

# GARY Goh SHING WEE

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## Profile

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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

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### 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 (2<sup>nd</sup> 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

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### Sea – Garena

Nov 2021 – Present

*Data Scientist*

- Design machine learning algorithms for in-house recommendation systems

### 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](#)

### 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

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- [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 Network Attribution** 2021  
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 Satellite-derived Solar Radiation** 2016  
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 Visualization** 2015  
Yang, Dazhi, Goh, Gary S. W., Xu, Chi, Zhang, Allan N., and Akcan, Orkan  
*In 2015 IEEE International Conference on Big Data*

## Computer Skills

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 **Github:** <https://github.com/garygsw>

**Programming languages:** Python, C/C++/C#, Java, JavaScript, 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, Microsoft .NET 4.5, Apache Cordova

**Database systems:** MySQL, PostgreSQL, SQLite, MongoDB

**Client-side technologies:** HTML5, CSS3, jQuery, D3.js

**Other software:** Microsoft Office, Automod, AIMMS, Adobe Photoshop and Illustrator

## Others

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**Languages:** English (fluent), Chinese (mother tongue)

**Hobbies:** traveling, computer games, hiking, movies, cooking, photography, digital design, guitar