

# Grace (Hae-Soo) Esther Lee

Los Angeles, CA • 310-913-6962 • [glee8804@gmail.com](mailto:glee8804@gmail.com) • <http://joyce04.github.io>

---

## EDUCATION

### University of California, Los Angeles

Ph.D in Computer Science

CA, USA

Sep 2020-Present

### Seoul National University

Master's in Computer Science, GPA:4.0/4.3

Seoul, South Korea

Feb 2020

### University of Illinois, Springfield

Bachelor of Arts in Computer Science, Online Degree, GPA: 3.94/4.0

Springfield, Illinois

Jan 2016 -

### Johns Hopkins University

Bachelor of Arts in Public Health, GPA: 3.15/4.0

Baltimore, Maryland

Sep 2007 - May 2012

## RESEARCH EXPERIENCE

### AITRICS, AI-driven Drug Discovery Team (<https://www.aitrics.com/>)

Research Engineer Intern

Seoul, South Korea

April 2020 - July 2020

- Implemented data extraction, preprocess, and machine learning training pipelines for toxicity prediction
- Applied Bayesian Graph Neural Network models for chemical property prediction and toxicity prediction

### Seoul National University, Database System Lab ([dbs.snu.ac.kr](https://dbs.snu.ac.kr))

Graduate Researcher

Seoul, South Korea

Jan 2018 - Present

- Participated in the following projects: Drug-Drug Interaction Prediction via Machine Learning, Drug Repurposing Through Drug and Adverse Effect Pair Extraction from Published Literature, Introducing NLP technologies into the Drug Regulatory System in Korean.
- Designed and implemented feature analysis and graph models to predict the possibility of drug-drug interactions and types of interactions.
- Developed and experimented with diverse document clustering approaches(LDA, K-means, Deep Embedded Clustering) to obtain topic relevant documents.
- Built a knowledge base construction pipeline for drugs and adverse effects from accumulating published literature data(text, table, XML) to entity recognition(CNN-LSTM, GloVe, ELMo).

## PUBLICATIONS

Hwnag, D., Lee, G., Jo, H., Yoon, S., & Ryu, S. A benchmark study on reliable molecular supervised learning via Bayesian learning. *ICML*. 2020.

Minji Sohn, Grace Lee, Hayoung Jang, Sangha Park, Jungmi Oh, Bongki Moon. Proposing the possible applications of artificial intelligence for the drug approval and review process. Poster presented at: Korean College of Clinical Pharmacy; 2019 Nov 14-16; Yeosu, South Korea

## PROFESSIONAL EXPERIENCE

### Samsung SDS, Agile Core Team ([www.samsungsd.com](https://www.samsungsd.com))

Software Engineer

Seoul, South Korea

Aug 2014 - Dec 2017

NexShop Micro Service Architecture, Remote Management System and Marketing Display Player

Jan 2017 - Dec 2017

- Developed a web player application for Tizen display, respective management server, and related APIs with continuous integration and testing environment.

- Served as an anchor of the project.

Daegu Bank Fido Android Library

Aug 2016 - Dec 2016

- Developed android library and API server for Daegu Bank application utilizing Fido(Fast IDentity Online) alliance.

Wellness, Mobile Application for Diabetic Patients

Mar 2016 - July 2016

- Developed a mobile application and respective server system for diabetic patients to monitor health conditions such as daily diets, glucose levels via Bluetooth connection to a glucose meter.

Electronic Health Record Solution

Nov 2014 - Feb 2016

- Develop common library and Delphi components for all hospital departments including patient time-line charts and medical alert components.

**Samsung Convergence Software Academy**

Seoul, South Korea

Trainee for Computer Science Track

Dec 2013 - June 2014

- Awarded as top final four for the project competition with the real-time health monitoring service system with a connected mobile application for care providers and patients with chronic illness.

## TEACHING EXPERIENCE

Seoul National University Big Data Academy, Teaching Assistant

Seoul, South Korea

July - September 2019, Nov 2018

- Taught Database systems classes and hands-on programming sessions with MySQL, SQLite, MongoDB, Python, Numpy, and Pandas.
- Awarded Best TA award for DS(Data Scientist) Training for Samsung Electronics 4th Session (Dec 2019)

## PERSONAL PROJECTS

Graph-based Active Learning for Entity Extraction

May 2019 - Feb 2020

- Implemented and experimented with diverse active learning strategies along with CNN-LSTM models for entity recognition.
- Proposed a novel graph format for graph-based centrality ranking approaches for active learning.
- Master's thesis

Medical Data and Machine Learning Group, SeoulAI

Jan 2019 - Feb 2020

<http://seoulai.com/project/medical-data-and-machine-learning>

- Analyzed and experimented with diverse definitions of Sepsis and patient cohorts with MIMIC-III.
- Analyzed supplemental sources of medical data for more reliable accumulation and prediction.

Interactive System of Document Clustering

Sep 2018 - Feb 2019

[https://github.com/joyce04/electron\\_visualization](https://github.com/joyce04/electron_visualization)

- Developed a user support system of comparing document clustering algorithms of Latent Dirichlet Allocation, K-means, and Deep Embedded Clustering to extract target clusters for relation extraction.
- *Publication in progress*

Football Analysis (Winning Goal, Key Performance Indicators)

Dec 2017 - Aug 2018

[https://github.com/madigun697/football\\_data\\_analysis.git](https://github.com/madigun697/football_data_analysis.git)

- Collected football data via crawling and converting PDF files and analyzed the impact of the first goal of winning and trends of goals time through statistics and machine learning

North Korean Elite Network Analysis

Mar 2018 - June 2018

- Collected information on North Korean Officials via crawling and an overall network of the society applying different weights on education, career history, family and more

## **SCHOLARSHIPS & AWARDS**

Merit-based Scholarship, Seoul National University

Fall, 2018. Spring, 2019. Fall, 2019

NRT MENTOR Fellowship

Fall 2020 - Spring 2021

## **TECHNICAL SKILLS**

|                       |  |
|-----------------------|--|
| Programming/Languages | Python(2017-Present), Flask(2018-), Flutter(2020-Present), Electron(2016-2018), Java6-8(2014-Present), Android(2016-2017), Javascript ES6(2017), Redux(2017), Spring(2014-2017), D3(2018-Present), AWS(S3, EC2), Docker, Mockito(2016-2018), Node.js(2016-2017), Enjoy unit tests and functional tests |
| Database Management   | Oracle RDBMS(2014-2015), MariaDB(2016-Present), PostgreSQL(2018-Present), MongoDB(2017-Present), SQLite(2018), MySQL(2018-Present)   |
| Machine Learning      | Pytorch(2019-Present), networkx(2018-Present), Keras(2017-Present), Tensorflow(2017-Present), nltk, gensim, spaCy  |
| Tools                 | DataGrip, IntelliJ, pyCharm, Eclipse, Slack, JIRA, Jenkins, Git, Android Studio, GoCI, Jupyter Notebook, Visual Studio Code, Webstorm  |