# Boram Lee

https://boram-emma.github.io/

Email: boramlee0418@gmail.com
Mobile: +1-240-263-8441


## Education

- **University of Maryland, College Park** — College Park, MD
  *Master of Data Science* — *Aug 2024 – May 2026*
- **Korea University** — Seoul, Republic of Korea
  *Master of Engineering in Brain and Cognitive Engineering; GPA: 4.21)* — *Mar 2015 – Feb 2017*
- **Korea University** — Seoul, Republic of Korea
  *Bachelor of Science in Nursing; GPA: 3.61)* — *Mar 2011 – Feb 2015*

## Experience

- **AI Medical Innovation Center, Hallym University** — Chuncheon, Republic of Korea
  *Data Scientist* — *Mar 2024 – July 2024*
  - **ELF (Elderly Friends)**: **Mobile AI voice assistance application** to manage health schedules and mental well-being of Korean seniors through conversations with an AI assistant; **Developed the AI conversation platform** by integrating STT (Speech-to-Text), ChatGPT, and TTS (Text-to-Speech) for automated interactions. Also, **Designed and implemented the database architecture** for efficient system operation. Conducted sentiment analysis on conversation data from the SeniorCare mobile platform.
- **KSOLUTIONS Corp.** — Seoul, Republic of Korea
  *Data Manager* — *Oct 2023 – Dec 2023*
  - **Industrial security CCTV data warehouse**: CCTV data for an AI-powered industrial security and surveillance detection system; Designed and managed pre-processing pipelines for CCTV video data warehouse. Supervised a team of 12 data research assistants, ensuring the acquisition of high-quality pre-processed dataset.
- **LG Uplus** — Seoul, Republic of Korea
  *Project Manager* — *Mar 2019 – Oct 2022*
  - **AI Contact Center (AICC)**: Callbot and chatbot-based customer support platform; Designed AICC by researching deep learning-based AICC modules and analyzing business scenarios. Also, developed the AICC capable of handling 200 simultaneous consultations. Achieved an average response accuracy of 92.5% and reduced response time to 2.2 seconds.
  - **Real Time STT (RT-STT) data warehouse**: Led the development of an RT-STT data warehouse for advanced customer consultation analysis, integrating 320 recording channels, 640 STT channels, and 22 physical servers with the legacy system.
  - **AI-based chatbot platform for customer consultation**: Designed and managed an AI-based chatbot platform for customer consultation, enhancing intent classification systems and scenarios with hybrid (rule- and deep learning-based) algorithms. Achieved an average intent classification accuracy of 91.4%, reduced response time to 1.3 seconds, and increased entry rates by 11.2% through the development of six input channels. Oversaw chatbot system operations and executed periodic updates three times annually. [Chatbot Web Link]
  - **STT post-correction module**: Siamese Neural Network (SNN)-based post-processing correction module for STT to further enhance error correction; Developed the modularized system for error detection and correction. Achieve an average error detection accuracy of 95.65% and error correction accuracy of 73.02% .

  *Researcher for Technical Research and Assessment* — *May 2017 – Mar 2019*
  - **Research for deep learning algorithms**: Presented findings and trends of deep learning techniques in seminars, reviewing Reinforcement Learning (RL)-based sentiment analysis and custom TTS.
  - **Proof of Concept (POC) for Natural Language Processing (NLP) module**: Evaluated the performance of deep learning-based NLP module and assessed commercialization feasibility.
- **Korea University** — Seoul, Republic of Korea
  *Research Assistant in College of Nursing* — *Mar 2012 – Feb 2014*
  - **Research – Fundamentals of Nursing**: Research on a computer decision making support system for patients pain management.

## Projects

- **Alzheimer Classification**: Developed a classification model for identifying four stages of Alzheimer's disease using transfer learning techniques on MRI data. Improved model accuracy by leveraging pre-trained neural networks.
- **Physiological Data Analysis**: Conducted causality analysis on physiological time-series data, focusing on relationships between EEG and ECG signals. Applied advanced statistical methods to uncover interdependencies. *Journal Publication

## Publications

- Won, D.O., **Lee, B.R.**, Seo, K.S., Kim, H.J., & Lee, S.W. (2019). Alteration of Coupling between Brain and Heart induced by Sedation with Propofol and Midazolam. *PLOS ONE*, 14(7), 1-20. [PDF Link]
- **Lee, B.R.**, Won, D.O., Seo, K.S., Kim, H.J., & Lee, S.W. (2017, January 9-11). *Classification of wakefulness and anesthetic sedation using combination feature of EEG and ECG* [Paper presentation]. 2017 5th International Winter Conference on Brain-Computer Interface (BCI), Gangwon, Republic of Korea. [PDF Link]

## Patents

- **Lee Boram**, & Jeon Byeongjin. 2023. The method and apparatus for classifying the intent of an utterance. KR20230085406A, filed December 7, 2021, and issued Jun 14, 2023. [Google Patent Link]
- **Lee Boram**, & Lee Jongeon. 2021. Apparatus and method for correcting error of speech recognition. KR102324829B1, filed December 2, 2019, and issued November 11, 2021. [Google Patent Link]
- **Lee Boram**, Lee Seongwhan, and Won Dongok. 2018. Apparatus and method for monitoring depth of sedation. KR101893596B1, filed December 22, 2016, and issued August 31, 2018. [Google Patent Link]

## Certificate

- **SQL Development certification,** obtained from the Korea Data Agency
- **Advanced Data Analytics Semi-Professional (ADsP) certification,** obtained from the Korea Data Agency
- **TensorFlow developer certificate,** obtained from Google
- **Registered Nursing certification,** obtained from the Korean department of Health and Welfare

## Skills And Technique

- **Languages**: Python, SQL, R programming, MATLAB **Technologies**: AWS, GCP, Docker