Kenichi HAYASHI (林賢一)

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KH's current research interest is evaluation of statistical models applied in biomedical research. He has also been studying statistical machine learning and aim to integrate both these research fields.

Current Positions and Affiliations

Keio University, Yokohama, Japan:
Associate Professor, Department of Mathematics, Faculty of Science and Technology, 2018-Present.

Previous Positions and Affiliations

04/2015 – 03/2018	**Keio University** Associate Professor (but literary "lecturer" in Japanese) Department of Mathematics
04/2015 – 03/2018	**Osaka University** Visiting Faculty, Graduate School of Medicine
05/2016 – 03/2017	**The Institute of Statistical Mathematics** Visiting Research Fellow (invited by Dr. Shinto EGUCHI)
10/2011 – 03/2015	**Osaka University** Assistant Professor, Graduate School of Medicine
04/2011 – 09/2011	**Osaka University** Researcher, Graduate School of Medicine
02/2010 – 10/2010	**University of California, Berkeley** Visiting Scholar, Department of Statistics
04/2009 – 03/2011	**Japan Society for the Promotion of Science** Research Fellow (Fellowships for Young Scientists)

EDUCATION

04/2007 – 03/2011	**Osaka University** Ph.D. in Engineering Sciences, 2011 Dissertation Title: *Boosting methods for asymmetric mislabeled data* Advisor: Yutaka KANO M.A. in Engineering Sciences, 2007
04/2001 – 03/2004	**Osaka University** B.A. in Human Sciences, 2004

PUBLICATIONS

[24] Taguri, M., Tkahashi, K., Komukai, S., Ito, Y., Hattori, S., Funatogawa, I., Shinozaki, T.,

Yamamoto, M., Hayashi, K. (2024), Advancements of biometrics in the field of epidemiology, *Japanese Journal of Biometrics* , accepted. (This is a review article written in Japanese, and KH authored Chapter 6 with MY)

[23] Shimura, J., Hayashi, S., Okayasu, S., Itagaki, M., Hayashi, K. (2023), Micro-internal short circuit detection in lithium-ion batteries based on k-nearest neighbor method, *Bulletin of Data Analysis of Japanese Classification Society* , accepted. (written in Japanese)

[22] Takai, K., Hayashi, K. (2023), Model selection with missing data embedded in missing-at-random data, *Stats*, **6**, 495-505.

[21] Aida, H., Hayashi, K., Takeuchi, A., Sugiyama, D., Okamoto, T. (2022), An accelerated failure time cure model with shifted gamma frailty and its application to epidemiological research, *Healthcare*, **10**, 1383.

[20] Inoue, K., Hikoso,S., Masuda, M., Furukawa, Y., Hirata, A., Egami, Y., Watanabe, T., Minamiguchi, H., Miyoshi, M., Tanaka, N., Oka, T., Okada, M., Kanda, T., Matsuda, Y., Kawasaki, M., Hayashi, K., Kitamura, T., Dohi, T., Sunaga, A., Mizuno, H., Nakatani, D., Sakata, Y. (2021), Pulmonary vein isolation alone vs. more extensive ablation with defragmentation and linear ablation of persistent atrial fibrillation: the EARNEST-PVI trial, *EP Europace*, **23**, 565-574.

[19] Hara, M., Hayashi,K., Kitamura, T., Honda, M., Tamaki, M. (2020), A nationwide randomised, double-blind, placebo-controlled physicians' trial of loxoprofen for the treatment of fatigue, headache, and nausea after hangovers, *Alcohol*, **84**, 21-25.

[18] Hayashi, K., Eguchi, S. (2019), The power-integrated discriminant improvement: an accurate measure of the incremental predictive value of additional biomarkers, *Statistics in Medicine*, **38**, 2589-2604.

[17] Dohi, T., Nakatani, D., Inoue, K., Hikoso, S. Oka, T. Hayashi, K., Masuda, M., Furukawa, Y., Kawasaki, M., Egami,Y., Kashiwase, K., Hirata, A., Watanabe, T., … Sakata,Y. (2019), Effect of extensive ablation on recurrence in patients with persistent ptrial fibrillation treated with pulmonary cein isolation (EARNEST-PVI) trial: design and rationale, *Journal of Cardiology*, **74**, 164-168.

[16] Hayashi, K., Shimizu, Y. (2018), Estimation of a concordance probability for doubly censored time-to-event data, *Statistics in Biosciences*, **10**, 546-567.

[15] Hayashi, K. (2018), Statistics is not alchemy, *Japanese Psychological Review*, **61**, 147-155. (unrefereed, written in Japanese)

[14] Hayashi, K. (2018), Asymptotic comparison of semi-supervised and supervised linear discriminant functions for heteroscedastic normal populations, *Advances in Data Analysis and Classification*, **12**, 315-339.

[13] Hayashi, K., Takai, K. (2017), Finite-sample analysis of impacts of unlabelled data and their labelling mechanisms in linear discriminant analysis, *Communications in Statistics - Simulation and Computation*, **46**, 184-203.

[12] Shirane, R., Tang, H., Hayashi, K., Okuno, Y., Iso, H., Asada, H., Yamanishi, K., Mori, Y. (2017), Relationship between cell-mediated immunity to varicella-zoster virus and aging in subjects from the community-based Shozu Herpes Zoster study, *Journal of Medical Virology*, **89**, 313-317.

[11] Hara, M., Hayashi, K., Kitamura, T. (2017), Outcomes differ by first documented rhythm after witnessed out-of-hospital cardiac arrest in children; an observational study with prospective nationwide population-based cohort database in Japan, *European Heart Journal - Quality of Care and Clinical Outcomes*, **3**, 83-92.

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Sato, H., Hayashi, K., Cui, R., Takao, Y., Shibata, M., Iso, H. (2016), Injustice experience questionnaire, Japanese version: cross cultural factor-structure comparison and demographics associated with perceived injustice, *PLoS One*, 11(8): e0160567.

[9] Taniguchi, T., Ohtani, T., Nakatani, S., Hayashi, K., Yamaguchi, O., Komuro, I., Sakata, Y. (2015), Impact of body size on inferior vena cava parameters for estimating right atrial pressure: a need for standardization?, *Jounral of the American Society of Echocardiography*, **28**, 1420-1427.

[8] Hara, M., Hayashi, K., Hikoso, S., Sakata, Y., Kitamura, T. (2015), Different impacts of time from collapse to first cardiopulmonary resuscitation on outcomes after witnessed out-of-hospital cardiac arrest in adults, *Circulation: Cardiovascular Quality and Outcomes*, **8**, 277-284.

[7] Yamamoto, M., Hayashi, K. (2015), Clustering of multivariate binary data with dimension reduction via L1-regularized likelihood maximization, *Pattern Recognition*, **48**, 3959-3968.

[6] Hayashi, K. (2014), Bias reduction in estimating a concordance for censored time-to-event response, *Journal of the Japanese Society of Computational Statistics*, **27**, 1-16.

[5] Asakura, K., Hamasaki, T., Sugimoto, T., Hayashi, K., Evans, S., Sozu, T. (2014), Sample size determination in group-sequential clinical trials with two co-primary endpoints, *Statistics in Medicine*, **33**, 2897-2913.

[4] Takai, K., Hayashi, K. (2014), Effects of unlabeled data on classification error in normal discriminant analysis, *Journal of Statistical Planning and Inference,* **147**, 66-83.

[3] Hayashi, K. (2012), A boosting method with asymmetric mislabeling probabilities which depend on covariates, *Computational Statistics*, **27**, 348-356.

[2] Hayashi, K. (2012), A simple extension of AdaBoost for asymmetric mislabeled data, *Statistics & Probability Letters*, **82**, 203-218.

[1] Hayashi, K., Shimizu, Y., Kano, Y. (2008), Consistency of penalized risk of boosting methods in binary classification, *New Trends in Psychometrics, Universal Academic Press*, 87-96.

AWARDS AND SCHOLARSHIP

[4] Comprehensive understanding of analytical methods for unbalanced data and developmental applications to survival time analysis, Grant-in-Aid for Scientific Research, Grant-in-Aid for Scientific Research (C), MEXT,JSPS, Apr, 2023 - Mar, 2027

[3] Development of models using statistical learning theory for data involving heterogeneous populations and its application to clinical medicine, Grant-in-Aid for Scientific Research, Grant-in-Aid for Scientific Research (C), MEXT,JSPS, Apr, 2018 - Mar, 2022

[2] A study on exploratory identification of responsive subgroups in complex survival event data Grant-in-Aid for Scientific Research, Grant-in-Aid for Young Scientists (B), MEXT,JSPS, Apr, 2015 - Mar, 2018

[1] Data analysis based on the boosting method - theoretical extension and application to multivariate analysis -., Research Fellow Scholarship for Young Scientists, MEXT, JSPS, Apr, 2009 – Mar, 2011

LANGUAGES

Japanese (native), English (Intermediate)