

RONGZI LIU

University of Florida

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PROFESSIONAL EXPERIENCE

[1] Kernel-Based Neural Network (KNN) for Cox Proportional Hazard Function with High-dimensional Genetic Data

Research Assistant, University of Florida; Prof. Qing Lu

Jun. 2020 - Nov. 2021

- Discovered traditional cox model does not perform well in nonlinear underlying function or high-dimensional data; Proposed a kernel-based neural network to deal with these problems.
- Designed and implemented a kernel-based neural network to estimate the variance components in linear mixed model
- Estimated the parameters in KNN by minimum norm quadratic unbiased estimates (MINQUE)
- Demonstrated that the KNN model outperforms competitors like traditional Cox model with elastic-net regularization and PyCox model by 18% in terms of C-index using DLBCL dataset

[2] Neural-Network Transformation Models for Counting Processes

Research Assistant, University of Florida; Prof. Qing Lu

Mar. 2019 - Jun. 2020

- Independently proposed, designed a neural network model to predict both the baseline cumulative hazard function and mis-specifying underlying function in the counting processes
- Designed a loss function in the neural network based on the log-likelihood function for semiparametric transformation model
- Demonstrated that the neural-network transformation model outperforms the linear transformation model by 16% in terms of estimation and 11% in terms of prediction accuracy when the covariate effects are nonlinear

[3] Prediction and Hypothesis Testing for Interval Censored Competing risks Data via Kernel Machine Semiparametric Transformation Models

Research Assistant, University of Florida; Prof. Qing Lu

Nov. 2021 - present

- Proposed and developed a kernel machine semiparametric transformation model to do risk prediction and association tests for interval censored competing risks data
- Utilized penalized expectation-maximization algorithm to solve the minimization problem and cross-validation to select the tuning parameters
- Illustrated the proposed method is more robust than other testing methods and has more accurate predictions

[4] Determine the Confidence Level for a Classification in CNN

Research Assistant, Michigan State University, CVLab; Prof. Xiaoming Liu

May 2018 - Feb. 2019

- Discovered that the distributions for the possibility of each label between correctly and incorrectly classified instances are different
- Designed a classic CNN model combined with a generalized linear model to tune the threshold for decision making
- Provided a predicted confidence interval and comparable accuracy rate

PUBLICATIONS

- Liu, R., Li, C. and Lu, Q., 2022. Neural-network transformation models for counting processes. *Statistical Analysis and Data Mining: The ASA Data Science Journal*, 15(3), pp.322-338.

EDUCATION

- PhD, Biostatistics, GPA 3.86/4.0, University of Florida Sep. 2020 - May. 2024(Expected)
- MS, Statistics, GPA 3.82/4.0, Michigan State University Sep. 2017 - Mar. 2019
- BS, Statistics, GPA 80/100, Tongji University Sep. 2013 - Jun. 2017

SKILLS

- **Skills:** Python, PyTorch, R, SAS, SQL
- **Machine learning essentials:** sklearn, XGBoost, NumPy, Pandas