

# Ryan Y.W. Tan

Student Researcher, Modeller & Policy Analyst

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## Summary

Ryan is a graduate student from Delft University of Technology. He has a strong interest in research on complex adaptive systems for policy/planning. He has worked as a research assistant in various research centres conducting case studies in the Asian context with regard to water resource management, disaster resilience, livelihood systems, urban connectivity and accessibility.

## Education

### Delft University of Technology (TU Delft)

M. Sc. Engineering and Policy Analysis

Netherlands

Sep 22 – Present

- Awarded the Justus & Louise van Effen Excellence Scholarship

### National University of Singapore (NUS)

B. Eng. Mechanical Engineering, Honours (Highest Distinction), CAP: 4.64/5.00

Singapore

Aug 18 – May 22

- University Town College Programme: Systems Thinking/ System Dynamics
- Modules: Mechanical Engineering, Urban Planning, Policy, Philosophy

### Nanyang Technological University (NTU)

Singapore Universities Student Exchange Programme

Singapore

Jan 21 – May 21

### Hwa Chong Institution – High School and College

Singapore-Cambridge GCE Advanced Level (4 H2- Physics, Computing, Math, Economics)

Singapore

Jan 10 – Dec 15

- Institution accepts the top 5% of scorers in primary and secondary school national examinations

## Research Experience

### School of Interdisciplinary Studies, University of Glasgow

Research Assistant (PI: Dr Cecilia Tortajada)

International

Sep 22 – Present

- “Adaptation and resilience to climate change in India: The role of large dams”

### International Centre for Integrated Mountain Development (ICIMOD)

System Dynamics Researcher (PI: Dr Arabinda Mishra, Mr Nand Kishor Agrawal)

Nepal / Singapore

Jan 21 – Aug 22

- “Integrating resilience into Monitoring and Evaluation of climate and development practices in Hindu-Kush Himalaya”

Topics: Livelihood Systems, Adaptation and Resilience Building, System Dynamics

### University Town College Programme, National University of Singapore (NUS)

Social Network Analysis Research Assistant (PI: Dr Naviyn Balakrishnan)

Singapore

Nov 21 – Aug 22

- “Measuring Learning Outcomes of University Town College Programme (UTCP) in Residential College 4 (RC4): Examining the Constructively Aligned Living-Learning Environments, and Student Characteristics”

Topics: Social Network Analysis, Cross-Disciplinary Mixing, Living-Learning Programmes

System Dynamics Research Student (SP: Prof Robert Wasson, Dr Navarun Varma)

Nov 19 – Dec 20

- “System dynamics across three scales in the Brahmaputra River Basin - Exploring a Himalayan social-hydrological system”

Topics: Policy Analysis, Social-ecological Systems, Disaster Resilience, System Dynamics

### Department of Mechanical Engineering, National University of Singapore (NUS)

B.Eng Dissertation (SP: Prof Marcelo H. Ang, Jr)

Singapore

Aug 21 – Mar 22

- “Implementation and Evaluation of Mobile Robot Localisation Techniques”

Topics: Computer Vision, Graph Algorithms, Graph Optimization

### Collaborative Space Syntax Research Projects

Spatial Data Researcher (in collaboration with a UCL researcher and practising architects)

Singapore

Apr 21 – Feb 22

- “Expanding on Connectivity Graphs (J-Graphs) to analyse Spatial Configurations in Complex Buildings”

Topics: Spatial Networks, Complex Buildings, Network Layouts

### Institute of Water Policy (IWP), Lee Kuan Yew School of Public Policy

Public Policy Research Assistant (PI: Dr Cecilia Tortajada)

Singapore

May 20 – Nov 20

- Responsibilities include Text Mining & Analysis, Systematic Reviews, Case Studies

Topics: Discourse Analysis, Sustainability Reporting, Water Management, Structured Topic Modelling

## Professional & Work Experience \_\_\_\_\_

### Inully Architecture Design Studio

*Spatial Design Analyst – collaboration with CIAP, Bescon and ARUP*

Singapore  
Jan 21 – Apr 21

- Planned the spatial configuration of the new campus at GEMS World Academy through analysing multi-scale connectivity and functionality of spaces

### Centre for Liveable Cities (CLC), Ministry of National Development

*Intern/Research Assistant - Complexity Science Team (SP: Dr Limin Hee)*

Singapore  
Jul 20 – Jan 21

- Supported projects aimed to bridge knowledge and foster discussions between stakeholders and agencies
- Conducted urban geospatial (GIS) modelling and analysis for government agencies
- Designed spatial network models and conducted analysis on choice accessibility on multiple scales

### 17 C4I Battalion, Singapore Armed Forces

*Signal Operator and Armourer in Charge (National Service)*

Singapore  
April 16 – Feb 18

- Managed vehicular communications for an active battalion and was presented with the batch's best detachment award

## Teaching Experience \_\_\_\_\_

### \_\_\_MODULES

#### 12DS3I - Design Research Studio, 12DAI - Data Analytics for Design

*School of Design and Environment, Ngee Ann Polytechnic*

Singapore  
Jan 21 – May 22

Co-Lecturer/ Course Developer – Diploma in Design (Product Innovation/Architecture)

#### ME1102 - Engineering Principles and Practice 1

*Faculty of Engineering, National University of Singapore*

Singapore  
Aug 19 – Nov 21

Teaching Assistant – Mechanical Engineering

#### DSA4264 - Sense-making Case Analysis: Public Policy and Society

*Department of Statistics, National University of Singapore*

Singapore  
May 20 – Nov 20

Support – Scraped Data and Code used as Teaching Material

### \_\_\_WORKSHOPS & GUEST LECTURES

#### Urban Analysis and Systematic Observations

*School of Architecture and the Built Environment, Singapore Polytechnic*

Singapore  
Jun 22

Guest Speaker – Diploma in Design (Interior Design)

#### Interior Spatial Analysis Workshop for Final Year Module - "Atelier Space, Inclusion & Belonging"

*School of Architecture and the Built Environment, Singapore Polytechnic + Lee Kuan Yew School of Public Policy*

Singapore  
Nov 21, Dec 21

Guest Lecturer & Critique – Diploma in Design (Interior Design)

#### Modelling Techniques for Seminar - "Navigation in Singapore Waters - Bridges and Barriers"

*Residential College 4, National University of Singapore*

Singapore  
May 20, May 21

Guest Speaker for UTS2708/ UTC2717 (NUS), a module on Systems Thinking and Water Policy

## Articles & Publications \_\_\_\_\_

### \_\_\_JOURNAL ARTICLES

#### System dynamics across three scales in the Brahmaputra River Basin- Exploring a Himalayan social-hydrological system

[Ryan YW Tan](#), Navarun Varma, Robert Wasson, Shukla Archajee. (2022). *International Journal of Water Resource Development*. [Manuscript in Preparation].

### \_\_\_CONFERENCE PAPERS & PRESENTATION

#### Testing the waters for a Social-Learning Lab in Residential College 4

Navarun Varma, [...], [Ryan Tan Yi Wei](#), et al. (2022). *2022 Teaching and Learning at Residential Colleges Colloquium*.

#### Integrating resilience into Monitoring and Evaluation of climate and development practices in Hindu-Kush Himalaya

Navarun Varma, Arabinda Mishra, [Ryan Yi Wei Tan](#), et al. (2022). *2022 International System Dynamics Conference*. [Work in Progress Paper]

#### System dynamics across three scales in the Brahmaputra River Basin- Exploring a Himalayan social-hydrological system

[Ryan Tan](#), Navarun Varma, Robert Wasson, Shukla Archajee. (2021). *2021 International System Dynamics Conference*. [Long Paper + Oral Presentation]

### \_\_\_OTHERS

#### Making the most out of every drop of Singapore's water

Cecilia Tortajada, [Ryan Tan Yi Wei](#). (2020, Nov 25). *The Business Times*. [Opinion Piece].

## Community Involvement \_\_\_\_\_

### Active Member

*System Dynamics Society (ASEAN and Student Chapter)*

International  
Mar 21 - Present

- Presenter and Reviewer at the 2022, 2021 International System Dynamic Conference

### External Advisor for Student Projects on Public Spaces

*School of Design and Environment, Ngee Ann Polytechnic*

Singapore  
May 21 – Aug 21

- Advised collaborative evidence-based design projects with industry partners: National Environment Agency, Jalan Besar Town Council, City Sprouts, Red Cross, Yong En Care Centre
- Projects aimed to rejuvenate and develop public spaces - Parks, Playgrounds, Void Decks, Gardens, Urban Farms, etc

## Certifications \_\_\_\_\_

### Moral Foundations of Politics

May 22

### Syntax\_202 + Syntax\_101 (Space Syntax)

Jun 21, May 21

### AnalyticsX: Big Data Analytics

Jun 20

### Solid Edge 2019 Certified Associate II

Aug 19

## Awards \_\_\_\_\_

### Justus & Louise van Effen Excellence Scholarships

Netherlands

*Full scholarship to study at TU Delft, MSc Engineering and Policy Analysis*

Mar 22

## Skills \_\_\_\_\_

- System Dynamics Modelling (Vensim)
- Spatial/Social Network Modelling (Space Syntax, SNA)
- Geographic Information Systems (QGIS)
- CAD Software (SolidWorks, Solid Edge, SketchUp)
- **Languages:** English (Native), Chinese Mandarin (Fluent)
- R, Python & C Programming
- Packages/ Frameworks: ggplot2, dplyr, rvest, selenium, quanteda, stm, igraph, rdepthmap, sp, rgdal, shiny, pandas, numpy, sklearn, pytorch, opencv, ROS