Lingyu **Li**

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CV of Miss Lingyu Li

Bio. I am currently a 3th-year PhD candidate at School of Control Science and Engineering, Shandong University, China, working with Zhi-Ping Liu on **Research on Biomarker Discovery Methods Based on Regularized Feature Selection**.

Research interests. Sparse statistical learning, Data mining and machine learning, Feature selection, Biomarker discovery.

Educations

Sep 2019 – Jun 2023 (expected)	**PhD Candidate in Biomedical Engineering**, *Shandong University* (SDU), Jinan **Doctoral thesis title** : "Research on biomarker discovery methods based on regularized feature selection" *Advisor : Prof. Zhi-Ping Liu*, **GPA** : 94.80/100 | **Rank** : 1/44
Dec 2021 –Dec 2022	**Visiting Student**, *The University of Hong Kong* (HKU), Hong Kong, China **Cooperation project** : "Application of Boolean Networks and Optimization Algorithms in Bioinformatics" *Advisor : Prof. Wai-Ki Ching*, **Topics** : Applied Discrete Mathematics | Mathematical Programming and Optimization
Sep 2016 –Jun 2019	**Master of Computational Mathematics**, *Shandong Normal University* (SDNU), Jinan **Master thesis** : "Numerical methods and theoretical analysis of a class of groundwater pollution problems" *Advisor : Prof. Ziwen Jiang*, **GPA** : 3.98/5.0 | **Rank** : 1/8
Sep 2012 –Jun 2016	**Bachelor of Mathematics and Applied Mathematics**, *Shandong Normal University* (SDNU), Jinan **Bachelor thesis** : "Uniform convergence of function term series and its application" *Advisor : Prof. Jinjun Fan*, **GPA** : 3.51/5.0 | **Rank** : 26/204

Researches

Biomedical Engineering :	Bioinformatics, Machine Learning, Mathematics and Computational Biology
Computational Mathematics :	Numerical Solution of PDEs, Science and Engineering Computation, Inverse Problem
Main Courses :	Data Mining, Biomedical Big Data, Applied Statistical Analysis, Differential Method, Functional Analysis, Elliptical Problem Finite Element Method, Modern Partial Differential Equation Theory, Application Software and Programming, Topology, Sobolev Space, Professional English

Publications

- **Lingyu Li**, Zhi-Ping Liu, "*A connected network-regularized logistic regression model for feature selection*", *Applied Intelligence* (**SCI, JCR : Q1, IF : 5.086**), Jan 2022.
  Regularized logistic regression | Feature selection | network-based sparse penalty | Network connectivity | Biomarker discovery
- **Lingyu Li**, Zhi-Ping Liu, "*Detecting prognostic biomarkers of breast cancer by regularized Cox proportional hazards models*", *Journal of Translational Medicine* (**SCI, JCR : Q1, IF : 5.531**), vol.19, Dec 2021.
  Breast cancer | Regularized Cox proportional hazards model | Feature selection | Biomarker | Prognostic risk score
- **Lingyu Li**, Zhi-Ping Liu, "Discovery of spontaneous preterm birth biomarkers based on machine learning", *Journal of Nanjing University(Natural Sciences)* (**In Chinese**), vol.57, no.5, Sep 2021.
  Biomarkers | Spontaneous preterm birth | Machine learning | Feature selection | Bioinformatics
- **Lingyu Li**, Zhi-Ping Liu, "*Biomarker discovery for predicting spontaneous preterm birth from gene expression data by regularized logistic regression*", *Computational and Structural Biotechnology Journal* (**SCI, JCR : Q1, IF : 7.271**), vol.18, pp.3434-3446, Nov 2020.
  Biomarker discovery | Spontaneous preterm birth | Gene expression data | Regularized logistic regression | Feature selection | Preterm risk score
- **Lingyu Li**, Ziwen Jiang, and Zhe Yin, "Compact finite-difference method for 2D time-fractional convection–diffusion equation of groundwater pollution problems", *Computational and Applied Mathematics* (**SCI, JCR : Q2, IF : 2.239**),vol.39, no.3, May 2020.
  Compact finite-difference method | Time-fractional convection–diffusion equation | Stability and convergence | Numerical examples
- **Lingyu Li**, Ziwen Jiang, and Zhe Yin, "*Fourth-order compact finite difference method for solving two-dimensional convection–diffusion equation*", *Advances in Difference Equations* (**SCI, JCR : Q1, IF : 2.803**), vol.2018, no.1, Jul 2018.
  Convection–diffusion equation | Compact finite difference method | Fourth-order accuracy | Numerical experiments
- **Lingyu Li**, Zhe Yin, "*Numerical simulation of groundwater pollution problems based on convection diffusion equation*", *American Journal of Computational Mathematics* (**In English**), vol.7, no.3, pp.350–370, Sep 2017.
  Groundwater Pollution | Two-Dimensional Convection Diffusion Equation | Finite Difference Method | Visualization | Numerical Simulation
- **Lingyu Li**, Jinjun Fan, "Uniform convergence of function term series and its application", *Journal of Shandong Normal University (Natural Science Edition)* (**In Chinese**), vol.31, no.4, Dec 2016.
  Function term series | Uniform convergence | Programming realization | Application | MATLAB

Projects

Nov 2020 — **Research on Mathematical Models and Algorithms in Breast Cancer Precision Medicine, National Key R&D Program, Participant**
- Combine Multi-omics data to develop optimization models and corresponding algorithms.

Multi-omics data | Regulatory network | Mathematical model | Precision medicine

Jan 2020 — **Research on Bioinformatics Methods for Integrating Multi-level Omics Data to Discover Complex Disease Biomarkers, National Natural Science Foundation of China (NSFC), Participant**
- Apply regularized regression models to select potential disease biomarkers.

Complex disease | Regularization | Feature selection | External verification | R

Jul 2019 — **Generalized Fractional Equation of Surface Growth : Modeling, Calculation, Analysis and Application, Shandong Provincial Natural Science Foundation of China, Participant**
- Use numerical methods to solve fractional equation, and perform numerical experiments.

Numerical methods | Theoretical analysis | Numerical examples | MATLAB

Competitions

Dec 2019 — **The 16th Huawei Cup Chian Postgraduate Mathematic Contest in Modeling (GMCM), , Third Prize**
- Submitted paper : Rapid path planning of intelligent aircraft under multiple constraints

Intelligent aircraft | Trajectory planning | Multiple constraints | Improved ant colony algorithm | Algorithm complexity

Dec 2017 — **The 14th Huawei Cup GMCM, , Third Prize**
- Submitted paper : Flight recovery problem

Flight recovery | Column generation algorithm | Multi-commodity network flow model | Passenger flow recovery model

Dec 2016 — **The 13th Huawei Cup GMCM, , Second Prize**
- Submitted paper : Analysis of genetic locus with inherited diseases and traits

Genetic statistics | Genome-wide association analysis (GWAS) | Numerical coding | Particle swarm optimization

Honors & Awards

Dec 2021	SDU 2021 Outstanding Postgraduate Cadre Award
Jul 2021	FDU Graduate summer school on “Application and Innovation of Data Science”, Obtained the graduation certificate
May 2021	SDU 2020 advanced individuals in innovation and entrepreneurship, outstanding communist youth league member
2020 & 2021	SDU 2020 first-class academic scholarship for PhD (twice), SDU 2020 outstanding graduate student (twice)
2020 & 2021	PKU The 2&3nd Summer School on “Biostatistics”, Completed the course and obtained the graduation certificate
Dec 2019	SDU 2019 second-class academic scholarship for PhD, SDU graduate innovation competition award
Jan 2019	SDNU 2019 outstanding graduates
2013-2018	SDNU excellent student first-class scholarship (twice), second-class scholarship (three times)
Oct 2017	Shandong province 2017 excellent bachelor degree thesis
2014 & 2015	Contemporary Undergraduate Mathematical Contest in Modeling (CUMCM) “Second prize” (twice)
Nov 2013	The 15th National Student Mathematics Competition (Mathematics) “Third prize”
Oct 2013	National Inspirational Scholarship

Skills

Programming Skills : Matlab, **R**, **C**, LaTeX, Python, Spass

Languages

English : Reading ●●●●● CET-4 : 514
Listening ●●●●○ CET-6 : 467
Speaking ●●●○○

(last update : 31 Jan. 2022)