# SE YOON LEE

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## EDUCATION

**Ph.D. Statistics, Texas A&M University, College Station, U.S.A.** *May 2021*
Advisor: Prof. Bani K. Mallick Overall GPA: 3.78/4
**M.A. Applied Statistics, Yonsei University, Seoul, South Korea** *Feb 2016*
Advisor: Prof. Joseph H.T. Kim Overall GPA: 3.86/4
**B.S. Mathematics, Yonsei University, Seoul, South Korea** *Feb 2013*
Graduated with the 2nd highest class rank out of 43 students Overall GPA: 3.84/4
Grades for core mathematics courses: **[Click]**

## RESEARCH INTEREST

**Clinical Trials, Bayesian Adaptive Design, Group Sequential Design, Survival Analysis, Machine Learning (Artificial Intelligence & Deep Learning)**

## DISSERTATION AND THESIS

- "Bayesian Hierarchical Modeling: Application towards Complex and High-dimensional Data," *Texas A&M University*, Doctoral Dissertation ; **[Link]**
- "Exponentiated generalized Pareto distribution: an alternative to the generalized Pareto distribution," *Yonsei University*, Master's Thesis ; **[Link]**

## WORK EXPERIENCE

**Johnson & Johnson.** *Apr 2022 – present*
***Senior Biostatistician*** Irvine, CA

- Developed Bayesian adaptive clinical trials designs to evaluate the safety and effectiveness of medical devices (Bayesian basket trial designs, power-prior designs, Bayesian group sequential designs, etc).
- Provided advanced biostatistical supports (e.g., power analysis, primary endpoint analyses, clinical trial designs, etc) to clinicians with main focus on cardiovascular diseases.
- Led working groups of experts (Machine Learning/Statistical Methodology & Consulting) as leader
- Led the development of basket trial designs and authored Statistical Analysis Plan for SECURE, a Post-Market Study [**ClinicalTrials.gov ID: NCT04750798**]

**Amgen Inc.** *May 2021 – Apr 2022*
***Scientist - Modeling & Simulations*** Thousand Oaks, CA

- Developed Pharmacokinetics/Pharmacodynamics/Cox hazard regression models for Phase I cancer clinical trials of AMG160 to treat a metastatic castration-resistant prostate cancer (mCRPC).
- Researched machine learning and deep neural network models to fit single dose data for subsequent simulation of multiple dosing scenarios.

**Novartis International AG.** *May 2020 – Aug 2020*
***Biostatistics Summer Intern*** East Hanover, NJ

· Developed a Bayesian linear mixed effect model for patients who have wet age-related macular degeneration to predict best-corrected visual acuity over the maintenance phase and suggest a personalized dose regimen. The proposed model has been trained by actual patients' data from HAWK and HARRIER studies (Number of patients is around 1,800 patients). ; **[Abstract]**

**EMD Serono Inc. Merck KGaA.** *May 2019 – Aug 2019*
***Pharmacometrics Summer Intern*** Billerica, MA

· Developed a Bayesian adaptive clinical trial design in Phase I cancer clinical trials, which aimed at utilizing grade information from the Common Toxicity Criteria for Adverse Events provided by the National Cancer Institute. ; **[Abstract]** ; **[Poster]**

**Texas A&M University.** *Aug 2016 – May 2021*
***Graduate Research/Teaching Assistant*** College Station, TX

· Researched on applications and developments of various statistical models (e.g. non-linear mixed effect model, nonparametric/semiparametric longitudinal model, clustering analysis, classification, hierarchical Poisson model, etc) to various industrial problems arising from biomedical, petroleum, wind energy industries, and COVID-19 outbreak.

## PUBLICATIONS

**Journal Article**

[1] **Seyoon Lee**, Joseph H.T. Kim. (2018) "Exponentiated generalized Pareto distribution: Properties and applications towards extreme value theory," *Communications in Statistics - Theory and Methods*, 48:8, 2014-2038

[2] **Se Yoon Lee**, Bowen Lei, and Bani K. Mallick. (2020) "Estimation of COVID-19 spread curves integrating global data and borrowing information," *PLOS ONE* ; **[Github]**

[3] **Se Yoon Lee**$^\star$, Kahkashan Afrin$^\star$, Ashif Iquebal$^\star$, Mostafa Karimi$^\star$, Allyson Larsen$^\star$, and Bani K Mallick$^\star$. (2020) "Directionally Dependent Multi-View Clustering Using Copula Model," *PLOS ONE* ($^\star$ : equal contribution, authors are alphabetically ordered in the last name.)

[4] **Se Yoon Lee** and Bani K. Mallick. (2021) "Bayesian Hierarchical modeling: application towards production results in the Eagle Ford Shale of South Texas," *Sankhyā: The Indian Journal of Statistics, Series B* ; **[Github]**

[5] **Se Yoon Lee**. (2021) "Gibbs sampler and coordinate ascent variational inference: a set-theoretical review," *Communications in Statistics - Theory and Methods*

[6] **Se Yoon Lee**, Alain Munafo, Pascal Girard, and Kosalaram Goteti. (2022) "Optimization of dose selection using multiple surrogates of toxicity as a continuous variable in Phase I cancer trial," *Contemporary Clinical Trials* ; **[Github]**

[7] **Se Yoon Lee**. (2022) "Bayesian Nonlinear Models for Repeated Measurement Data: An Overview, Implementation, and Applications, " *Mathematics*

[8] **Se Yoon Lee**. (2022) "The Use of a Log-Normal Prior for the Student t-Distribution, " *Axioms*

[9] Hyung-Kyu Chae, Hyun Jeong Hong, **Se Yoon Lee**, Jung-Hoon Park, Woo Joo Choi, Seungkuk Oh, Seoyeoun Ji, Yeon-Jung Hong. (2022) "Factors Affecting the Outcome of Medical Treatment in Cats with Obstructive Ureteral Stones Treated with Tamsulosin: 70 Cases (2018–2022), " *Veterinary Sciences*

**Conference Paper/Poster**

[1] **Se Yoon Lee**, Shankar Lanke, Alain Munafo, Pascal Girard, and Kosalaram Goteti. (2020) "Optimization of dose selection using multiple surrogates of toxicity as continuous variable in Phase I cancer trial," *American Conference on Pharmacometrics 11*

[2] **Se Yoon Lee**, Po-Wei Chen, Naren Narayanan, Sandeep Dutta, and Malidi Ahamadi. (2022) "Performance of nlmixr vs NONMEM for the Estimation of Pharmacometrics Models with Different Degrees of Non-linearity; an AMGEN experience," *American Society for Clinical Pharmacology & Therapeutics 2022 Annual Meeting*

**Under review**

[1] **Se Yoon Lee**, Peng Zhao, Debdeep Pati, Bani K. Mallick. (2023+) "Tail-adaptive Bayesian Shrinkage" ; **[Slides]**

[2] **Se Yoon Lee**. (2023+) "A Dose-Response Modeling Framework Based on Continuous Toxicity Outcomes in Phase I Cancer Clinical Trials"

## PROFESSIONAL ACTIVITIES

**Invited Peer Reviewers**

- European Journal of Clinical Investigation (Impact Factor: 3.481)
- Artificial Intelligence Review (Impact Factor: 8.139)
- The Journal of Clinical Pharmacology (Impact Factor: 3.126)
- Statistics in Medicine (Impact Factor: 2.373)
- Frontiers in Public Health (Impact Factor: 3.709)
- The R Journal (Impact Factor: 3.984)
- Computational Geosciences (Impact Factor: 2.948)

## HONORS AND AWARDS

**Travel fund for an invited talk at Yonsei University** *Dec 2019*
Given to an invited speaker for the presentation

**Travel fund for an invited talk at University of Michigan** *Jun 2019*
Given to an invited speaker for an annual meeting about wind energy

**Travel fund for poster presenter for the Houston Geological Society** *Mar 2018*
Given to a poster presenter

**Anant Kshirsagar fellowship** *Jul 2018*
Given to graduate students who demonstrate excellence in making progress in research

**The 1st place prize in SETCASA poster session in 2018** *Apr 2018*
Given to only one winner for the poster session

**Graduate student travel award for JSM** *Jul 2017, 2018*
Given to graduate students who make a presentation at the conference

## INVITED TALKS

- "Prediction of best-corrected visual acuity for wet age-related macular degeneration patients in HAWK and HARRIER studies via a Bayesian hierarchical linear model" *Aug 2020*
  Organization: Novartis International AG, Internship Project Presentation
- "Estimation of COVID-19 spread curves integrating global data and borrowing information" *Jul 2020*
  Organization: Mathophilia 2020, IQAC, Banwarilal Bhalotia College, Asansol, India
- "Bayesian Hierarchical Model: Application towards Wind Farm Data" *Jun 2020*
  Organization: National Science Foundation, University of Connecticut, Mansfield, CT, U.S.A.
- "Continuous shrinkage prior revisited: a collapsing behavior and remedy" ; **[Abstract]** *Dec 2019*
  Organization: Yonsei University, Department of Applied Statistics, Seoul, South Korea
- "Tutorial: understanding offshore wind energy data and spatial modeling" *Jun 2019*
  Organization: National Science Foundation, University of Michigan, Ann Arbor, MI, U.S.A.

## SOFTWARE

**Software used in papers**

- Bayesian Hierarchical Richards Model ; Written in R ; **[Download]** ; **[Github]**
- Spatial Weibull Model ; Written in R ; **[Github]**
- bayesestdft ; Written in R ; **[Github]**

## SKILLS

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|---|---|
| **Language** | Fluent in English and Korean; Elementary in Chinese and Japanese |
| **Computer Language** | Proficient in R, Python, SQL, Microsoft Access, SAS, and NONMEM |
| **Certificate** | Cognigen NONMEM Workshop |