

Tak-Sung Heo

CONTACT INFORMATION	77, Seongsin-ro, Deogyang-gu, Goyang-si, Gyeonggi-do, 10483 Republic of Korea	MILITARY SERVICE	2014.07.15. ~ 2016.04.14. Army Sergeant, Honorable Discharge
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INTERESTS Interested in Natural Language Processing, Biomedical Natural Language Processing, and Deep Learning, especially about Natural Language Understanding.

EDUCATION **Hallym University**, Chuncheon-si, Gangwon-do, Republic of Korea **Mar. 2019 – Feb. 2021**
Department of Convergence Software
Master of Science (CGPA: 4.25/4.5)
Advisor: Professor Yu-Seop Kim
Research Area: Natural Language Processing, Biomedical Natural Language Processing and Deep Learning

Hallym University, Chuncheon-si, Gangwon-do, Republic of Korea **Mar. 2013 – Feb. 2019**
Major Department of Life Science and Double Major Department of Convergence Software
Bachelor of Science (CGPA: 3.53/4.5)

EXPERIENCED TASK/LEVEL	<ul style="list-style-type: none">• Sentence Classification	■■■■■
	<ul style="list-style-type: none">• Document Classification	■■■■■
	<ul style="list-style-type: none">• Sentence Similarity Measuring	■■■■■
	<ul style="list-style-type: none">• Disease Prediction	■■■□□
	<ul style="list-style-type: none">• Topic Change Detection	■■□□□

PROJECTS **• Building language resources and developing deep learning/natural language processing for automatic language disorder diagnosis** **Apr.2019 ~ Feb.2021**
Aim: Automating language analysis using conversation data from early childhood through high school.
Role: Used LDA and Sent2Vec to automate topic change detection, which is one of the methods of measuring the development of conversational ability.

• Development of an automatic prognosis prediction system for cerebral infarction through natural language processing based on deep learning **Jan.2019 ~ Feb.2021**
Aim: Development of a deep learning algorithm that can predict important clinical outcomes using text from electronic medical records.
Role: Applied a deep learning algorithm (CNN, LSTM, BERT) to the text of electronic medical record.

• Reliability and validity verification of automatic evaluation of machine translation and application to the evaluation of human translation **Jan.2019 ~ Jun.2019**
Aim: Establishing a system to verify the reliability and validity of automatic translation evaluation.
Role: Direct implementation of BLEU and METEOR, the metrics for evaluating the quality of machine translation.

AWARDS **• Excellence Award at KSC 2019 Undergraduate/Junior Paper Contest (2019)**
Korean Institute of Information Scientists and Engineers (KIISE)

- **2018 SW WEEK Contest Code Ground Gold Award (2018) – 1st place**
Hallym University, Chuncheon-si, Gangwon-do, Republic of Korea

SKILLS

- **Language:** Python, Java
- **Frameworks:** TensorFlow, Keras
- **Others:** Pycharm, Jupyter notebook

CONFERENCES

[ICMLA '21] Medical Code Prediction from Discharge Summary: Document to Sequence BERT using Sequence Attention

Tak-Sung Heo*, Yongmin Yoo*, Yeongjoon Park*, Byeong-Cheol Jo*, Kyoungsun Kim

The 20th IEEE International Conference on Machine Learning and Applications (ICMLA), 2021 [IEEE]

*These authors contributed equally

[ClinicalNLP '20] Various Levels of Representation for Predicting Stroke Prognosis using Text Records of Magnetic Resonance Imaging

Tak-Sung Heo, Chulho Kim, Jeong-Myeong Choi, Yeong-Seok Jeong, Yu-Seop Kim

The 3rd Clinical Natural Language Processing Workshop (ClinicalNLP), 2020 [EMNLP]

[HCLT '20] Korean sentence spacing correction model using syllable and morpheme information

Jeong-Myeong Choi, Byoung-Doo Oh, **Tak-Sung Heo**, Yeong-Seok Jeong, Yu-Seop Kim

The 32nd Annual Conference on Human & Cognitive Language Technology (HCLT), 2020 [KIISE]

[HCLT '20] Attention based multimodal model for Korean speech recognition post-editing

Yeong-Seok Jeong, Byoung-Doo Oh, **Tak-Sung Heo**, Jeong-Myeong Choi, Yu-Seop Kim

The 32nd Annual Conference on Human & Cognitive Language Technology (HCLT), 2020 [KIISE]

[KSC '19] Depression Judgment System based on Deep Neural Network

Seok-Ju Park, Byoung-Doo Oh, **Tak-Sung Heo**, Yu-Seop Kim

Proceedings of Korea Software Congress (KSC), 2019 [KIISE]

[KSC '19] The performance comparison of Korean text tokenizing and defining stopwords for sentiment analysis

Yeong-Seok Jeong, **Tak-Sung Heo**, Yu-Seop Kim

Proceedings of Korea Software Congress (KSC), 2019 [KIISE]

[KSC '19] Measurement of the number of topics in children's speech using LDA and Affinity propagation algorithm

Se-Eun Oh, **Tak-Sung Heo**, Yoonkyoung Lee, Yu-Seop Kim

Proceedings of Korea Software Congress (KSC), 2019 [KIISE]

[HCLT '19] Detection of Topic Changes in Child Speech Using Sent2Vec

Tak-Sung Heo, Yoonkyoung Lee, Yu-Seop Kim

The 31st Annual Conference on Human & Cognitive Language Technology (HCLT), 2019 [KIISE]

[HCLT '18] Prediction of the age of speakers based on Convolutional Neural Networks and polarization model

Tak-Sung Heo, Ji-Soo Kim, Byoung-Doo Oh, Yu-Seop Kim

The 30th Annual Conference on Human & Cognitive Language Technology (HCLT), 2018 [KIISE]

[HCLT '18] Automatic Analysis Service for Korean Speaking by Age

Ji-Eun Choi, Byoung-Doo Oh, **Tak-Sung Heo**, Yu-Seop Kim

The 30th Annual Conference on Human & Cognitive Language Technology (HCLT), 2018 [KIISE]

JOURNALS

[(KCI), *zfdsl* '21] **Die Applikabilität der automatischen Evaluation von Humanübersetzungen**
(English: The applicability of the automatic evaluation of human translations)

Hye-yeon Chung, Hye-jeong Myeong*, Hye-Rim Choi*, **Tak-Sung Heo***

***These authors contributed equally**

Zfdsl, Aug.2021 [KDSL]

[(SCIE), *Symmetry* '21] **A Novel Hybrid Methodology of Measuring Sentence Similarity**

Yongmin Yoo*, **Tak-sung Heo***, Yeongjoon Park*, Kyoungsun Kim

***These authors contributed equally**

Symmetry, Aug.2021 [MDPI]

[(SCIE), *Appl. Sci.* '21] **Global and Local Information Adjustment for Semantic Similarity Evaluation**

Tak-Sung Heo, Jong-Dae Kim, Chan-Young Park, Yu-Seop Kim

Applied Sciences, Mar.2021 [MDPI]

[(SCIE), *Sens. Mater.* '21] **Prediction of Atrial Fibrillation Cases: Convolutional Neural Networks using the Output Texts of Electrocardiography**

Tak-Sung Heo, Chulho Kim, Jong-Dae Kim, Chan-Young Park, Yu-Seop Kim

Sensors and Materials, Jan.2021 [MYU]

[(SCIE), *Sci. Rep.* '21] **Deep learning based prediction of prognosis in nonmetastatic clear cell renal cell carcinoma**

Seok-Soo Byun, **Tak-Sung Heo**, Jeong-Myeong Choi, Yeong-Seok Jeong, Yu-Seop Kim, Won-Ki Lee, Chulho Kim

Scientific Reports, Jan.2021 [Nature]

[(SCIE), *J. Intell. Fuzzy Syst.* '21] **Sentence Similarity Evaluation using Sent2Vec and Siamese Neural Network with Parallel Structure**

Tak-Sung Heo, Jong-Dae Kim, Chan-Young Park, Yu-Seop Kim

Journal of Intelligent and Fuzzy Systems, Jan.2021 [IOS Press]

[(SCIE), *J. Pers. Med.* '20] **Prediction of Stroke Outcome Using Natural Language Processing-Based Machine Learning of Radiology Report of Brain MRI**

Tak-Sung Heo, Yu-Seop Kim, Jeong-Myeong Choi, Yeong-Seok Jeong, Soo-Young Seo, Jun-Ho Lee, Jin-Pyeong Jeon, Chulho Kim

Journal of Personalized Medicine, Dec.2020 [MDPI]

[(KCI), *Journal of Translation Studies* '20] **Application of Automatic Evaluation to Human Translation**

Bo-Young Kim, Yeon-Joo Kim, Seung-Hee Seo, Shin-Ae Song, Jin-Hyun Lee, Kyoung-Ah Jeon, Ji-Soo Choi, Seung-Bin Hong, Hye-yeon Chung, **Tak-Sung Heo**

Journal of Translation Studies, Mar.2020 [KATS]

SUMMARY

Tak-Sung Heo is a researcher and developer specializing in natural language processing. Interested in automating various problems through natural language processing techniques, especially natural language understanding. Good at Python programming language and TensorFlow framework for deep learning. Still doing a lot of studies so that it can be applied in real life.