Lu Jiarui

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EDUCATION

SHANGHAI JIAO TONG UNIVERSITY (SJTU) *Shanghai, China*

BSc.(Hons.) in Chemistry Zhiyuan Honors Program(top 10% enrolled) 2017–2021(expected)

BSc. in Applied Mathematics Dual Major 2017–2021(expected)

Overall GPA: 90.2/100; or 3.87/4.00 (WES - Evaluated)

Relevant Courses: Linear Algebra(A+, 98), Probability Theory and Statistics(A+, 100), Time Series Analysis(A, 93), Partial Differential Equation(A+, 98), Python and Data Science(A+, 100), Reinforcement Learning(A+, 97)

ACADEMIC RESEARCH

Center for Brain-like Computing and Machine Intelligence, *Shanghai Jiao Tong Univ., Shanghai*

Undergraduate Research Assistant Advisor: Yang Yang

Design of Novel Drugs based on Deep Neural Networks Dec. 2018 – Sept. 2019

- Predicted the potential edges in a drug-target interaction networks (Labeled edge sparsity ~0.28%)
- Integrated word2vec, text CNN, random walk, stacking methods to build a system
- Improved state-of-the-art methods performance by AUROC 3.2%, AUPR 2.4%

Drug-Target Interaction Prediction with Graph Convolutional Neural Network Sept. 2019 – Nov. 2020

- Predicted the binding affinity of anti-virus drugs and illness targets(Scale ~10k instances)
- Designed interpretable graph partition algorithm and unsupervised contrastive methods
- Improved state-of-the-art graph embedding methods performance by MSE 11.8%, CI 2.5%

PUBLICATION

- Zhimiao Yu*, **Jiarui Lu*,** Yuan Jin, Yang Yang, *KenDTI: an ensemble learning approach based on network integration and TextCNN for drug-target interaction prediction*. *IEEE Trans.CBB*(under review-2)

SCHOLARSHIPS & AWARDS

Zhiyuan Honor Scholarship (5%) Dec. 2019

Shanghai Scholarship (1%) Sept. 2019

Presidential Scholarship for Studying Abroad (1/70) Jul. 2019

Shanghai Jiao Tong Merit Student (5%) Nov. 2018

Enterprise Scholarship (from Union of Water) (2/70) Sept. 2018

INTERNSHIP

ByteDance (TikTok), *Shanghai* Intern Researcher Nov. 2020 – Present

- AI Lab – Machine Learning and Natural Language Computation(MLNLC) Group (Leader: Li Lei)
- Performed research and engineering work in areas: AI drug discovery, large-scale data mining

PROJECTS

Machine Learning-based Bioimage Localization and Classification, Github *(CS385 Course Project)*

- Handled ~30k biomedical images under a multi-label classification task
- Implemented the K-Means algorithm with the feature extraction by SIFT key-point detection
- Synthesized ResNet-50 and SVM classifier to develop a deep classification system

Analysis of Model-free algorithms Tested on Popular Game Player, Github *(CS489 Course Project)*

- Trained both value-based, policy-based algorithms on environments *Mujoco Ant-v2* and *Gym Boxing-v4*
- Compared moving average reward and loss, analyzed performance and bottleneck of each algorithm

Computational Optimization of Molecular Transition State *(CA369 Course Project)*

- Performed Density Functional approach on methylbutyrate variants to optimize their transition states
- Analyzed a typical rearrangement process according to the simulation results

COMPETITIONS

High-performance Computing(HPC) Student Competitions:

Team Leader of SJTU *Center for High-performance Computing, SJTU*

- ASC 19 Competition, Beijing, China (CESM) **Meritorious Prize** Apr. 2019
- SC 19 Student Cluster Competition, Denver, US *(*VPIC*)* **5th Internationally** Nov. 2019
- Intel Parallel Application Challenge, China (E-CUBE) **Bronze Award** Sept. 2020

MISCELLANEOUS

Programming Skills C / C++(with OpenMP/MPI/CUDA), Java, Python2/3, SQL, LaTex

Scripting Languages Linux Shell(familiar, with Slurm/PBS job scheduler), R (statistics/ time series analysis)

Machine Learning NumPy, Pandas, TensorFlow, PyTorch, SciKit-Learn

Selected Experiences Teaching assistant of *Principle of Chemistry* (165 freshman undergraduates enrolled); Student Volunteer during Covid19 Pandemic in Shanghai; Student Volunteer for 1st World Laureate Forum