Stanley G. L. GAN

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CAREER OBJECTIVE Pursue a career in data science with the aim of designing sophisticated machine learning models and visualization tools in deriving meaningful business insights

EDUCATION

MSc Computing Science, *Simon Fraser University (SFU), Vancouver, Canada*   *Sept 2016 – Sept 2018*
- Thesis: *Resolving Bacteria Strain Diversity and Drug Resistance using Machine Learning and Optimization*
- Core subjects: Machine Learning, Statistical Learning, Deep Learning, Algorithm Design   CGPA: 4.0/4.3

BSc (Hons) Mathematics, *The University of Hong Kong (HKU), Hong Kong*   *Sept 2012 – June 2016*
- Core subjects: Linear Algebra, Optimization, Numerical Analysis, Database Management   CGPA: 3.2/4.3

SCHOLARSHIPS & AWARDS

- Awarded Graduate Fellowship, Entrance Scholarship, KEY Big Data Award at *SFU*   *Sept 2016 – Sept 2018*
- Awarded HKU Entrance Scholarship and HKSAR Government Scholarship at *HKU*   *Sept 2012 – June 2016*

WORK EXPERIENCE

Machine Learning Researcher at *1QBit, Vancouver, Canada*   *Sept 2017 – Present*
- 1QBit is a 60-person software R&D consulting company focusing on advanced computation technologies.
- Developed computationally efficient machine learning and quantum computation frameworks for one of the world's largest insurance institution with a team of 6 researchers.
- Developed a first quantum-based algorithm for drug discovery by collaborating with data scientists in Accenture Labs and chemists in Biogen (U.S. multinational biotechnology company). Initial results were published in a computer science archive *arXiv*.
- Opportunity to interface with international clients and to work with a diverse team of smart researchers, software developers and business analysts, that enhances my communication and team management skills.

Researcher at *SFU, Vancouver, Canada*   *Sept 2016 – Sept 2018*
- Research using machine learning to predict drug resistance of *Tuberculosis (TB)* while working with 5 professors from UBC and Université de Montréal. This project contributed to an accurate, accessible platform for drug diagnosis in North America and initial work will be published in a computer science archive, *bioRxiv*.
- Proposed an optimization pipeline to unravel diversity of bacteria while working with 4 professors and researchers from SFU, UBC and Yale University. My work had been published in one of the prestigious workshops, *RECOMB-Seq* 2018 and will be published in *Bioinformatics* Journal.
- Led researchers in publishing papers to journals and conferences such as *Bioinformatics* and *RECOMB*. Learnt supervisory skills and to work under pressure to meet submission deadlines.

Strategic Planning and Advisory Intern at *AECOM, Hong Kong*   *June 2015 – Aug 2015*
- Constructed new transport model for Kowloon Motor Bus routes that improved efficiency by 7% in initial run.
- Experienced the corporate culture of a large multi-national engineering consulting firm at AECOM.

SKILLS

Technical Skills
- Programming Languages: Python, R, SQL, MATLAB, C++, Bash Scripting
- Data Visualization and Data Science Tools: Tableau, Scikit-Learn, Keras, TensorFlow, CPLEX, cuDNN

Other Skills
- Leadership skills: supervised 3 undergraduate students resulting in 1 offer to UBC post-graduate program
- Fluent in written and spoken English, Mandarin, Cantonese and Malay
- Hobbies and Interests: swimming, playing guitar, hiking, jogging

PUBLICATIONS

Deconvoluting the Diversity of Within-host Pathogen Strains in a Multi-locus Typing Framework
- Proceedings of RECOMB-Seq 2018 (To be appeared)

Analysis of Machine Learning Methods in Predicting Drug Resistance of *Mycobacterium Tuberculosis*
- Preprint on bioRxiv (To be appeared)

PROJECT EXPERIENCES

Statistical Learning (Featured Bioinformatics Topic on Kaggle)
Predicting Diabetes Incidence for the Pima Indian Dataset, *SFU Canada*   *Sept 2017 – Dec 2017*
- This topic is one of the most sought after health problem to solve using machine learning due to its great impact on identifying diabetes incidence in an early stage.
- Explored statistical learning methods including Generalized Additive Model (GAM), GBM, SVM, imputation methods such as MICE, and visualization tools such as VIM in R.
- The best model is an ensemble of GAM, GBM and SVM, achieving 80.6% average test accuracy which is comparable to state-of-the-art models.

Deep Learning (Natural Language Processing)
Aspect Based Sentiment Analysis using Deep Memory Networks, *SFU Canada*   *Jan 2017 – May 2017*
- This topic is crucial in recommender system in ecommerce or social network, where predicting sentiment of a product in a sentence accurately improves recommendation for users, which in turn increases revenue.
- Obtained data from SemEval 2017 and achieved test accuracy higher than state-of-the-art neural network based model in 3 classes classification (Positive/Negative/Neutral) by 7.6%

Machine Learning (Computer Vision)
Fingerprint Liveness Detection using Neural Networks, *SFU Canada*   *Sept 2016 – Dec 2016*
- This topic is important in security as to counteract novel spoof materials in faking fingerprints and identities.
- Implemented models such as deep neural networks and CNN with Dropout in classifying real and fake fingerprint images (2000 training images: 1000 real and 1000 fake, 2500 test images: 1000 real and 1500 fake).
- Utilized dimensionality reduction technique PCA which improved test accuracy by ~9% for all models.
- The best model achieved test accuracy of 99% and ACE score of 1.1(Metric used by LivDet competition).

Theoretical Computer Science (Design and Analysis of Algorithm)
Online Randomized Algorithm, *HKU Hong Kong and SFU Canada*   *Aug 2015 – Jan 2016, Sept – Dec 2016*
- This topic is important in analysis of randomized algorithm with scarce information especially in auctions (seller and buyer matching) and organ donation (donor and receiver).
- Obtained 100% in course project by studying the design of competitive online algorithms using primal dual approach and applying this approach in analysing RANKING algorithm for online bipartite matching problem.

EXTRA-CURRICULAR AND VOLUNTEERING ACTIVITIES
- **August 2018:** Presented poster topic "Predicting Antibiotic Resistance of Mycobacterium Tuberculosis" at the SFU Symposium on Mathematics and Computation
- **August 2017:** Presented poster topic "Illuminating the Diversity of *Borrelia* in Ticks" at the SFU Symposium on Mathematics and Computation
- **Jan 2013 – Jan 2016:** Performed in charity events and cultural nights for the HKU Residential College Band. Managed to raise 13,000HKD for minority schools in Hong Kong.