

Seohyun Back

Research Engineer, Samsung Research
M.S. candidate, Korea University

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RESEARCH INTEREST

- **NLP, NLU**: Natural language processing, Natural language understanding
- **MRC**: Deep learning for reading comprehension-based question answering
- **VQA**: Deep learning for visual question answering
- **Text Summarization**: Deep learning for text summarization

PROGRAMMING SKILLS

- **Advanced**: Python (tensorflow, pytorch), C, C++, Java
- **Moderate**: HTML, CSS, Javascript

EDUCATION

- **Korea University** Seoul, South Korea
M.S. candidate in Big Data Convergence (Advisor : Prof. Jaegul Choo) Sep 2016 - Present
- **Sungkyunkwan University (military service 2008 - 2009)** Suwon, South Korea
B.S. in Computer Science and Engineering (Advisor : Prof. Jeehyong Lee) Mar 2007 - Aug 2014

PUBLICATIONS

MemoReader: Large-Scale Reading Comprehension through Neural Memory Controller

- **Seohyun Back**, Seunghak Yu, Sathish Indurthi, Jihie Kim, and Jaegul Choo
Conference on Empirical Methods in Natural Language Processing (EMNLP), 2018, Brussels, Belgium, Long paper

Cut to the Chase: A Context Zoom-in Network for Reading Comprehension

- Sathish Indurthi, Seunghak Yu, **Seohyun Back** and Heriberto Cuayahuitl
Conference on Empirical Methods in Natural Language Processing (EMNLP), 2018, Brussels, Belgium, Short paper

A Multi-Stage Memory Augmented Neural Network for Machine Reading Comprehension

- Seunghak Yu, Sathish Indurthi, **Seohyun Back** and Haejun Lee
Proceedings of the Workshop on MRQA, Melbourne, Australia, 2018. Association for Computational Linguistics (ACL)

Text Summarization using Self-Attention and Self-Learning

- Jisang Yu, **Seohyun Back** and Jaegul Choo
Conference on Korea Software Congress (KSC2018), 2018, Pyeongchang, South Korea

Document Summarization Using Mutual Recommendation with LSA and Sense Analysis

- **Seohyun Back**, Dongwook Lee, Minji Park, Jinhee Park, Hyewuk Jung and Jeehyong Lee
Proceedings of Korean Institute of Intelligent Systems (KIIS) Spring Conference 2012 (Best Paper Award)

Moving Pattern based Bot Detection Model

- **Seohyun Back**, Jaekwang Kim and Jeehyong Lee
Proceedings of Korean Institute of Intelligent Systems (KIIS) Fall Conference 2011

PATENTS

Answer Appropriateness Judgement in Question Answering System (2017)

- **Seohyun Back**, Doohwa Hong, Jongyoub Ryu, Jiyeon Hong, Sungja Choi and Eunkyoung Kim
US (2018), WO (2018), KR P20170167775

Electronic Device and Method for Controlling External Device Thereof (2016)

- **Seohyun Back**, Jiwoong Choi, Yongseok Jang and Hyunah Oh
US US15/467054, CN (2018), WO PCT/KR2017/003103, KR P20160106116, EP 17786086.3

RESEARCH EXPERIENCE

- **Samsung Research AI Center (Language Understanding Lab)** Seoul, South Korea
Research Engineer (Supervisor : Dr. Seunghak Yu) *Sep 2016 - Present*
 - **Machine reading comprehension (Question Answering):** Proposed and developed a new deep neural network for QA tasks using external memory. Achieved multiple state-of-the-art results in popular QA competition leaderboards; MS MARCO (1st), TriviaQA (1st) and SQuAD (5th, single model). Also achieved state-of-the-art result on QUASAR and NarrativeQA datasets. Three papers accepted in ACL MRQA and EMNLP in 2018.
 - **Text summarization:** Reproduced several existing abstractive summarization models for research baselines.
 - **Voice assistant (Bixby):** Developed a rejection module to exclude non-processable commands.
- **Samsung Creative Lab (C-lab)** Seoul, South Korea
Research Engineer *Sep 2015 - Aug 2016*
 - **Indoor pointing system:** Customized GMM algorithm to predict indoor pointing using mobile device based on collected RF signal. The final project was acquired by Samsung Electronics Mobile Division.
 - **Machine learning library:** Developed own machine learning library for the python; Pytrain.
- **Information and Intelligence System Lab (IIS Lab)** Suwon, South Korea
Research Intern in Sungkyunkwan University *Jul 2011 - Jun 2012*
 - **Text summarization:** Proposed and developed a new extractive model. Best paper award in KIIS 2012.
 - **Auto playing bot detection:** Proposed and developed a method to detect auto playing bot in MMORPG.

WORK EXPERIENCE

- **Samsung DMC Research (Acoustic and Sound Technology Lab)** Suwon, South Korea
Software Engineer *Jul 2014 - Aug 2015*
 - **Commercial chatbot:** Developed chitchat model, crawler, dialog manager and customized intent classifier.
 - **Machine translation:** Integrated ASR, MT, TTS modules to make end-to-end system and built PoC.
 - **Dialog summarization:** Integrated ASR, dialog manager modules to make phone call summarization.
- **Samsung Software Membership** Suwon, South Korea
Software Engineer *Jan 2011 - Jun 2014*
 - **Large-scale quiz system:** Developed distributed quiz server systems with multiple connections.
 - **Web market framework:** Developed p2p market solution that consist of web server and Android application.
 - **Distributed streaming system:** Developed web browser p2p streaming system using web-rtc protocol.
- **Whoyster** Anyang, South Korea
Software Engineer, Co-Founder *Jul 2011 - Jun 2012*
 - **Document summarization solution:** Developed a tool for document analysis and extractive summarization.
 - **Funding:** Equipments and location was funded by National IT Industry Promotion Agency (NIPA).

TEACHING EXPERIENCE

- **Tashkent University of Information Technologies (TUIT)** Tashkent, Uzbekistan
Software Tutor, Volunteer *Jul 2013 - Aug 2013*
 - **Machine learning:** Teaching basics of machine learning models including KNN, D-Tree, NaiveBayes. (40 hours)
 - **Java & Android:** Teaching fundamentals of Java language and Android application. (40 hours)

HONORS AND AWARDS

- **Samsung Best Paper Award Gold* Prize:** Among 1,580 submissions, AI division, 1st prize (Fall 2018)
- **Samsung Best Paper Award Silver* Prize:** Among 1,580 submissions, AI division, accept rate 2.02% (Fall 2018)
- **Samsung Best Paper Award Bronze* Prize:** Among 1,580 submissions, AI division, accept rate 4.17% (Fall 2018)
- **SEC Annual Awards Bronze* Prize:** Best achievement award in R&D, Samsung Electronics (Fall 2017)
- **Super Rookie 1st* Prize:** Highest performer of new employee's project, Samsung Electronics (Spring 2015)
- **Elite Membership Student:** Selected one of the best members, Samsung Software Membership (Spring 2014)
- **SSM Best Project Award 1st* Prize:** Best achievement award, Samsung Software Membership (Fall 2013)
- **KIIS Best Paper Award:** Korean Institute of Intelligent Systems 2012 (Spring 2012)
- **Smart Contents Startup Company 1st* Prize:** Whoyster, National IT industry Promotion Agency (Fall 2011)
- **Smart Home Idea Award Triple 2nd* Prize:** Korea Association of Smart Home (Fall 2010)
- **SKKU Mobile App Competition Silver* Prize:** Sungkyunkwan University (Spring 2010)

SCHOLARSHIPS

- **Academic Scholarship:** Korea University (Fall 2017)
- **Seoul Accord Scholarship:** Selected student, Sungkyunkwan University (Fall 2011)
- **Jang Yeong-sil Scholarship:** Freshmen for outstanding academic records, Sungkyunkwan University (2007 - 2013)

EXTRACURRICULAR ACTIVITIES

- **Study and Open source Coding Club (SOCC)** Seoul, South Korea
Organizer, AI division educator *Dec 2013 - Present*
 - **Conducting AI studies:** Paper reading, Tensorflow programming, NLP/NLU, Statistical analysis.
 - **Organizing conference:** Planning and conducting IT conference every year with almost a hundred participants.
 - **Funding:** Conference cost and location was funded by NAVER LABS (Jun 2014 - Dec 2015).
- **The 3rd Software Maestro (Government-led training program)** Seoul, South Korea
Student in software engineering *Jun 2013 - Nov 2013*
 - **Software mentoring course:** Studied agile methods and information retrieval.

LANGUAGES

- **English:** Business **Korean:** Native