BOBBY RANJAN

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Education

Nanyang Technological University (NTU)	Singapore
Ministry of Education Tuition Grant Recipient	
Bachelor of Engineering (Computer Engineering)	Graduated in June 2018
Minor in Entrepreneurship	
Minor in Life Sciences	
GPA: 4.60/5.00	

GRE General Test: 162 Verbal, 167 Quantitative, 4.0 Writing	March 2019

Vikhe Patil Memorial School	Pune, India
Grade 12 | CBSE Board Examinations (A-level equivalent)	Graduated in May 2014
School Rank 1 with 96.8%	

Selected Publications

- **Ranjan, B.**, Sun W., Park J., Xie R., Alipour F., Singhal V., Prabhakar S. (2020). DUBStepR: correlation-based feature selection for clustering single-cell RNA sequencing data. *bioRxiv*.
  - DUBStepR (Determining the Underlying Basis using Stepwise Regression) uses information contained in pairwise correlations of mRNA levels of genes to select features for clustering.
  - **Received ISMB Fellowship award** for presenting DUBStepR at ISMB (virtual) in June 2020.

- Lee, H. O.*, Hong, Y.*, Etlioglu, H. E.*, Cho, Y. B.*, Pomella, V., …, **Ranjan, B.**, ..., Park, W. Y. (2020). Lineage-dependent gene expression programs influence the immune landscape of colorectal cancer. *Nature Genetics*, 1-10.
  - Analysis of 91,103 unsorted single cell transcriptomes from 23 Korean and 6 Belgian CRC patients.
  - Cancer cells displayed normal differentiation programs & genetic alterations that fostered immunosuppressive microenvironments directed by T-reg cells, myofibroblasts and myeloid cells.

- **Ranjan, B.***, Schmidt, F.*, Sun, W., Park, J., Honardoost, M. A., Tan, J., ... & Prabhakar, S. (2020). scConsensus: combining supervised and unsupervised clustering for cell type identification in single-cell RNA sequencing data. *bioRxiv*.
  - Hybrid approach to obtain cell type labels in scRNA-seq data using a consensus of supervised and unsupervised clustering.
  - **Selected for flash talk** at Single Cell Analyses Meeting, CSHL in November 2019.

- **Ranjan, B.**, Chong, K. H., & Zheng, J. (2018). Composite mathematical modeling of calcium signaling behind neuronal cell death in Alzheimer's disease. *BMC systems biology*, *12*(1), 10.
  - An integrated mathematical model depicting the relationship among amyloid depositions, calcium signaling and mitochondrial permeability transition pore (PTP) related cell apoptosis in Alzheimer's disease.
  - **Selected for talk** at Asia-Pacific Bioinformatics Conference in April 2018

- **Ranjan, B.** (2018). Detection of functional and topological modules in protein interaction networks. *Final Year Project, Nanyang Technological University*.
  - Applied module detection and clustering algorithms to identify functionally relevant protein modules in protein-protein interaction networks.

Achievements & Awards

ISMB 2020 Fellowship Award| International Society for Computational Biology | June 2020
Top 8 & Most Socially Useful Award| NUS Hack & Roll 2018 | January 2018
People's Choice Award | NUS Hack & Roll 2017 | January 2017
President's Research Scholar | NTU | August 2015
Best Freshmen Award | NUS Hack & Roll 2015 | January 2015
All India Rank 1820 | IIT JEE Advanced (India) | May 2014
All India Rank 3 scoring 98.2%| ICSE Board (O-level equivalent) | May 2012

Experience

Bioinformatics Specialist | **Genome Institute of Singapore**   Singapore
August 2018 – Present
Group Leader: Dr. Shyam Prabhakar
Ongoing work:
- ➢ Robust clustering and interpretation of scRNA-seq data using reference component analysis (manuscript in preparation)
- ➢ Analysis of single-cell data as part of an integrative multi-omics study on the mechanism of anti-depressant drug action in the rodent brain (manuscript in preparation)

Software Design Engineer Intern | **BitTitan**   Singapore
May 2017 – August 2017
- ➢ Built customer-facing license consumption report for all BitTitan products
- ➢ Conducted tech feasibility analysis to improve BitTitan's reporting capacity
- ➢ Built code analysis tool to clean up database references across codebase

Technology Analyst Intern **| Bank of America, Merrill Lynch**   Singapore
August 2016 – December 2016
- ➢ Used message queues to improve efficiency of payment processing system
- ➢ Built a proof-of-concept (POC) to help onboard new testers onto platform

Skills

- ➢ **Genomic data analysis:** scRNA-seq • Bulk RNA-seq • scATAC-seq
- ➢ **Programming languages:** R • Java • Python • C# • C
- ➢ **Wet lab:** 10X scRNA-seq Chemistry • RNAscope

Hobbies & Interests

Hackathons • Science Communication • Football • Table Tennis • Music

Other Activities

Project Officer | **Stronghold Diagnostics Labs (SDL) [COVID-19 Testing Facility]**
July 2020 – October 2020 | Singapore
- ➢ Assisted in submission of daily clinical reports for SDL
- ➢ Performed software integration testing for automated clinical reporting
- ➢ Developed visualization tools for staff members to communicate and receive updates

Website Manager | **PGMedOnline.com**
January 2018 – Present | India
- ➢ PGMedOnline is a home-based coaching website for all medical examinations
- ➢ My responsibilities involve regular website maintenance and liaison with website developers