Alexander Suen

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Education

Some University (just use ZJU) **Sep. 2020 – Jul. 2024 (Expected)**
Bachelor of Information Science (Statistics) & Medicine, Minor in Computer Science *GPA: 3.88/4.00, Top 15%*

Relevant Coursework

- Data Structures & Algo
- Database System
- Computer Organization
- Statistical Learning
- Artificial Intelligence
- Optimization Algorithms
- Linear Algebra & Calc
- Multivariate Statistics
- Numerical Analysis
- Medical Genetics
- Molecular Biology
- Biochemistry

Research Experience

Zhejiang University, Department of Genetics **Oct. 2023 – Present**
Research Assistant *Hangzhou, China*

- Conducted a comprehensive study using WGCNA to explore underlying mechanisms in heart failure heterogeneity.
- Identified significant modules associated with ICM/DCM through the construction of gene co-expression networks.
- First-authored and led the research paper manuscript, currently under review for publication in an SCI-indexed journal.

Zhejiang University, School of Medicine **Sep. 2020 – Dec. 2021**
Research Assistant *Hangzhou, China*

- Performed phylogenetic analysis on gene family *ADTRP*, mining their evolutionary relation by maximum likelihood.
- Performed RNA-seq analysis on Ischemic Cardiomyopathy samples and recognized potential transcriptional regulators.
- Automated RNA-seq workflows using bash scripting and Python, enhancing laboratory data processing efficiency.
- Characterized *Liver Enriched Gene 1 (LEG1)* from expression profile, glycosylation type, and secretion characteristics.

Zhejiang University, School of Medicine **Sep. 2020 – Jun. 2021**
Student Research Training Program (SRTP), rated as national-level *Hangzhou, China*

- Contributed to the building of a diagnostic grading system for IgA Nephropathy using Convolutional Neural Networks.
- Preprocessed biopsy images, applying data augmentation & feature extraction methods to optimize model performance.
- Implemented algorithms for detection, segmentation, and classification of glomeruli in various stages of degeneration.

Selected Publications (Details Omitted)

- Bioinformatic analysis, NFIC, upstream, Transcriptional Regulator, Ischemic Cardiomyopathy. *some journal*. Some time 13;13(6):1051.
- **Alexander Suen**, et al. Molecular characterization of protein xxxxx. *Journal of xxxx*, Date..: 261-268.
- A BC#, **Alexander Suen**#,. Phylogenetic Analysis a gene family xxxx. *Some journal*. Some time 30;12(8):1190. (# denotes equal contribution, sort in alphabetic order)

Projects

Machine Learning for Identification of Genomic Biomarkers in Ischemic Cardiomyopathy (ICM) | *ML, Genomics*

- Analyzed extensive genomic datasets to identify key differentially expressed genes (DEGs) in ICM progress.
- Implemented and evaluated five machine learning classification methods (SVM, LASSO, GBM, DT, CNN) to filter and assess candidate diagnostic genes based on classification accuracy and overall weights (a multi-model approach).
- Identified 3 key genes with significant diagnostic potential in ICM and conducted functional enrichment analysis.

Angiotensin-Converting Enzyme (ACE) Inhibitor Bioactivity Prediction APP | *Python, ML, Drug Discovery*

- Predicted the target protein bioactivity towards inhibiting ACE, which is a drug target for ICM.
- Developed regression models based on Random Forest and conducted comparative analysis of several ML algorithms.
- Engineered a user-friendly bioactivity prediction APP for efficient QSAR modelling and potential candidates analysis.

Multimodal Single-Cell Integration - Kaggle HPCs Maturation Prediction | *Python, Deep Learning, Multi-modality*

- Integrated multimodal genomic data (DNA, RNA and protein) to unravel genetic interactions.
- Employed Truncated SVD and UMAP for dimensionality reduction, realizing efficient processing of large-scale genomic datasets in hierarchical format. Applied Group K-Fold cross-validation to ensure robust and unbiased model training.

Teaching Assistant Experience

Biostatistics (2021-2022-2)
Biostatistics (2020-2021-2)
Quantitative Genetics (2023-2024-1)

Technical Skills

Programming Languages: Competent in Python, experience in R, C/C++, Java, HTML, MATLAB, Verilog, Assembly
Libraries/Frameworks/Database: PyTorch, SQL, NumPy, Pandas, Tensorflow, Matplotlib, SciPy
Development Tools: Git, CUDA, LaTeX, Linux, Google Colab, Google Cloud Platform

Selected Honors and Awards

Kaggle Competition — Evaluate Student Summaries - Bronze Medal **Oct. 2023**
Top 7%, 138th out of 2064 Participants *The Learning Agency Lab, CommonLit*

Kaggle Competition — LLM Science Exam - Bronze Medal **Oct. 2023**
Top 9%, 231th out of 2664 Participants *Kaggle*

Kaggle Competition — Mircobusiness Density Forecasting - Bronze Medal **Jun. 2023**
Top 9%, 297th out of 3547 Participants *GoDaddy*

Scholarship for Excellence in Special Major **2020 – 2023**
Top 15% students in specialized and interdisciplinary fields, won consecutively for three years *Hangzhou, China*

ZJU Scholoarship — Second Prize **2020 – 2021; 2022 – 2023**
Top 8% students in Zhejiang University *Hangzhou, China*

ZJU Scholoarship — Third Prize **2021 – 2022**
Top 20% students in Zhejiang University *Hangzhou, China*

Student Leadership Award **2020 – 2021**
Awarded for significant contributions to student-led initiatives/activities on campus *Hangzhou, China*

Internship

Research Intern — Alibaba DAMO Academy, NLP Research Team **Jul. 2023 – Oct. 2023**
Focused on sentiment analysis and transfer learning based on large-scale pre-trained models. *Hangzhou, China*

Extracurricular

Certified First Aider — Red Cross Society of China **2021 – Present**
Administered immediate first aid for everyday injuries and during major sports events. *Hangzhou, China*

ZJU Youth Volunteer Service — 5-Star Honor Award **2020**
Dedicated over 300 hours to diverse community service including community hospital volunteer service. *Hangzhou, China*

Club Activities — Student Association of Science & Technology (SAST) **2020 - 2022**
Vice President (2020 – 2021) *& Member* (2021 – 2022) *Zhejiang University*

- SAST's club tier ranking increased from 4-star to 5-star (highest possible association ranking) during my tenure.
- Orchestrated key events and activities such as the Lazy Man's Innovation Competition and the SAST anniversary.
- Directed a team of over 20 members to serve and promote innovation & entrepreneurship competitions.