

JINHEON BAEK

+82 10-2520-8579 ◊ jinheon.baek@kaist.ac.kr

288, Wangsan-ro, Dongdaemun-gu, Seoul, Republic of Korea 02491

<https://jinheonbaek.github.io>

RESEARCH INTEREST

My research interest is mainly on developing novel machine learning models and algorithms for graphs. I focus on representing graph-structured data such as a molecule, society, and neural network, as well as modeling interactions between knowledge, and interactions between drugs with relational graphs.

EDUCATION

Korea Advanced Institute of Science and Technology (KAIST)

M.S. in Artificial Intelligence

Advisor: Professor Sung Ju Hwang

GPA: 4.22/4.30

Daejeon, Korea

Mar. 2020 - Present

Korea University

B.S. in Computer Science and Engineering

B.E. in Software Technology and Enterprise Program (Interdisciplinary Program)

GPA: 4.40/4.50, GPA of Computer Science and Engineering: 4.48/4.50

Seoul, Korea

Mar. 2016 - Feb. 2020

PUBLICATION

Conference

International

- **J. Baek***, M. Kang*, and S. J. Hwang. Accurate Learning of Graph Representations with Graph Multiset Pooling. International Conference on Learning Representation (**ICLR**), **2021**. (*: equal contribution)
- **J. Baek**, D. B. Lee, and S. J. Hwang. Learning to Extrapolate Knowledge: Transductive Few-shot Out-of-Graph Link Prediction. Conference on Neural Information Processing System (**NeurIPS**), **2020**.

Journal

International

- H. Kim, Y. Koh, **J. Baek**, and J. Kang. Exploring The Spatial Reasoning Ability of Neural Models in Human IQ Tests. **Neural Networks**, **2021**.

Workshop

International

- S. Jeong, **J. Baek**, C. Park, and J. C. Park. Unsupervised Document Expansion for Information Retrieval with Stochastic Text Generation. Scholarly Document Processing at Conference of the North American Chapter of the Association for Computational Linguistics (**SDP@NAACL**), **2021**. (**Oral Presentation**)

Preprint

- W. Jeong*, H. Lee*, G. Park*, E. Hyung, **J. Baek**, and S. J. Hwang. Task-Adaptive Neural Network Retrieval with Meta-Contrastive Learning. arXiv:2103.01495. (*: equal contribution)

Domestic Journal & Conference

Korean

- **J. Baek**, H. Kim, and K. Kim. Artificial Intelligence-Based High School Course and University Major Recommendation System for Course-Related Career Exploration. KIPS Transactions on Software and Data Engineering (KTSDE), 2021.

- **J. Baek**, M. Kang, and S. J. Hwang. Graph Representation Learning with Attention-based Set Pooling. Conference of Korean Artificial Intelligence Association (CKAIA), 2020. **(Best Paper)**
- **J. Baek**, G. Jang, S. Jeong, D. Park, K. Kwon, and J. Kang. Embedding Academic Majors and Lectures for Analyzing Departments in University. Korea Computer Congress (KCC), 2019. **(Oral Presentation)**
- D. Park, Y. Park, B. Chang, **J. Baek**, and J. Kang. Embedding Food Ingredients Based on Chemical Combination in Dense Vector Space. Korea Computer Congress (KCC), 2018. **(Best Paper)**
- **J. Baek**, D. Lee, C. Hong, and B. Ahn. Multimodal Approach for Blocking Obscene and Violent Contents. Journal of Convergence for Information Technology (JCIT), 7(6), 2017.

RESEARCH EXPERIENCE

MLAI (Machine Learning & Artificial Intelligence) Lab, KAIST Daejeon, Korea
Research Assistant (Advisor: Professor Sung Ju Hwang) Jul. 2019 - Present

- Conducting research on representing graphs (molecule, society, and neural network), and modeling interaction between objects (knowledge, and drug), with machine learning approaches (graph neural network, graph pooling, and meta-learning).

DMIS (Data Mining & Information System) Lab, Korea University Seoul, Korea
Undergraduate Research Assistant (Advisor: Professor Jaewoo Kang) Mar. 2018 - Jun. 2019

- Conducted research on embedding specific knowledge such as ingredients for food recommendation and majors for career recommendation, and performed research on investigating the spatial reasoning ability of neural models with human IQ tests.

ETRI (Electronics and Telecommunications Research Institute) Daejeon, Korea
Trainee of Research - Smart Data Research Group Jan. 2019 - Feb. 2019

- Researched and developed an open data distribution platform based on the international standard (DCAT). Specifically, researched Hyperledger-Indy for blockchain identification, and PaaS service for cloud engineering with open-sourced cloud foundry software. Also, applied several DevOps tools, such as Ansible, AWX, and Traefik, to manage nodes on a cloud infra.

PROFESSIONAL EXPERIENCE

Jobshopper Seoul, Korea
Non-executive Technical Director (Technical Lead) Mar. 2019 - Present (Jul. 2018 - Dec. 2018)

- Led the development and research groups of more than 10 people to develop education technology services that mainly focus on career for secondary students, by planning businesses, developing server systems, managing cloud services, and developing AI models.
- Successfully exit big-data based university information platform, namely majormap, at May. 2020.

EXTRA-CURRICULAR ACTIVITY

Microsoft Student Partner Korean & International
Developer, Lead, and Global summit program representative of Korean Jul. 2016 - Jul. 2020

- As a developer, educated developers mainly on Microsoft Cloud Platform Azure and Machine Learning.
- As a community leader in Korea, selected the new members, planned the community programs, and reviewed the technical contents of each group with Microsoft employees.
- As a representative of Korean on the global summit program, conducted a role as a technical ambassador by attending Microsoft Build that is the biggest annual conference held by Microsoft.

Inc0gnito Hacking Conference

Chairman

Korean

Mar. 2018 - Feb. 2019

- Inc0gnito is the largest information security conference in Korea organized by undergraduate students over more than 10 universities.
- Organized the conference that covers various techs, news, and trends on information security areas, which also aims the goal of being a meeting place for future information security specialists.

SW Maestro

8th Trainee

Korean

Jul. 2017 - Dec. 2017

- SW Maestro is the largest government-funded program to train talented students on software in Korea.
- Researched and developed systems that automatically blocking obscene and violent movie contents using machine learning, and I chose the path of a researcher while writing my first paper in the second year of an undergraduate student through this program.

TALK

- Learning to Extrapolate Knowledge: Transductive Few-shot Out-of-Graph Link Prediction, NeurIPS Social - ML in Korea. *Dec. 2020*
- Basic algorithms on machine learning with Python code challenges, Microsoft coding education volunteer group seminar, Seoul, Korea. *Jul. 2018*
- Basic algorithms on machine learning and deep learning with Python code challenges, Microsoft newcomer tech seminar, Seoul, Korea. *May. 2018*
- IaaS (Infrastructure as a Service) on Microsoft Azure, Microsoft newcomer tech seminar, Seoul, Korea. *Apr. 2018*
- Phishing website detection with Microsoft Azure machine learning studio, KUSISWALL seminar (Joint seminar with Korea, Sookmyung, and Hanyang university undergraduate students), Seoul, Korea. *Feb. 2018*
- Basic algorithms on machine learning with Azure machine learning studio, Microsoft Student Partner evangelism, Seoul, Korea. *Nov. 2016, Nov. 2017*
- Azure Cognitive Services with serverless cloud computing using JavaScript and Python, Microsoft Student Partner evangelism, Seoul, Korea. *Nov. 2017*
- Windows Hello: Microsoft face recognition system in windows 10, Microsoft Student Partner inner tech seminar, Seoul, Korea. *Oct. 2016*
- Security issues on hash encryption and Linux password, KUSISWALL seminar (Joint seminar with Korea, Sookmyung, and Hanyang university undergraduate students), Seoul, Korea. *Jun. 2016*

VOLUNTEERING EXPERIENCE

WoonWha

Seoul, Korea

Math and homeroom teacher - Korea University Education Volunteer Club

Jul. 2016 - Jul. 2017

- Volunteered for children vulnerable to education due to family circumstances, almost every twice a week that ranks about 300 hours.

Do-Dream

Ankoreborei, Cambodia

Volunteer - Samsung Dream Scholarship Foundation 5th Overseas Volunteering Program

Jan. 2017

- Volunteered for Cambodia countryside children by teaching students, building school, and sharing cultures during two weeks.

HONOR & AWARD

Graduation Project Competition, Korea University

Seoul, Korea

*First Prize (Around 20 total submissions)**Jun. 2019*

- Researched the effectiveness of embedding methods on data mining topics such as food and education: recommending novel combinations of foods by embedding their ingredients; analyzing university majors by embedding their curriculum.

Academic Excellence Award, Korea University

Seoul, Korea

*Prize**Feb. 2019*

- Semester Highest Honors (GPA: 4.50/4.50)

Microsoft Student Partner

Seoul, Korea

*Second Prize (Around 10 total teams)**Feb. 2018*

- For excellence in Microsoft Student Partner activities as a team leader during the second half of 2017.

Microsoft Student Partner

Seattle, WA USA

*Nominated as a representative of Korean (Around 50 total members in Korea)**Mar. 2017*

- For excellence in Microsoft Student Partner activities, invited as a technical ambassador on the global summit program.

ACADEMIC SERVICES

Conference Reviewer

- Neural Information Processing Systems (**NeurIPS**), 2021
- International Conference on Machine Learning (**ICML**), 2021

TECHNICAL STRENGTHS

Programming Languages

Python (Prefer), JavaScript, Java, C

Cloud Services

Microsoft Azure, Google Cloud Platform, AWS

Databases

MongoDB, PostgreSQL

Last Updated: Apr. 18, 2021