Gary Goh Shing Wee

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Profile

A fresh post-graduate with background in machine learning, statistics and operations research. My interest is to find explanations to data-driven artificial intelligence models (especially deep learning) and interpret their behaviors.

Education

Singapore University of Technology and Design (SUTD) – ISTD Pillar   **Sep 2016 – Sep 2021**

Master of Engineering (Research) in Computer Science and Design

- Advised by **Prof. Alexander Binder** and previously **Prof. Yue Zhang**
- **Cumulative Point Average**: 5.00 / 5.00
- **Thesis**: *Analyzing Deep Learning Models for Traffic Prediction*
- **Thesis committee**: Zhou Jianying, Lim Kwan Hui, Berrak Sisman, Liu Jun
- **Coursework**: Analysis of Algorithms, Statistics, Computer Networks,
  Theory and Application of Software Security, Database Systems
- Teaching assistant for Computation Structures labs taught by **Dr. Oka Kurniawan**
- Funded by Singapore-MIT Alliance for Research and Technology (**SMART**) Fellowship

National University of Singapore (NUS) – Faculty of Engineering   **Aug 2010 – Jul 2014**

Bachelor of Engineering in Industrial and Systems Engineering

- **Area of specialization**: *Logistics and Systems Optimization*
- **Cumulative Aggregate Point**: 4.32 / 5.00 (2nd Upper Honours)
- **Coursework**: Operation Research, Simulation, Statistics, Probability, Data Structures and Algorithms,
  Software Engineering, Supply Chain and Inventory Management
- **Thesis**: *Multi-mode Switching Problem for Production/Inventory Systems*
- Thesis supervised by **Prof. Shuangchi He** and **Prof. Dacheng Yao**
- **Awards**: Faculty's Dean List (Top 5% of Cohort) – AY2011/12 and AY2013/14 Semester II

Work Experience

Agency for Science, Technology and Research (A*STAR) – SIMTech   **Aug 2014 – Aug 2016**

Research Engineer in Planning and Operations Management Group (POMG)

- Research in data mining for supply chain and manufacturing systems
- Develop full-stack software for **Manufacturing Control Tower program**
- Provide text-mining solutions for the **Antuit-SIMTech Supply Chain Analytics Lab**
- Design and implement full-stack desktop application with data visualization and
  demand forecasting capability in a **T-Up** secondment program to **JR Vending**

Electrify   **Apr 2018 – Jun 2019**

IoT Software Engineer (Freelance)

- Develop and maintain software for unix-based embedded systems in remote devices
  to collect sensor data under intermittent internet connection environment
- Utilize MQQT messaging protocol with **AWS IoT Framework** to ensure reliable and secure data collection
- Create AWS Lambda functions to relay data exchange between content management server to remote devices

Integrated Decision Systems Consultancy (IDSC)   **Jan 2013 – Jan 2014**

Associate Consultant (Intern)

- Built optimization models for stock mix optimization (**OPTIMAX**), supply chain network optimization, and inventory
  optimization for the consultancy's clientele
- Perform simulation analysis to evaluate various inventory re-order policies
- Develop demand forecasting and data visualization capability into software solutions

Publications

[1] **Analyzing Deep Learning Models for Traffic Prediction**   2021
Goh, Gary S. W.
Master's Thesis at Singapore University of Technology and Design

[2] **Understanding Integrated Gradients with SmoothTaylor for Deep Neural**   2021
Network Attribution
Goh, Gary S. W., Lapuschkin, Sebastian, Weber, Leander, Samek, Wojciech, and Binder, Alexander
In 2020 25th International Conference on Pattern Recognition (ICPR)

[3] **Twitter-Informed Crowd Flow Prediction**   2018
Goh, Gary S. W., Koh, Jing Yu, and Zhang, Yue
In 2018 IEEE International Conference on Data Mining Workshops (ICDM)
Award: Research Showcase Award (Data Science) at FIRST Industry Workshop 2018

[4] **Spatial Data Dimension Reduction using Quadtree: A Case Study on**   2016
Satellite-derived Solar Radiation
Yang, Dazhi, Goh, Gary S. W., Jiang, Siwei, and Zhang, Allan N.
In 2016 IEEE International Conference on Big Data

[5] **Forecast UPC-level FMCG demand, Part III: Grouped Reconciliation**   2016
Yang, Dazhi, Goh, Gary S. W., Jiang, Siwei, and Zhang, Allan N.
In 2016 IEEE International Conference on Big Data

[6] **Optimizing Performance of Sentiment Analysis through Design of Experiments**   2016
Goh, Gary S. W., Ang, Andy J. L., and Zhang, Allan N.
In 2016 IEEE International Conference on Big Data

[7] **Sparsity Adjusted Information Gain for Feature Selection in Sentiment Analysis**   2015
Ong, B. Y., Goh, Gary S. W., and Xu, Chi
In 2015 IEEE International Conference on Big Data

[8] **Forecast UPC-level FMCG demand, Part II: Hierarchical Reconciliation**   2015
Yang, Dazhi, Goh, Gary S. W., Jiang, Siwei, Zhang, Allan N., and Akcan, Orkan
In 2015 IEEE International Conference on Big Data

[9] **Forecast UPC-level FMCG demand, Part I: Exploratory Analysis and**   2015
Visualization
Yang, Dazhi, Goh, Gary S. W., Xu, Chi, Zhang, Allan N., and Akcan, Orkan
In 2015 IEEE International Conference on Big Data

Computer Skills

⍟ **Github**:	https://github.com/garygsw
Programming languages:	Python, C/C++/C#, Javascript, Java, Microsoft VBA, R
Operating systems:	Mac OS, Windows, Ubuntu, Raspberry Pi OS, Linux Mint
Python libraries:	PyTorch, NumPy, Pandas, SciPy, Keras, Theano, scikit-learn, SpaCy, Django, ...
Frameworks:	Jupyter, Qt, AWS, Miscrosoft .NET 4.5, Cordova
Database systems:	MySQL, PostgreSQL, SQLite, MongoDB
Client-side technologies:	HTML5, CSS3, JQuery, D3.js, AngularJS
Other software:	Automod, AIMMS, Adobe Photoshop and Illustrator

Others

Languages:	English (fluent), Chinese (mother tongue)
Hobbies:	traveling, computer games, hiking, movies, cooking, photography, digital design, guitar