Jungin Choi

Seoul, 08826, Republic of Korea •
(+82) 10-8456-1024 •
serimtech07@snu.ac.kr •
Github •

EDUCATION

Seoul National University (SNU) *Mar 2017 – Aug 2022*
B.S. in **Statistics** and **Mathematics** (Double Major)
Overall GPA: 3.93 / 4.30, *Summa Cum Laude* Expected

Korea Science Academy of KAIST (KSA) *Mar 2014 – Feb 2017*
Secondary Education in Science (1 year early admission)

RESEARCH EXPERIENCE

High Dimensional Massive Data Analytics Laboratory, SNU *May 2021 – Present*
Undergraduate Researcher, Advisors: Woncheol Jang, Seok-Oh Jeong, and Dongseok Choi

- Development of an R Package 'multiLocalFDR'
  - Devised a fast semiparametric mixture method for multi-dimensional local-FDR estimation
  - Reduced the runtime to 1/10 of the runtime of the previous model by smoothing subgradient-based convex optimization in MLE estimation
  - Conducted case studies in antibody-associated vasculitis pathway and ophthalmologic microarray data

Bioinformatics and Biostatistics Laboratory, SNU & SNU Hospital *Dec 2020 – Present*
Undergraduate Researcher, Advisor: Taesung Park

- Development of a Proteomic Multimarker Panel for Pancreatic Cancer
  - Selected protein markers by SHAP value method that increased cancer diagnostic AUC up to 90%
  - Developed an interpretable Deep Neural Net model using Multi-Reaction Monitoring data for pancreatic cancer prediction
  - Embedded a partially connected protein layer to simultaneously learn the weight of genes in protein

Stan Korea (A probabilistic programming language for Bayesian inference) *Dec 2019 – Feb 2021*
Research Assistant, Developer

- Prediction of Naval Ship Engine Failure *(Client: Korean Navy)* [Link]
  - Implemented hierarchical Gaussian process and solved identification issue through reparameterization
  - Selected as an official Stan case study in Stan Forums
- Stan Case Studies *(*Gaussian process [Link], population dynamics ODE [Link], sports analytics [Link])

Bayesian Statistics Research Laboratory, SNU *Jun 2020 – Sep 2020*
Undergraduate Researcher, Advisor: Jaeyong Lee

- Bayesian Epidemic Model Under Lockdown
  - Applied Bayesian inference in the stochastic ODE regression model for prediction of COVID-19 cases
  - Improved posterior predictive check performance by time-dependent lockdown parameters

WORK EXPERIENCE

Data Scientist, Intern – NAVER *Aug 2021 – Present*

Full-time Paid Intern, Primary Language: Python, Scala

- Search Quality Enhancement

- Devised Probabilistic Graphical Model and Neural Network Click Model for search quality enhancement based on 3 billion+ daily user logs in **NAVER, Korea's most prominent search engine company**
- Increased the log-likelihood of the click models by 4.2% by applying forgetting rate in the EM algorithm
- Participated at the DEVIEW Conference as a contributor in click model optimization

PUBLICATIONS & PRESEANTATIONS

Software

multiLocalFDR: Open-source R package hosted as a GitHub repository [Link]

Working Papers

[1] **Jungin Choi**, Seok-Oh Jeong, Woncheol Jang, and Dongseok Choi. multiLocalFDR: Multi-dimensional Local-FDR Estimation Using a Semiparametric Mixture Method. *Journal of Statistical Software* (under preparation)

[2] **Jungin Choi**, Joonsun Baek, Suhyeon Baek, and Geunhee Cho. Optimization of Relevance Parameter and Forgetting Rate in Click Model for Web Search. (under preparation)

[3] Hyunji Moon, **Jungin Choi**, and Seoyeon Cha. A multi-state Markov model to separate the latent deterioration process from the maintenance effect on reliability engineering of ships. 2021 [arXiv Link]

Presentations

[1] Joonsun Baek, Suhyun Baek, Geunhee Cho, **Jungin Choi**, Deokmin Ham, and Hyjun Kim. "User Behavior Understanding for Search Quality Enhancement". DEVIEW 2021. Online. [Oral & Poster] [Link] *Oct 2021*

[2] Hyunji Moon and **Jungin Choi**. "Predicting Korean Naval Ship Engine Failure with Hierarchical Gaussian Process". Official Stan Case Studies – Volume 7 (2020). Stan Forums. Online [Link] *Sep 2020*

[3] **Jungin Choi**, Jaegun Lee, and Yunju Park, "Modeling of Population Movements on the Occurrence of Infectious Diseases Using Discrete Time Markov Chain". International Conference on Pure and Applied Mathematics 2016. London. UK. [Oral & Poster] *Jul 2016*

[4] Ji-Woong An and **Jung-in Choi**. (2015). "Word Recommendation Program Based on Korean Rhyme.", *Journal of Korea Multimedia Society* 18-(2). The Autumn Conference of Korea Multimedia Society. Daegu. Korea. [Poster] *Nov 2015*

HONORS & SCHOLARSHIPS

Dean's List, College of Natural Sciences at SNU *Fall 2017 / Fall 2019 / Spring 2020*

Korea Presidential Science Scholarship, Korea Student Aid Foundation *2017 – 2020*
Received full tuition and $4,000 annual stipend (110 students nominated nationwide)

Hansung Nobel Gifted Scholarship in Science, Hansung Sonjaehan Scholarship *2015 – 2016*
Received $4,500 annual stipend (150 students nominated nationwide in Natural Science section)

Best Paper Award for 2015 Autumn Conference, Korea Multimedia Society *2015*

LEADERSHIP

Student Council of Seoul National University *2019 – 2020*
Optimized and adjusted the intervals of SNU shuttle buses by survival analysis of bus arrivals

Vice-president of Student Council in the Department of Statistics *2018*

President of Junior Class Student Council in the Department of Statistics *2017*

EXTRACURRICULAR

Science Educational Volunteer Corps (Leader of Math Mentoring Team), SNU *2017 – 2019*
Designed and provided science tutoring programs to students in rural regions

International Exchange Program in Kamnoetvidya Science Academy, Rayong, Thailand *2016*

2015 Oxford Summer Courses, University of Oxford *2015*
Computer Science tutoring from the Department of Computer Science

PROGRAMMING SKILLS

Language: Proficient - Python, R, C, C++, Java, Stan, Scala, Bash / Learning - MySQL
Big Data: Proficient - Hadoop, Spark
Document: Proficient - LaTeX