David Seunghyun Yoon

Mobile: +82-10-2223-0901
E-mail: mysmilesh@gmail.com
http://david-yoon.github.io

EDUCATION

Seoul National University, Seoul, Korea
Ph.D. in Department of Electrical and Computer Engineering   Aug. 2020 (expected)

- 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 (dual)   Feb. 2006

PROFESSIONAL EXPERIENCES

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)

HONORS AND AWARDS

Google Conference and Travel Scholarships, for ICASSP-20 paper   2020

Google Conference and Travel Scholarships, for ICASSP-19 paper   2019

5th place, National AI R&D Fake News Challenge, Ministry of Science and ICT, Korea   2017

Samsung scholarship for graduate study, Samsung Electronics   2015, 2016

Best Paper Presentation, Korea Computer Congress   2014

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).

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

PUBLICATIONS

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.

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 Dernoncourt, 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 Con-*

ference 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 Dernoncourt, 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 *Porc. 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.

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 uing 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.

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

PATENTS
KOREAN

[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 sentense 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.