

BOBBY RANJAN

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Education

Nanyang Technological University

MOE Tuition Grant Recipient

B.Eng. in Computer Engineering

Minors in Entrepreneurship & Life Sciences

CGPA - 4.60/5.00 | June 2018

Vikhe Patil Memorial School

Grade 12 | CBSE Board Examinations (A-level equivalent) | Science Stream

School Topper with 96.8% | May 2014

Skills

Programming Languages:

R • Java • Python • C# • C

Web Development:

HTML5 + CSS3 • JavaScript • jQuery • Bootstrap • PHP • JSP • Django • AngularJS • Node.js • MongoDB

Co-Curricular Activities

IEEE NTU Student Branch | Vice President

NTU Sikh Society | Publicity Director

NTU Model United Nations | Media

NTU Students' Union | Events Director

Selected Courses

Biostatistics

Biochemistry

Molecular & Cell Biology

Principles of Genetics

Machine Learning

Computer Vision

Advanced Algorithms

Distributed Systems

Information Retrieval

Operating Systems

Introduction to Databases

Digital Systems Design

Software Engineering

Sensors, Interfacing & Control Systems

Computer Networks

Entrepreneurship for New Ventures

Interests

Computational Biology • Immunology • Hackathons • Science Communication • Football • Table Tennis • Singing

Fun Facts

- ✓ Invited to UC Berkeley in June 2013 for National Student Leadership Conference (NSLC)
- ✓ Possesses DELF A2 diploma in French from Ministry of Education, France

Selected Publications

Lee, H.-O., Hong, Y., Etlioglu, H., Cho, Y.B., et al. Lineage-dependent gene expression programs influence the immune landscape of colorectal cancer. *Nat. Genet.* (2020).

- Analyzed the transcriptome of 91,103 unsorted single cells from 23 Korean and 6 Belgian patients.
- Cancer cells displayed normal differentiation programs & genetic alterations that apparently fostered immunosuppressive microenvironments directed by regulatory T cells, myofibroblasts and myeloid cells.

Ranjan, B., Schmidt, F., et al. 2020. scConsensus: combining supervised and unsupervised clustering for cell type identification in single-cell RNA sequencing data. *bioRxiv*. doi: 10.1101/2020.04.22.056473.

- Hybrid approach to obtain cell type labels in scRNA-seq data using a consensus of semi-supervised and unsupervised clustering.
- Selected for flash talk at Single Cell Analyses Meeting, CSHL in Nov. 2019.

Ranjan, B., Chong, K. & Zheng, J. Composite mathematical modeling of calcium signaling behind neuronal cell death in Alzheimer's disease. *BMC Syst Biol* 12, 10 (2018). <https://doi.org/10.1186/s12918-018-0529-2>.

- An integrated mathematical model to analyze and understand 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 Apr. 2018

Bobby Ranjan. Detection of functional and topological modules in protein interaction networks | Final Year Project, NTU | May 2018

- Applied module detection and clustering algorithms to help researchers identify significant modules in Protein Interaction Networks (PIN).
- <http://hdl.handle.net/10356/73997>

Experience

Bioinformatics Specialist | Genome Institute of Singapore

August 2018 – Present | Singapore

- Developing algorithms for cell type identification in single-cell data

Software Design Engineer Intern | BitTitan

May 2017 – August 2017 | Singapore

- 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
- Tech stack includes C#, SQL and Microsoft Roslyn

Technology Analyst Intern | Bank of America, Merrill Lynch

August 2016 – December 2016 | Singapore

- Used message queues to improve efficiency of payment processing system
- Built a proof-of-concept (POC) to help onboard new testers onto platform
- Tech stack includes AngularJS, Java Spring, ActiveMQ, MyBatis & SQL

Summer Intern | Asia Risk Transfer Solutions (ARTS)

May 2016 – July 2016 | Singapore

ARTS aims to help create risk transfer products for developing communities in Asia

- Developed 2 MVP Android applications for different user groups
- Tech stack includes Java, Android and Django

Achievements & Awards

Top 8 & Most Socially Useful Award | NUS Hack & Roll 2018 | January 2018

People's Choice Award | NUS Hack & Roll 2017 | January 2017

Best Freshmen Award | NUS Hack & Roll 2015 | January 2015

President's Research Scholar | NTU | August 2015 – June 2016

All India Rank 1820 | IIT JEE Advanced (India) | May 2014

All India Rank 3 scoring 98.2% | ICSE Board (O-level equivalent) | May 2012