JUNBIAO LU

Research Interest: Data-driving modeling, Statistics, Machine Learning, Algorithm
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EDUCATION

Beijing University of Posts and Telecommunications (BUPT) Sept 2016 - Jun 2020
B.S. in Applied Physics

- GPA: 3.74/4.0, (average score: 90/100, rank: 2/55)
- Major GPA: 3.80/4.0 (average score 93/100)
- Major Courses: Mathematic Analysis 95/100, Advanced Algebra and Geometry 95/100, Methods of Mathematical Physics 92/100, Probability Theory and Mathematical Statistics 96/100, Thermodynamics and Statistical Physics 89/100, Data Structure 93/100, C programming language 89/100, Fundamentals of Scientific Computing 94/100, Fortran Scientific Computing 96/100

Beijing University of Posts and Telecommunications Sept 2021 - Jun 2024
M.S. in Physics

- GPA: 3.77/4.0
- Courses: Real Analysis 99/100, Nonlinear Functional Analysis 97/100, Stochastic Process 93/100, Stochastic Analysis 96/100, Applied PDE 92/100, Advanced Econometrics 84/100
- Audit and Self-study: Advanced Probability Theory (text book: Bingyi Jing), Statistical Inference (text book: Casella), Mathematical Finance (text book: Sheldon Ross)

RESEARCH EXPERIENCE

Growth Rates of Random Matrix Products Sept 2019 - Sept 2020
AAPPS Bulletin, Second Author

- Calculation of the exponent of multiple random matrices with discrete and continuous distributions
- Validity test by generating the exponent using invariant polynomial derived from the original method
- Application to the calculation of Ising model's free energy in random on-site field

Bankruptcy Mechanism in Coevolutionary Game Theory May 2023 - May 2024
Europhysics Letters(EPL), First Author

- Conceptualization of evolutionary game with bankruptcy mechanism
- Model simulation using Monte Carlo method on complex networks (square lattice, ER network)
- Data visualization and statistical analysis
- Original draft writing and review

Functional Correlated Covariates in Elderly Mobility Study Sept 2024 - present
Research Assistant, City University of Hong Kong, Project 1

- Literature review to find methods for collinearity issue in Kinect sensor data
- Construction of optimization objective function using graph-based method
- Model simulation using proximal gradient descent to test the validity

Tensor Imputation of Patient Drug and Gene Sept 2024 - present
Research Assistant, City University of Hong Kong, Project 2

- Literature review to find cancer dataset for our proposed method

· Model simulation to test the validity
· CDS-DB cancer dataset processing to align with the existing code

WORK EXPERIENCE

Breast Cancer Detection using Deep Learning Jun 2022 - Jul 2022
Research Intern, Deepwise.Co.Ltd.

· Task: develop a image classification model using deep learning
· Data processing: obtain the lesion images and label from hospital, adjust the size of the benign area around the lesion to crop the image, rotate and symmetrize image to increase sample size, and segment the data set
· Model training: select different kinds of ResNet, construct and train binary classification model
· Evaluation: precision 94%, recall 90%, f1-score 91.96%

Named Entity Recognition in Search Query Nov 2023 - Jan 2024
Research Intern, Zuoyebang.Co.Ltd.

· Task: build a named entity recognition model based on 500,000 gpt4-annotated data for the article query
· Data processing: design entities and GPT prompt, generate labels, add some artificial data
· Model training: use Bert, Roberta and CRF(Conditional Random Field), construct and train a multi-classification model
· Evaluation: precision 97.26%, recall 97.49%, f1-score 97.37%
· Official release: convert trained model into a low-latency online model (pytorch-ONNX-Triton)

AWARD & STANDARD TEST

Award

· Mathematics Competition, Third Prize, BUPT Jul 2017
· China Undergraduate Physics Tournament, Third Prize, Beijing May 2018
· HUANGKUN Scholarship, Institute of Semiconductor CAS Dec 2018
· Graduate First-Class Scholarship, BUPT three consecutive years, Dec 2021, Dec 2022, Dec 2023

Standard Test

· TOEFL(ibt): 106 (Reading 29, Listening 29, Speaking 23, Writing 25) Oct 2024

SKILLS

· Coding: Python (Pytorch), R, Fortran, Matlab, Origin, LaTeX
· Language: Fluent English, Native Chinese

MISCELLANEOUS

I love tennis, English comedy and novels. My tennis NTRP level is 3.5. My favourite novel is the Neapolitan Novels by Elena Ferrante