAAI Conference on Artificial Intelligence (AAAI, Oral), Jan 2019, Honolulu, Hawaii, USA [poster, slides]

Journals

- Taegwan Kang, **Segwang Kim**, Hyeongu Yun, Hwanhee Lee, and Kyomin Jung, Gated Relational Encoder-Decoder Model for Target-Oriented Opinion Word Extraction, IEEE Access 2022
- **Segwang Kim**, Joonyoung Kim, and Kyomin Jung, Compositional Generalization via Parsing Tree Annotation, IEEE ACCESS 2021 [code]

PROJECTS

Improving Reliability of Large-scale Language Models 2021 - 2023
NAVER
In collaboration with NAVER's language research team, I worked on enhancing the reliability of open-domain QA systems for handling ambiguous user queries. Our efforts resulted in the publication of a top-tier Natural Language Processing conference paper.

Developing Deep Learning Architecture for Logical Inference 2019 - 2021
Samsung Research Funding & Incubation Center for Future Technology
I spearheaded a research project aimed at designing novel architectures and learning methods to imbue deep learning models with logical inference abilities. Our work led to the publication of papers, including one in a top-tier AI conference paper.

Developing Automatic Temperature System 2018 - 2019
Dasan DNG
I led the development of a smart thermostat system, bridging the gap between customer requirements and developer plans.

Rumor Detection on NAVER Blog Spaces 2017 - 2018
NAVER
I proposed a machine learning approach for detecting malicious rumors on social media. Our method, based on XGBoost-based tree boosting, provides insights into which word combinations in a post contribute to its classification as a rumor.

Improving Japanese-Korean Neural Machine Translation Models 2016 - 2017
NAVER
To address out-of-vocabulary issues in machine translation, I implemented a method from a published paper. This approach covers N^2 words with $2N$ subwords using graph optimization techniques.

PROGRAMMING SKILLS

- C++ (Robotics Library - Lie Algebra $\mathfrak{so}(3)$)
- Python (PyTorch, TensorFlow)
- Bash
- MATLAB

EXTRACURRICULAR ACTIVITIES

Sports

Soccer — Spring 2012 -

- 1st place, SNU President's Cup Soccer Tournament — Spring 2015
- 1st place, SNU President's Cup Soccer Tournament — Spring 2013

Swimming — Summer 2016 -

Tennis — Summer 2017 -

Last Updated: June 27, 2024