

# David Seunghyun Yoon

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<http://david-yoon.github.io>

## EDUCATION

**Seoul National University**, Seoul, Korea

*Ph.D. in Department of Electrical and Computer Engineering*

Aug. 2020

- Advisor: Professor Kyomin Jung
- Thesis: Learning to Rank Texts for Question Answering System Using Deep Neural Networks

**Seoul National University**, Seoul, Korea

*M.S. in Department of Electrical and Computer Engineering*

Feb. 2017

- Advisor: Professor Kyomin Jung

**Handong Global University**, Pohang, Korea

*B.S. in Electrical and Electronics Engineering, Mechanical Engineering*

Feb. 2006

- Dual Degree

## PROFESSIONAL EXPERIENCES

NLP Research Scientist at **Adobe Research**, San Jose, US

Jul. 2020

Research Scientist Intern at **Adobe Research**, San Jose, US

Sep. 2018 – Dec. 2018

- Sentence-level answer selection model for QA. Appeared in CIKM-19
- Multimodal speech emotion recognition. Appeared in ICASSP-19

Staff Engineer at **Samsung Research**, Seoul, Korea

Feb. 2006 – Mar. 2017

- Developed information retrieval based QA system.
- Developed (front-end, back-end) social service platform. Filed 2 patents.
- Developed concept-prototyping products. Filed 6 patents.

Representative of Employees, Hangajok Council at **Samsung Electronics**, Korea

Jan. 2012 – Jun. 2014

- Participated in labor-management consultation council

Trainer of Global New Employee Course at **Samsung Electronics**, Korea

Jan. 2011 – Jul. 2011

- Served as a trainer of Samsung “global new employee training course” (English)

## ACADEMIC ACTIVITIES

### Program Committee

NAACL (2019), ACL (2020), EMNLP (2019, 2020), AACL (2020)

AAAI (2020), INTERSPEECH (2019)

### Journal Reviewer

Information Processing and Management, 2020

IEEE Signal Processing Letters, 2020

### Teaching Assistant

Lab. Sentiment Analysis, BigCamp (Big Data Academy), **Big Data Institute**

2016, 2017, 2018, 2019

Programming Methodology, **Seoul National University**

Spring 2018

Topics in Computer and VLSI (Machine Learning), **Seoul National University**

Fall 2015

### Talks

Research in Natural Language Processing, **NVIDIA AI Conference**

Jul. 2019

QA-pair ranking algorithm and its applications, **Naver**

Aug. 2018

Advancement of the Neural Dialogue Model, **Fast Campus**

Jul. 2018

RESEARCH  
INTERESTS

**Question Answering (QA) System**

- Recently, I am interested in learning sentence representation for natural language processing (NLP) tasks, including QA. Appeared in ACL 2020.
- We present a graph neural network-based model that can detect supporting sentence for machine reading question answering (MRQA). Appeared in LREC 2020.
- We propose a hierarchical model for understanding lengthy text for QA. In addition, we develop a latent clustering method that analyses and uses topic information in the target dataset as additional information. Appeared in NAALC 2018, CIKM 2019.

**Understanding multimodal information**

- We present a novel attention mechanism over multimodal information. It iteratively hops over each modality to aggregate salient information for speech emotion recognition. Appeared in ICASSP 2019, ICASSP 2020.
- We show that usage of multimodal information using deep neural network-based model significantly improve the performance for speech emotion recognition task. Appeared in IEEE SLT 2018.

**AI for social good**

- We are trying to develop an algorithm that can be proactively used to prevent text-related problems in our society. Our first effort begin with developing a model that can detect the abusive language on Twitter (appeared in EMNLP workshop 2018). We further present research that can detect misleading news headlines (appeared in AAAI 2019, Disinformation, Misinformation, and Fake News in Social Media-Emerging Research Challenges and Opportunities, Springer 2020).

PUBLICATIONS

**Refereed Conference Publications**

- [14] J Shin, Y Lee, **S Yoon**, K Jung, “Fast and Accurate Deep Bidirectional Language Representations for Unsupervised Learning,” to appear in *Annual Meeting of the Association for Computational Linguistics (ACL)*, 2020.
- [13] **S Yoon**, F Deroncourt, DS Kim, T Bui, K Jung, “Propagate-Selector: Detecting Supporting Sentences for Question Answering via Graph Neural Networks,” in *Proc. of the International Conference on Language Resources and Evaluation (LREC)*, 2020.
- [12] H Kwak, M Lee, **S Yoon**, J Chang, S Park, K Jung, “Drug-disease Graph: Predicting Adverse Drug Reaction Signals via Graph Neural Network with Clinical Data,” in *Proc. of the Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*, 2020. (Oral Presentation, Acceptance Rate=21%)
- [11] **S Yoon**, S Dey, H Lee, K Jung, “Attentive Modality Hopping Mechanism for Speech Emotion Recognition,” in *Proc. of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2020. (Oral Presentation)
- [10] **S Yoon**, F Deroncourt, DS Kim, T Bui, K Jung, “A Compare-Aggregate Model with Latent Clustering for Answer Selection,” in *Proc. of the ACM International Conference on Information and Knowledge Management (CIKM)*, 2019. (Oral Presentation, Acceptance Rate=21%)
- [9] **S Yoon**, S Byun, S Dey, K Jung, “Speech Emotion Recognition Using Multi-hop Attention Mechanism,” in *Proc. of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2019. (Oral Presentation)
- [8] S Byun, **S Yoon**, K Jung, “Neural Networks for Compressing and Classifying Speaker-Independent Paralinguistic Signals,” in *Proc. of the IEEE International Conference on Big Data and Smart Computing (BigComp)*, 2019. (Oral Presentation)

- [7] S Yoon\*, K Park\*, J Shin, H Lim, S Won, M Cha, K Jung, “Detecting Incongruity Between News Headline and Body Text via a Deep Hierarchical Encoder,” in *Proc. of the AAAI Conference on Artificial Intelligence (AAAI)*, 2019. (Oral Presentation, Acceptance Rate=16%)
- [6] S Yoon, J Shin, K Jung, “Learning to Rank Question-Answer Pairs using Hierarchical Recurrent Encoder with Latent Topic Clustering,” in *Proc. of Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL)*, 2018. (Acceptance Rate=31%)
- [5] J Shin, Y Kim, S Yoon, K Jung, “Contextual-CNN: A Novel Architecture Capturing Unified Meaning for Sentence Classification,” in *Proc. of the IEEE International Conference on Big Data and Smart Computing (BigComp)*, 2018. (Oral Presentation)
- [4] S Yoon, P Estrada, K Jung, “Synonym Discovery with Etymology-based Word Embeddings,” in *Proc. of the IEEE Symposium Series on Computational Intelligence (SSCI)*, 2017.
- [3] S Yoon, M Sundar, A Gupta, K Jung, “Automatic Question Answering System for Consumer Products,” in *Proc. of SAI Intelligent Systems Conference. Springer, Cham*, 2016.
- [2] K Park, J Kim, J Park, M Cha, J Nam, S Yoon, E Rhim, “Mining the Minds of Customers from Online Chat Logs,” in *Proc. of the ACM International on Conference on Information and Knowledge Management (CIKM)*, 2015. (Acceptance Rate=21%)
- [1] S Yoon, K Lee, H Shin, “Media clips: Implementation of an intuitive media linker,” in *Proc. of IEEE International Symposium on Broadband Multimedia Systems and Broadcasting (BMSB)*, 2011.

#### Journal Publications and Book

- [3] S Byun\*, S Yoon\*, K Jung, “Comparative Studies on Machine Learning for Paralinguistic Signal Compression and Classification,” to appear in *Journal of Supercomputing*, 2020. (SCI, IF=2.157)
- [2] K Park, T Kim, S Yoon, M Cha, K Jung, “BaitWatcher: A lightweight web interface for the detection of incongruent news headlines,” in *Fake News, Disinformation, and Misinformation in Social Media: Emerging Research Challenges and Opportunities*, Springer, 2020.
- [1] S Yoon, E Rhim, D Kim, “Domain Question Answering System,” in *KIISE Transactions on Computing Practices*, 2015.

#### Peer Reviewed Workshops

- [5] H Lee, S Yoon, K Jung, “DSTC8-AVSD: Multimodal Semantic Transformer Network with Retrieval Style Word Generator,” in *Proc. of the AAAI Conference on Artificial Intelligence (AAAI) Workshop on DSTC8*, 2020.
- [4] J Nam, S Yoon, K Jung, “Surf at mediqa 2019: Improving performance of natural language inference in the clinical domain by adopting pre-trained language model,” in *Proc. of Association for Computational Linguistics (ACL) Workshop on BioNLP*, 2019.
- [3] S Yoon, S Byun, K Jung, “Multimodal Speech Emotion Recognition using Audio and Text,” in *Proc. of the IEEE Workshop on Spoken Language Technology (SLT)*, 2018.
- [2] Y Lee\*, S Yoon\*, K Jung, “Comparative Studies of Detecting Abusive Language on Twitter,” in *Proc. of Empirical Methods in Natural Language Processing (EMNLP) Workshop on Abusive Language Online*, 2018.

- [1] **S Yoon**, H Yun, Y Kim, G Park, K Jung, “Efficient Transfer Learning Schemes for Personalized Language Modeling using Recurrent Neural Network,” in *Proc. of the AAAI Conference on Artificial Intelligence (AAAI) Workshop on Crowdsourcing, Deep Learning and Artificial Intelligence Agents*, 2017.

#### HONORS AND AWARDS

<b>5th place</b> , National AI R&D Fake News Challenge, Ministry of Science and ICT, Korea	2017
<b>Samsung Scholarship for Graduate Study</b> , Samsung Electronics	2015, 2016
<b>Best Paper Presentation</b> , Korea Computer Congress	2014
<b>Samsung Award for Outstanding Performance</b> , Samsung Electronics	2013
<b>Google Conference and Travel Scholarships</b> ,	2019, 2020

#### INTERNATIONAL PATENTS

- [8] Y Kim, O Kwon, S Kim, H Oh, **S Yoon**, S Cha, J Lee, “Terminal apparatus, server and method of controlling the same,” *issued patent*, US 10,084,850, AU2014200631B2, CN104104766A, Sep. 25, 2018
- [7] J Nam, M Lee, M Koo, **S Yoon**, “Method of recommending application, mobile terminal using the method, and communication system using the method,” *issued patent*, US 9,247,376, Jan. 26, 2016
- [6] **S Yoon**, M Lee, “Method and apparatus for displaying photo on screen having any shape,” *issued patent*, US 9,049,383, Jun. 2, 2015
- [5] **S Yoon**, M Lee, M Koo, J Nam, “Method and apparatus for providing information and computer readable storage medium having a program recorded thereon for executing the method,” *issued patent*, US 8,958,824, Feb. 17, 2015
- [4] **S Yoon**, S Kim, “Method and apparatus for fast tracking position by using global positioning system,” *issued patent*, US 8,094,070, Jan. 10, 2012
- [3] Y Won, **S Yoon**, O Kwon, M Kim, H Oh, S Lee, S Cha, “User terminal device, information providing system, and method for providing information,” *pending patent*, US 14/511,506, Oct. 10, 2014
- [2] **S Yoon**, M Lee, M Koo, J Nam, “Apparatus and method for clipping and sharing content at a portable terminal,” *pending patent*, US 13/629,394, CN108133057A, EP3370172A1, WO2013048091A2, Sep. 27, 2012
- [1] K Kim, J Lee, W Park, H Shim, Y Park, M Lee, M Koo, **S Yoon**, J Nam, “Method and apparatus for connecting devices,” *pending patent*, US 13/452,766, EP2515505A1, WO2012144757A2, KR101894389B1, Apr. 20, 2012

#### KOREAN PATENTS

- [8] K Jung, **S Yoon**, J Shin, H Kwak, S Byun, “Artificial intelligence based dialog system and response control method thereof,” *issued patent*, KR 10-2059015, Dec. 18, 2019
- [7] Y Kim, O Kwon, S Kim, H Oh, **S Yoon**, S Cha, J Lee, “Terminal apparatus, server and method of controlling the same,” *issued patent*, KR 10-1832394, Feb. 20, 2018
- [6] **S Yoon**, J Nam, M Koo, M Lee, “Apparatus and method for collecting information of destination in portable terminal,” *issued patent*, KR 10-1914632, Oct. 29, 2018

- [5] **S Yoon**, M Lee, M Koo, J Nam, “Method and apparatus for providing information, and computer readable storage medium,” *issued patent, KR 10-1773167*, Aug. 24, 2017
- [4] J Nam, M Lee, M Koo, **S Yoon**, “Method for recommendation of application, mobile terminal thereof and communication system thereof,” *issued patent, KR 10-1747303*, Jun. 8, 2017
- [3] K Jung, J Shin, **S Yoon**, “Apparatus and method for evaluating sentence by using bidirectional language model,” *pending patent, KR1020190165712*, Dec. 12, 2019
- [2] E Rhim, J Kim, J Nam, **S Yoon**, K Park, J Park, M Cha, “Device and method for analyzing user emotion,” *pending patent, PCT/KR1020160058782*, May. 13, 2016
- [1] **S Yoon**, S Lee, O Kwon, M Kim, H Oh, Y Won, S Cha, “Method and apparatus for changing personal information,” *pending patent, KR1020130122222*, Oct. 14, 2013

#### SKILLS

Excellence in Programming Languages: Java, C++, Python  
 Excellence in Deep Learning Framework: TensorFlow, PyTorch  
 Fluency in front-end sever design: Apache Tomcat, Spring Framework, AWS, Linux  
 Familiarity with back-end sever design: NoSQL

#### REFERENCES

References available upon request.