

# Yongshin Kim



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<http://yong-shin.github.io>

## RESEARCH INTEREST

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NLP, Voice Synthesis, Deep Learning, Emotion Recognition, Human-Computer Interaction

## EDUCATION

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Korea Advanced Institute of Science and Technology (KAIST)

M.S. in Data Science

Aug. 2020 – Jul. 2022

Advisor: Uichin Lee

Handong Global University (HGU)

B.A. Mathematics and Statistics & B.A. Management (Double-Major)

Mar. 2014 – Jul. 2020

*Summa Cum Laude*

## PUBLICATIONS

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[1] Lee, P., Kim, H., **Kim, Y.**, Choi, W., Zitouni, M. S., Khandoker, A., ... & Jeong, Y. (2022). Beyond Pathogen Filtration: Possibility of Smart Masks as Wearable Devices for Personal and Group Health and Safety Management. *JMIR mHealth and uHealth*, 10(6), e38614.

[2] SeungLin Yang, **Yongshin Kim**, Doohee Chung, (2019) “*Nonlinear Relationship Between Technological Entrepreneurship and National Competitiveness: The Moderation Effect of Innovation-driven Economy*”, *Journal of Technology Innovation*, 27(3), 113-142. (KCI)

[3] Haejun Jung, **Yongshin Kim**, Doohee Chung, (2019) “*The Effect of Intellectual Property-Based Startups on Employment*”, *Innovation Studies*, 14(4), pp119-154. (KCI)

## EXPERIENCE

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### Work Experience

Machine Learning Researcher

Okestro

Sept. 2022 – Present

### Academic Experience

Interactive Computing Lab

KAIST

Advisor: Uichin Lee

Aug. 2020 – Jul. 2022

Technological entrepreneurship Lab

HGU

Advisor: Doohee Chung

Aug. 2018 – Jul. 2020

Mathematics and Statistics major

HGU

Advisor: Heonjoo Kim

Aug. 2019 – Feb. 2020

Business Information Technology Practice (Teaching Assistant)

Advisor: I-Soo Joe

HGU

Mar. 2018 – Jul. 2018

Principles of Accounting (Tutoring for foreigner)

Advisor: Hyunmo Sung

HGU

Sept. 2017 – Dec. 2017

## Other Experience

Mentor, Vision in Calling | HGU

Mar. 2020 – Jul. 2020

Director, Dep. of General Affairs, Student Government | HGU

Dec. 2019 – Jul. 2020

Director, Technological entrepreneurship Lab | HGU

Jul. 2019 – Feb. 2020

Executive, Residential College of International Dormitory | HGU

Jul. 2019 – Feb. 2020

Manager, Handong English Camp | HGU

Mar. 2018 – Sept. 2018

Instructor Education Certification for foreigners | HGU

Mar. 2018 – Jun. 2018

Accountant, International freshmen orientation | HGU

Mar. 2017 – Aug. 2019

English Teacher, Global Vision Christian School | GVCS)

May. 2017 – Sept. 2017

## PROJECTS

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### Research Projects

Baseline of SWOT Classification

Okestro

We present baseline indicators by introducing BERT model, which is widely used in the natural language processing field, for the first time in SWOT analysis. Starting with this approach, the baseline indicators of this study are expected to be useful for business intelligence cloud platforms that can be easily accessed by all stakeholders through deep learning of SWOT analysis.

Sept. 2022 – Dec. 2022

Automation of Company SWOT Analysis Using Sentence BERT

Okestro

This study presented SWOT Sentence BERT as an AIaaS model that can intellectually automate company SWOT analysis. The SWOT Sentence BERT is a sentence embedding model that is learned through SWOT text data processed in the form of natural language inference task. In order to automate SWOT analysis, we applied K-Means clustering algorithm to make clusters with sentence embeddings and classified sentence embeddings based on their predicted clusters.

Sept. 2022 – Dec. 2022

Emotion Recognition (Master Thesis)

KAIST

In this study, we propose a method for predicting the emotions of the speaker in the naturalistic conversation using a speaker encoder and counterpart encoder composed of CNN-LSTM deep learning networks. We used emotion-related data called K-EmoCon collected during the debate process to empirically evaluate our model. The results showed that the counterpart's speech and the physiological signals had a positive impact on predicting the speaker's emotions.

Oct. 2021 – July. 2022

Video & Speech synthesis

Deepbrain AI

We produced AI Human through voice conversion using StarGAN-VC and image synthesis using FSGAN. Through the process of analyzing various voice conversion models(CycleGAN, StarGAN-VC, StarGAN-VC2), we improved the quality of voice conversion by analyzing loss terms, number of domain classes, batch size, and iteration. In addition, the average similarity between the source video and the target video was used to facilitate video synthesis.

Sept. 2021 – Oct. 2021

Digital Therapeutics (DTx)

KAIST

We develop fundamental technologies of data-driven digital therapeutic, receptivity optimization for mobile digital therapeutic development. Furthermore, we analyze the effectiveness of digital treatments by applying causal analysis.

Aug. 2020 – Sept. 2021

## Smart Mask

We review existing types of smart masks and study what sensor data can be collected through smart masks. Also, we develop emotional and stress monitoring algorithms through smart mask sensor data.

KAIST

Jan. 2021 – July. 2022

## Contact Tracing

We develop risk scoring algorithms that can be used for analysis to detect BLE contact between client devices. In addition, the need to introduce a place beacon is increasing as the number of cases infected with COVID increases just by staying in the same place without having to contact the confirmed patient directly. We also identify the coverage that place beacon can effectively send and receive signals with client devices.

KAIST

Aug. 2020 – Dec. 2020

## Course Projects

[KSE531] Human-Computer Interaction: Theory and Design

“Step-by-step Self-reliant Thinking with CAN(Communicative Art Network)”

KAIST

Spring 2021

[KSE526] Analytical Methodologies for Big Data

“EFNet: Attention based CNN-LSTM Networks for Energy Usage Forecasting with External Factors”

KAIST

Fall 2020

[KSE801] Special Topics in Intelligent Service Engineering (Sensor Data Science)

Emotion recognition with mobile phone & wearable sensor data

KAIST

Fall 2020

## AWARDS AND HONORS

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Best Paper Award (Korean Institute of Information Technology)

2022

President Award (Top 10 World-changing Projects) | HGU

2020

Best Paper Award (National Technology Policy Paper Competition) | IITP & KOTIS

2019

Best Paper Award (Korea Society for Innovation Management & Economics Paper Competition)

2019

Academic Top Scholarship for Seniors | HGU

2019

Academic Excellence Scholarship for Juniors | HGU

2018

Academic Excellence Scholarship for Sophomores | HGU

2017

Academic Excellence Scholarship for freshmen | HGU

2016

## CONFERENCES

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[1] **Yongshin Kim**, Sanghyeon Jung, Chanjae Lee, Jinhee Kim, “*Baseline of SWOT Classification using Bidirectional Encoder Representations from Transformers for Business Intelligence Cloud Platform*”, Korean Institute of Information Technology, 2022 Fall Conference, Jeju Island, Korea (2022)

[2] **Yongshin Kim**, Panyu Zhang, Gyuwon Jung, Hee-pyung Kim, Uichin Lee, “*Causal Analysis of Observational Mobile Sensor Data: A Comparative Study*”, Korea Computer Congress, 2021 Spring Conference, Jeju Island, Korea (2021)

[3] Haejun Jung, **Yongshin Kim**, Doohee Chung, “*The Effect of Intellectual Property-Based Startups on Employment*”, Korea Technology Innovation Society, 2019 Fall Conference, Jeju Island, Korea (2019) – Best Paper Award

[4] SeungLin Yang, **Yongshin Kim**, Doohee Chung, “*Nonlinear Relationship Between Technological Entrepreneurship and National Competitiveness: The Moderation Effect of Innovation-driven Economy*”, Korea Society for Innovation Management & Economics, 2019 Spring Conference, Daejeon, Korea (2019) – Best Paper Award

## COMPUTER SKILLS

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Python (Intermediate), R (Intermediate), SPSS (Intermediate), Excel (Intermediate), SQL (Basic), STATA (Basic), AMOS (Basic), SAS (Basic)

Updated 1 December, 2022