FULONG JIN

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EDUCATION

University of Science and Technology of China *Sept. 2023 - Present*
Master's student in Statistics
Department of Statistics and Finance, School of Management
Advisor: Prof. Xueqin Wang

Lanzhou University *Sept. 2019 - Jun. 2023*
Bachelor of Science in Mathematics
School of Mathematics and Statistics

PAPERS

Fulong Jin, Xiaoke Zhang, Siyu Zhang and Xueqin Wang. "Spliced Iterative Variable Selection for Time-Varying Coefficient Cox Models."Accepted by *SCIENTIA SINICA Mathematica*.

CONTRIBUTED SOFTWARES

- **GLAR**, Ultilizing least angle regression to solve the group lasso penalized regression.

RESEARCH EXPERIENCE

Methodology

Splicing algorithm for Time-Varying Coefficient Cox Models *Jun. 2024 - Aug. 2025*

- Developed the first provably scalable algorithm tailed for best subset selection in high-dimensional time varing Cox model, extending splicing algorithm to non-parameteric models.
- Established subset selection "uniform in time consistency", secured the oracle property with a high probability and obviated the need for parameter tuning by comprising a generalized group information criterion.
- Verified computational efficiency and accurate best subset recovery across diverse scenarios through extensive simulations and discovered potential gene phenotype related to lung adenocarcinoma named MED6

Learning Sparse-Input Neural Network via Weight-Coupled Skip Connection *May. 2024 - Sep. 2024*

- In this project, we developed a feature selection frame for deep neural network $\boldsymbol{\beta}^\top X + f_\theta(\boldsymbol{\beta} \odot X)$.
- The residual item provides identifiability and sparsity meanwhile avoids gradient vanishing.
- On regression, classification and survival datasets, the method exhibited the state-of art performance compared to others.

Distributed Sparse Heterogeneity Pursuit: Support Decomposition and Valid Inference *12. 2025 - Now*

- In this project, We try to conduct a consistent distributed model selection procedure for sparse parameter setting as $\boldsymbol{\beta}_{(k)} = \boldsymbol{\beta}_g + \delta_{(k)}$.
- The first step is to initialize using **Local-Lasso** which guarantee $\hat{\mathcal{S}}_{(k)} \subset \mathcal{S}^*_{(k)}$
- The second step is to using **SVD** on coefficient matrix to identify homogeneous set $\hat{\mathcal{S}}_g$.

- The step is to conduct **projection** which is orthogonal to subspace $\hat{\mathcal{S}}_{(k)}/\hat{\mathcal{S}}_g$ and then use **distributed surrogate score** to obtain $\hat{\boldsymbol{\beta}}_g$.
- The last step is to conduct **debiased-lasso** on $\hat{\mathcal{S}}_{(k)}/\hat{\mathcal{S}}_g$ with **residual** $r_{(k)} = y_{(k)} - X_{(k)}\hat{\boldsymbol{\beta}}_g$ and then get the heterogeneous part $\hat{\delta}_{(k)}$ on different center.
- A paper detailing our work is in preparation.

Application

Understanding Brain Fmri and Symptoms Related to Depression diagnose in UK Biobank
Apr. 2023 - Present

- Extracted and cleaned up depression-related outcomes and covariates for matching individuals of case control and apply MNI25 standard template on constructing ROIs time series for functional learning from electronic health records (EHRs) in the UK Biobank.
- Builded a casual graph via Granger Causality to detect Interactional influence and fundamental part leading to depression episode.
- A paper detailing our work is in preparation.

Computing

Best Subset Selection in CoxPH Models *Oct. 2022 - oct. 2023*

- Conducted the coding component including simulations and real data analysis for an efficient algorithm for best subset recovery in CoxPH model.

HONORS AND AWARDS

Graduate Academic Scholarship *Sept. 2023 & Sept. 2024*
National Scholarship (Top 1 in 2019 mathematical class) *Dec. 2021*

TEACHING AND VOLUNTEERING EXPERIENCE

Teaching Assistant, Probability and Mathematical Statistics (Credit:3) *Sept. 2024 - Jan. 2025*

COMPUTER SKILLS

Computer Skills: R, Python, C/C++, Matlab, LaTeX