Rom Uddamvathanak

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Education

MONASH UNIVERSITY   VIC, Australia
Master of Data Science   2021
Thesis: Joint Graph-Sequence Learning for Molecular Property Prediction (IJCNN)
Relevant Coursework: International Study Grant Offer & Summer Research Scholarship, Data Life Cycle, Calculus, AI, Machine Learning, Deep Learning.

COVENTRY UNIVERSITY   Singapore
Bachelor of Science with Honours in Computer Science, First Class Honours   2019
Thesis: Two-stage ensemble of Deep Convolutional Neural Networks for Object Recognition (ICIRT)
Relevant Coursework: Student Ambassador for Cambodian Student, Algorithm and Data Structure, Software Engineering, Agile Development, Open-source development.

Experience

A*STAR   Singapore
Senior Research Officer   2021 - Present

- Developed innovative computational solutions to improve the accuracy and reliability of Single Cell RNA-seq data analysis, addressing the critical issue of batch integration.
- Played a pivotal role in the development and maintenance of DISCOToolkit Python version, a powerful and widely used toolkit that hosts variety annotated atlases data and enables seamless batch integration for Single Cell RNA-seq data.
- Applied in-depth knowledge of computational biology, deep learning, and generative AI to enhance the understanding of human Single-Cell Omics data and develop reliable tools for data analysis.
- Served as a reviewer for the International Society for Computational Biology (ISCB), contributing to the evaluation of high-quality research in the field of computational biology.

Papers:

- SEDR: Unsupervised Spatial Embedded Deep Representation of Spatial Transcriptomics. (Genome Medicine, Co-author) (Under pre-acceptance)
- GENEX: Explainable Batch effect removal for Single-cell RNA Sequencing Data. (RECOMB 2024) (Under review)
- Single Cell Multi-Modality Integration and Cross-modality Imputation with scGUMI. (RECOMB 2024) (Under review)

Other Roles:

- Verifying Officer, effectively managing and approving requests within the team.
- Server Manager, ensuring the smooth operation and maintenance of server infrastructure for research and development activities

Leadership & Activities

Kaggle
Casual Machine Learning Practitioner   Jun 2018 – Present

- Actively participate in competitions and browse through discussion forums to continuously expand my skill set and stay abreast of the latest advancements in machine learning and deep learning.
- Achieved notable success in various competitions, including earning a Silver Medal in the Fraud Detection competition, demonstrating a strong ability to apply machine learning techniques to solve real-world problems.
- Engage in a wide range of machine learning competitions, such as iceberg detection, forecasting classification, predicting molecular properties, and Jigsaw Toxicity Classification, continuously seeking new skills and insights for self-development and expanding my expertise in various domains of machine learning.

Monash University
Research Student   Nov 2020 – Jun 2021

- Developed a novel end-to-end Joint Graph-Sequence fusion framework for learning high-quality molecular property representations by jointly capturing information from both graph and sequence molecular data.

- Proposed an attentional feature fusion mechanism to effectively integrate graph-sequence molecular embeddings, enhancing the model's ability to extract meaningful information from both modalities.
- Demonstrated the effectiveness of the proposed method by achieving state-of-the-art performance on multiple datasets, including SARS-CoV, outperforming existing models by a significant margin.
- Presented the research findings at the prestigious International Joint Conference on Neural Networks (IJCNN), a leading conference in the field of artificial intelligence.

Monash University
FIT Peer Mentor   Mar 2020 – Jul 2020

- Provided valuable support and guidance to junior students as a FIT Peer Mentor, fostering a collaborative learning environment and contributing to a positive and inclusive learning experience.
- Assisted junior students with understanding unit content and navigating their academic pursuits, enhancing their academic success.
- Facilitated group discussions and workshops to promote peer-to-peer learning and knowledge sharing, enabling students to overcome challenges and develop their skills.
- Effectively communicated complex concepts and strategies to junior students, acting as a role model and mentor to guide their academic journey.

Skills & Interests
Technical:
    Programming Languages: Python (Main), R, Java, JavaScript, C++, C, Bash
    Machine Learning Package: Pytorch, Keras, Tensorflow, scikit-learn, MATLAB
    Cloud Computing: Google Cloud Platform
    Database: MySQL, MongdoDB, Apache Spark
    Data Analysis: Data Cleaning, Data Validation, Exploratory Data Analysis, Data Analytics & Interpretation
    Bioinformatic Tools: DNBelab C Series HT Single-Cell Analysis Software (MGI)
Language:
    English: Fluent
    Khmer: Mother Tongue
Interests:
    Technical Exploration: Generative AI, Large Language Model, Explainable AI, Sparse Data Processing, Big Data, Computational Biology, Multi-modal, Computer Vision, Graph Neural Network, Image Processing, Natural language Processing
    Continuous Learning: Theoretical understanding in Deep Learning and Machine Learning, Responsible AI, Machine Learning Engineer through Google Cloud Platform.
    Personal Development: Curated Leadership skill learning pathway developed by A*STAR
    Hobby: Bouldering

Publications
Published:
(1) Rom Uddamvathanak, Xin Zheng, Shirui Pan. 2021. Joint Graph-Sequence Learning for Molecular Property Prediction. *International Joint Conference on Neural Networks (IJCNN) at 2022 IEEE World Congress on Computational Intelligences.*
(2) Rom Uddamvathanak, Feng Yang. 2018. A Comprehensive Study in Ensembling Deep Convolutional Neural Networks for Image Classification. *The 10th international Conference on Signal Processing Systems.*
(3) Rom Uddamvathanak, Feng Yang, Xulei Yang, Ankit Kumar Das, Yan Shen, Mohamed Salahuddin, Shaista Hussan, Shailey Chawla. 2018. Two-Stage Ensemble of Deep Convolutional Neural Networks for Object Recognition. *The 2018 International Conference on Intelligent Rail Transportation.*

Websites
LinkedIn: Rom Uddamvathanak   Google Scholar   Google Cloud Profile   GitHub   Kaggle
Personal Website: https://uddamvathanak.github.io/Rom-Uddamvathanak/