

Howon Ryu

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EDUCATION

University of California, San Diego

Biostatistics, Ph.D. in progress

La Jolla, CA

Jun 2026 (expected)

University of California, Los Angeles

Biostatistics, M.S

Los Angeles, CA

Jun 2020

Sungkyunkwan University

Statistics, M.S

Seoul, Republic of Korea

Aug 2018

HIGHLIGHTED WORK EXPERIENCE

Center for Devices and Radiological Health, FDA

ORISE Research Fellow

Silver Spring, MD

Aug 2023 – Dec 2024

- Developed Parkinson's disease severity classification model (CNN + LSTM) and step measurement model (CNN) for gait feature derivation using deep learning methodologies
- Developed a data processing pipeline that extracted gait features from walkway and accelerometry data for internal validation
- Performed extensive literature review on the use of physiological signals from wearable devices for Parkinson's disease

OARC Stats Statistical Consulting, UCLA

Statistical Consultant

Los Angeles, CA

Aug 2020 – Jan 2021

- Provided statistical consulting service to UCLA affiliated researchers and faculty in data analysis (GLM, survival analysis, mixed effects models), study result interpretation, study design, and statistical programming
- Created instructional materials on statistical data analysis methods

Center for Computer Vision and Imaging Biomarkers (CVIB), UCLA

Data Manager

Los Angeles, CA

Jul 2019 – Jun 2020

- Developed and maintained scripts for database queries, and quality control checks on oncology (lung and prostate) clinical database using R
- Organized data exportation for clinical research, and provided reports per studies
- Collaborated with data engineering team in checking data integrity and data migration across different data structures and user interfaces

SELECTED RESEARCH EXPERIENCE

Spatial confidence regions on fMRI data

Advised by Dr. Armin Schwartzman

- Developed a spatial confidence region framework on fMRI brain image (2D/3D), applying advanced multiple testing corrections for false discovery rate (FDR) control (Benjamini-Hochberg and two-step adaptive procedure)
- Validated methodology with simulation and real data application (HCP fMRI dataset)

Wearable device and physical activity analysis

Advised by Dr. Jingjing Zou

- Built a physical activity classification model from wearable device inputs which is effective for clinical datasets with limited labeled data using self-supervised learning framework—transformer-based masked autoencoder model
- Conducted large-scale model comparison against baseline models, transfer learning, and ablation studies, demonstrating model performance

Sedentary behavior intervention effect measurement through wearable sensor

Advised by Dr. Jingjing Zou

- Built a sedentary behavior recognition model on a clinical trials dataset (RISE for Health) to produce labels to replace activPAL, and applied mixed effects model to compare intervention effect

Association of psychosocial stress and fertility outcomes

UCSD Health Moores Cancer Center

- Performed functional data analysis of daily stress on its effect on fertility outcomes among women going through IVF procedures in their natural and stimulation cycle

TEACHING EXPERIENCE

Biostatistics I (FMPH/PHB 400): Graduate Teaching Assistant, 2021 Fall

Biostatistics II (FMPH/PHB 419): Graduate Teaching Assistant, 2022 Winter

Biostatistics in Public Health (FMPH 102): Graduate Teaching Assistant, 2022 Spring

Biostatistical Methods I (FMPH/PHB 221): Graduate Teaching Assistant, 2024 Fall & 2025 Fall

PUBLICATIONS

(Under Review) Ryu, H., Maullin-Sapey, T., Schwartzman, A., Davenport, S., (2025). Spatial Confidence Regions for Excursion Sets with False Discovery Rate Control. arXiv preprint arXiv:2504.13124.

(Under Review) Ryu, H., Chen, Y., Wang, Y., LaCroix, A., Di C., Natarajan, L., Wang, Y., Zou, J., (2025). MoCA: Multi-modal Cross-masked Autoencoder for Digital Health Measurements. arXiv preprint arXiv:2506.02260.

Kapoor, N. S., Ryu, H., Smith, L., Zou, J., Mitchell, K., & Blair, S. L. (2024). Presentation and management of granulomatous mastitis in the United States: results of an American Society of Breast Surgeons registry study. *Annals of Surgical Oncology*, 1-9.

Green, R., Lin, J., Montoya, A. K., Bello, M. S., Grodin, E. N., Ryu, H., ... & Ray, L. A. (2022). Characteristics associated with treatment seeking for smoking cessation among heavy-drinking research participants. *Frontiers in Psychiatry*, 13, 951364.

Ryu, H., & Wong, W. K. (2023). Design Evaluation and Optimization of Population Pharmacokinetics Model Using an R Package PopED. *Mathematics*, 11(21), 4407.

PRESENTATIONS

Talks

Ryu H, Hansen D, Lee M, Kontson K, Nair R, Wang G. Using Wearable Device Data for Step Measurement On Parkinson's Disease Population. Joint Statistical Meeting (JSM) 2025 Section on Medical Devices and Diagnostics: Statistical Modeling, Data Analysis, and Forecasting Techniques; 2025 Aug 6; Nashville, TN

Strohl H, Ryu H, Do N, Su I, Zou J. Association of Psychosocial Stress And Fertility outcomes: The SAFE Study. Division of Reproductive Endocrinology & Infertility group meeting, UCSD School of Medicine; 2024 Oct 14; La Jolla, CA

Poster Presentation

Ryu H, Wang G, Lee M, Nair R. Prediction of Parkinson's disease severity through MDS-UPDRS ratings and H&Y stage from IMU signals using neural network model. Eastern North American Region, International Biometric Society (ENAR); 2024 March; Baltimore, MD.

Desmond A, Karmarkar M, Ryu H, Shahbaz S. Lung Injury Prevention Using an Evidence-Based Algorithm: A Neonatal Intensive Care Unit (NICU) Quality Initiative. 7th Annual UCLA Children's Hospital Children's Discovery & Innovation Institute Symposium; 2020 May 21; Los Angeles, CA

SKILLS

Technologies: R, Python, SAS, SQL, Shell Scripting, Cluster Computing (SLURM, Kubernetes), Git, L^AT_EX, Markdown

Experienced domains: digital health, physical activity, brain imaging data (fMRI), physiological signals, time series data analysis, wearable device data, statistical learning, data science, survival analysis, mixed effects model, machine learning, deep learning