CALEB EUNCHAN BAE

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EDUCATION

University of Pennsylvania *Expected Ph.D. 2024*
Major: Biostatistics

Harvard University *S.M. 2019*
Major: Biostatistics
Advisor: Dr. Giovanni Parmigiani
Thesis: "Variant-level Mendelian risk prediction model"

Sungkyunkwan University *B.S. & B.B.A 2017*
Major: Mathematics, Global Business Administration **Valedictorian**
Advisor: Dr. Kun Chang Lee
Thesis: "Determining Attributes of Suicide Attempts in Korean Elderly People: Emphasis on Attribute Selection Techniques"

RESEARCH INTEREST

Bayesian Statistics, Cancer Genetics, Machine Learning, Causal Inference

TEACHING EXPERIENCE

Teaching Assistant August 2018
BST215: Linear and Longitudinal Analysis, Harvard University *Evaluation 4.8/5.0*

· Led office hours
· Graded homeworks and final project

Teaching Assistant July 2011 - May 2012
Decision Making Under Uncertainty, Samsung Electronics

· Taught artificial neural network with business data
· Prepared the course material: Multiple back propagation

RESEARCH EXPERIENCE

Research Assistant 2018 - 2019
BayesMendel Lab, Dana Farber Cancer Institute

· Develop a Mendelian model for variant-level
· Attend and present updates in R01 Monthly Investigator meeting
· Member of Dean's Fund for Scientific Advancement study team
· Perform decision analysis for mastectomy/oophorectomy by incorporating psychological effect
· Conduct statistical analysis for All Syndromes Known to Man Evaluator (Ask2me)
· Advisor: Dr. Giovanni Parmigiani (gp@jimmy.harvard.edu)
· Advisor: Dr. Timothy R. Rebbeck (timothy_rebbeck@dfci.harvard.edu)
· Advisor: Dr. Danielle Braun (dbraun@mail.harvard.edu)

Research Assistant 2014 - 2016
Samsung Advanced Institute for Health Sciences & Technology(SAIHST)

- Analyzed the electronic health record data and conducted a research with attribute selection techniques. (Software: SAS,R, Weka)
- Designed a EEG(electroencephalography), ECG(electrocardiogram) experiment and analyzed the data. (Software: BIOPAC, Laxtha)
- Implemented machine learning methods such as bayesian network, support vector machine, neural network and decision tree in the observational data. (Software: Weka, BayesiaLab, JAVA, SAS)
- Advisor: Dr. Kun Chang Lee (leekc@skku.edu)

Undergraduate Research Assistant 2011- 2012
Department of Interaction Science, Sungkyunkwan University

- Designed and executed a UI/UX experiment regarding Earcon and analyzed the data. (Software: SPSS, E-Prime, Eye-tracker)
- Advisor: Dr. Kwangsu Cho (kwangsu.cho@yonsei.ac.kr)

SCHOLARSHIPS

Kwanjeong Scholarship 2017- 2024
Kwanjeong Educational Foundation

Talented Students Scholarship 2015- 2016
Sungkyunkwan University

PUBLICATIONS

(In progress) Jinbo Chen, Xinglei Chai, Lingjiao Zhang, Tara M. Friebel, **Caleb Eunchan Bae**, Danielle Braun, Giovanni Parmigiani, Timothy R. Rebbeck, "Absolute Mutation-Specific Risk of Breast and Ovarian Cancer in BRCA1 or BRCA2 Mutation Carriers".

(In progress) **Caleb Eunchan Bae**, Jinbo Chen, Giovanni Parmigiani, Timothy R. Rebbeck, Danielle Braun "Variant-level Mendelian Risk Prediction Model".

(In revision) Jinbo Chen, **Eunchan Bae**, Lingjiao Zhang, Kevin Hughes, Giovanni Parmigiani, Danielle Braun, Timothy R. Rebbeck, "Penetrance of Breast and Ovarian Cancer in Women with a BRCA1/2 Mutation and Use of Risk-Reducing Salpingo-Oophorectomy: An Updated Meta-analysis", JNCI Cancer Spectrum, 2020.

Eun Chan Bae, Kun Chang Lee, "Determining attributes of suicide attempts in Korean elderly people: Emphasis on attribute selection techniques", Journal of the Korea Society of Computer and Information, 2015, Vol 22, No 9, 11-20.

Eun Chan Bae, Kun Chang Lee, "Predicting Stock Liquidity by Using Ensemble Data Mining Methods", Journal of the Korea Society of Computer and Information, 2016, Vol 21, No 6, 9-19.

CONFERENCE PRESENTATION

Caleb Eunchan Bae, Jinbo Chen, Lingjiao Zhang, Giovanni Parmigiani. Tim R. Rebbeck, Danielle Braun, "Variant-level BRCA mutations risk prediction model", DF/HCC Celebration of Early Career Investigators in Cancer Research 2018.

Do Young Choi, Kun Chang Lee, **Eun Chan Bae**, "A physiological approach to investigating cognitive process changes when making decisions under uncertainty", Cogsci 2015

Seung Eun Lee, **Eun Chan Bae**, Seung Yeon Hwang, Eun Jung Cho, Kwangsu Cho, "Design of Earcon for Effective Working Memory; Focusing on Effectiveness of Changes in Exposure of Variety of Auditory Information", HCI 2012

TECHNICAL SKILLS

Softwares	**Related Projects and Courses**
R	- R package update: "BRCAPRO" - Cluster computing with Unix - "A neurotoxicity study on maternal exposure to metal pollutant in Bangladesh" - "Bayesian inference with Pareto distribution" - "Estimation of the Variance of Normal Distribution", Basics of Statistical Inference - *Bayesian Data Analysis*
Python	- "Network Models for the Study of HIV/AIDS",
Python	Introduction to Social and Biological Networks
STATA	- "New Guidance from the American College of Cardiology on Blood Pressure Status: How Does this Change Our Understanding of Risk Factors for Hypertension?", Applied Regression Analysis
SAS	- *Survival Analysis*, Applied Survival Analysis - *Longitudinal Analysis*, Applied Longitudinal Analysis - Teaching Assistant: Linear and Longitudinal Analysis

EXTRA-CURRICULAR ACTIVITIES

Vice president 2018 - 2019
Harvard Chan Korean Society, Harvard University

Infantry 2012 - 2014
Republic of Korea Marine Corps

· 42th Six star salute honoree, *USO*

Silver medalist 2009
Korean Mathematics Competition, The Korean Society of Mathematical Education