

Residential College 4

# 10th Anniversary Symposium

Interconnected Horizons:  
Systems Thinking, Communities,  
and Entrepreneurship

19 October 2024, 8.45AM to 5PM



RESIDENTIAL  
COLLEGE 4

National University of Singapore

# RC4 10th Anniversary Symposium

## PROGRAMME AGENDA

8.15AM	<b>Registration (Guests to be seated by 8.40am)</b>
8.45AM	<b>Opening Address</b> by A/P Peter Pang, Master, Residential College 4
9AM	<b>Plenary Talk 1: Professor John Sterman*</b> Moderator: A/P Lakshminarayanan Samavedham
10AM	<b>Plenary Talk 2: Professor Peter S. Hovmand*</b> Moderator: A/P Lakshminarayanan Samavedham
11AM	<b>Tea Break</b>
11.30AM	<b>Panel: Policymaking for the 21st Century</b> by Ms Bernise Ang, Dr Corinne Ong, Tan Qing Heng (Moderator: Dr Navarun Varma)
12.30PM	<b>Lunch Reception</b>
1.30PM	<b>Panel: Technology, Innovation &amp; Entrepreneurship</b> by Dr Justin Choo, Mr Leon Toh, Mr Cheng Huimin (Moderator: A/P Tan Tin Wee)
2.30PM	<b>Panel: Student Research Papers</b> by Edwin Setiadi Sugeng, Ernest Cuong, William Tok, Toh Chin Howe, Pierre Ng, Sky Wong, Ho Sze Yuan, Winnie Tan (Moderator: Dr Cindy Fu)
3.30PM	<b>Panel: Communities &amp; Engagement</b> by Dr Lynette Tan, Dr Toh Tai Chong, Martha Henrietta Soetedjo, Daniel Lee (Moderator: A/P Chng Huang Hoon)
4.30PM	<b>Closing Address &amp; Networking Session with Refreshments</b>

*\*The plenary speakers will connect virtually and engage with the audience in the auditorium live.  
All timings reflected here are in Singapore Time.*



# About Interconnected Horizons



The theme of this symposium is "Interconnected Horizons: Systems Thinking, Communities, and Entrepreneurship", with the following key threads:

(i) Policymaking for the 21st century: This panel aims to explore the interlinked issues of social inequality and poverty, disasters and development, epidemiology and public health, energy, and global climate change, in the VUCA world of the 21st century. It will highlight scientific means to explore such issues, which are often framed as (super) wicked, and showcase related methodological and pedagogical innovations in connection with policymaking and education.

(ii) Communities & Engagement: Fieldwork and service learning are essential for many areas of inter- and trans-disciplinary knowledge generation and education. This thread aims to explore the needs and tools for engaging with communities for knowledge, teaching and learning, and co-creation of impact in and out of the classroom. It will also address the questions of how we can adopt and adapt these methods to specific education and cultural contexts.

(iii) Technology, Innovation & Entrepreneurship: This panel delves into the realm of creativity, innovation, and entrepreneurship within educational and societal frameworks, and explores how these concepts intersect and catalyse change within academic institutions and beyond. This thread aims to showcase novel approaches to fostering innovation and entrepreneurship among students, faculty, and researchers, while also addressing the challenges and opportunities in translating innovative ideas into viable enterprises. Additionally, it will explore the role of education in cultivating an entrepreneurial mindset and fostering an ecosystem conducive to innovation and venture creation.

Collectively, these three threads aim to explore best practices in integrating theory with practice, creating meaningful learning experiences both inside and outside the classroom. The threads examine how experiential learning, study abroad programs and other forms of immersive education can enrich students' learning experiences, prepare them for the complexities of the modern world, and foster lifelong learning habits in them.

# Plenary Talks



## A/P Lakshminarayanan Samavedham



Founding Master, Residential College 4, NUS

**Moderator**

A/P Lakshminarayanan Samavedham is the Founding Master of Residential College 4 (RC4) at the National University of Singapore (NUS).

He received his B.Eng (Hons.) and MS degrees in Chemical Engineering from BITS Pilani, India, and the Indian Institute of Technology, Madras, respectively. After completing his PhD in Process Control from the University of Alberta, Laksh went on to work for Mitsubishi Chemical Corporation, Japan, at their Mizushima R&D Centre. He is currently an Associate Professor in the Department of Chemical and Biomolecular Engineering at the NUS College of Design and Engineering.

## Plenary Speakers



### **Prof John Sterman**

Jay W. Forrester Professor of Management, MIT and Director, MIT System Dynamics Group



### **Prof Peter S. Hovmand**

Pamela B. Davis MD PhD  
Professor of Medicine, Center for Community Health Integration,  
School of Medicine at Case Western Reserve University



Plenary Speaker 1:

# Prof. John Sterman



**Jay W. Forrester Professor of Management,  
MIT and Director,  
MIT System Dynamics Group**

## System Dynamics: Innovating for impact in a complex world

Congratulations to NUS RC4 on its 10th anniversary!

On this anniversary your focus on systems thinking and system dynamics is needed more than ever. Why? Today humanity faces grave threats arising from our mismanagement of increasingly complex systems we, collectively, have created. Fortunately, progress in system dynamics, the natural and social sciences, computing, and other modeling disciplines enable us to build reliable, useful knowledge of complex systems. How can we build on those innovations to improve the science and practice of system dynamics? How can we help leaders in government, business, civil society, education, and every aspect of society—and the public at large—develop their systems thinking capabilities? How can we not only create new knowledge but use it to make a difference in the world? I'll share a few examples and ask you to join in the exciting work ahead.

Professor John Sterman is the Jay W. Forrester Professor of Management at the MIT Sloan School of Management and a Professor in the MIT Institute for Data, Systems, and Society. He is also the Director of the MIT System Dynamics Group and the MIT Sloan Sustainability Initiative. Prof. Sterman's research centers on improving decision-making in complex systems, including corporate strategy and operations, energy policy, public health, environmental sustainability, and climate change. He is the author of many scholarly and popular articles on the challenges and opportunities facing organizations today, including the book, *Modelling for Organizational Learning*, and the award-winning textbook, *Business Dynamics*.

Prof. Sterman is a Fellow of the American Association for the Advancement of Science and received an honorary doctorate from the Università della Svizzera italiana, Switzerland. He has twice been awarded the Jay W. Forrester Prize for the best published work in system dynamics; has won an IBM Faculty Award as well as the Accenture Award for the best paper of the year published in the *California Management Review*. He received the Best Application Award from the System Dynamics Society for his work on climate change policy. At MIT, he has been recognized with the Samuel E. Seegal Faculty Prize, given to a professor who "inspires students in pursuing and achieving excellence," the Jamieson Award for Excellence in Teaching, numerous other awards for teaching excellence; and was named one of MIT Sloan's "Outstanding Faculty" by the *BusinessWeek Guide to the Best Business Schools*. His research has been featured in media around the world including the *New York Times*, *Washington Post*, *Boston Globe*, *Public Television's News Hour*, *National Public Radio's Marketplace*, *WGBH*, and other media for his innovative use of interactive simulations in management education and policymaking, particularly in climate change and energy policy.



Plenary Speaker 2:

# Prof. Peter S. Hovmand



**Pamela B. Davis MD PhD Professor of Medicine, Center for Community Health Integration, School of Medicine at Case Western Reserve University**

## **Community-Based System Dynamics in an Era of Artificial Intelligence/Machine Learning: Thick Data/Thin Description**

Community engaged system dynamics including group model building, participatory system dynamics, and computer mediated modeling have gained interest as a potential way to address the problem of bias due to limited awareness of societal context in artificial intelligence/machine learning (AI/ML) models. Systems thinking and participatory methods such as group model building generate causal maps of a problem or issue that can be used to better understand the relationships of numeric and text data. While causal maps and other forms of causal structures elicited during group model building represent “thick data” to AI/ML developers, their interpretation varies by the approach to participation. This talk reviews some of the key differences and highlights Community Based System Dynamics as a way to develop “thin descriptions” of social phenomena.

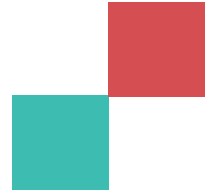
Professor Peter S. Hovmand is Pamela B. Davis MD PhD Professor of Medicine, Center for Community Health Integration, School of Medicine at Case Western Reserve University. Prof. Hovmand is an internationally recognized leader in developing and applying participatory methods in system dynamics and systems science in public health and medicine. He founded and led the Brown School’s Social System Design Lab at Washington University in St. Louis from 2009 to 2020, authored Community Based System Dynamics and led the creation of Scriptapedia as a knowledge common for group model building scripts. Prof. Hovmand serves as an associate editor for System Dynamics Review.

Dr. Hovmand’s work has been supported by the National Science Foundation, National Institutes of Health, Lupina Foundation, SkipNV, US Department of Agriculture, St. Louis Federal Reserve Bank, Robert Wood Johnson Foundation, Substance Abuse and Mental Health Services Administration, Foundation for Food and Agriculture Research, Administration for Children & Families, Ohio Department of Mental Health, Economic and Social Research Council United Kingdom, Wellcome Trust, Centers for Disease Control and Prevention, Bill and Melinda Gates Foundation, YMCA, RegionWise, Save the Children UK, Wellesley Institute, Google (now Alphabet), and Government of Singapore.



Panel:

# Policy Making for the 21st Century



**Dr. Navarun Varma**



Director of Studies, Residential College 4, NUS

**Moderator**

Dr. Navarun Varma is the Director of Studies and a Senior Lecturer (Resident Fellow) at Residential College 4, National University of Singapore (NUS). He teaches courses on Disaster Resilience, Water Governance in Asia, and Food Systems Resilience. In his Senior Seminar courses, there is a fieldwork component in ASEAN countries, delivered in collaboration with NUS Global's partner Universities in the region, and funded through its Southeast Asia Friendship Initiative (SFI). Navarun also played a key role in launching the STEER Himalaya Program in the College. He sits on the editorial board of the International Journal of Water Resources Development (Taylor and Francis).

Navarun's academic interests lie in the fields of systems thinking and sustainability science, policy education, environmental policy, and water governance. His experience in fieldwork and policy research enables him to develop innovative teaching methods that help students connect theory with practice and learn inter-and-transdisciplinary themes and skills. He co-edited the book "Emerging Pedagogies for Policy Education: Insights from Asia," which was published by Palgrave Macmillan in 2022. Currently, he is working on Simulation-Based Learning techniques and participatory modeling with his students and collaborators from academia and the public.

## Panel Members



**Ms Bernise Ang**  
Founder,  
Zeroth Labs



**Dr. Corinne Ong**  
Ridge View Residential College,  
NUS



**Mr Tan Qing Heng**  
RC4 Alumnus,  
NUS BIZ'26



# Panel: Policy Making for the 21st Century

## PANEL SPEAKERS:



Founder, Zeroth Labs & Fellow, Residential College 4, NUS

### Bernise Ang

#### *Encountering policy challenges: from the classroom to the field*

##### Synopsis

Bernise will share her journey from youth activism to founding Zeroth Labs, a systems research lab addressing complex societal challenges. Drawing from her work with UN agencies, the Singapore government, and others, she will share her efforts to use a mix of methods including complexity science, systems thinking, anthropology, design and others to inform interventions in countries at various stages of development.

*Bernise Ang is a fellow at RC4. As a practitioner in systems thinking and international development, she has conducted qualitative and quantitative research from the field to inform the decision making of government leaders in social policy domains such as rapid urbanisation, youth unemployment, and others. In her role as Principal at Zeroth Labs, a systems research firm, she developed the UN Development Programme (UNDP) Asia Pacific's first systems research approach. Her teaching experience includes co-teaching a summer programme on complexity and systems thinking (CAST) since 2020 at Yong Loo Lin School of Medicine at NUS, capstone advisory for the Master of Tri-Sector Collaboration at the Singapore Management University, among others.*

*She studied psychology at the University of New South Wales, and her work now involves bringing together methods from behavioural science, anthropology, applied mathematics and others to make complexity science more applicable and useful to addressing the grand challenges facing the world today. Her research interests include the application of network theory to advancing quantitative ways of understanding phenomenon in fragile states and social systems with high economic inequality. Her notable achievements include staring down a foreign minister and making 3 ambassadors cry while arguing for fossil fuel energy transition as a youth activist at UN climate negotiations.*



Fellow, Ridge View Residential College, NUS

### Corinne Ong Pei Pei

#### *Discourse of Future's Thinking*

##### Synopsis

How can higher education play a role in cultivating thinkers who are capable of engaging with real-world issues with policy implications, and what role could research play in inspiring future-oriented analysis for policymaking and policy education? In this sharing, I apply environmental sustainability problems as a case-in-point given its "wicked" qualities. Specifically, I explore and explain how the strategic use of future-oriented research and educational activities in the realm of environmental sustainability, can respectively, stimulate useful ideas for policy-making and equip young adults with the competencies to contribute to problem-solving more effectively, as citizens and/or in other capacities.

*Dr. Corinne Ong is a Fellow of RVRC, teaching several modules for the new RVRC Programme being launched in AY21/22. She is an environmental and urban sociologist by training, obtaining her Masters and Doctoral degrees in Sociology from the University of North Texas (UNT), USA. Since graduating with her doctorate, Corinne has been actively engaged in teaching and applied research. Corinne began her career as an Assistant Professor in Sociology in a teaching college in the United States, before working in Singapore's higher educational institutions and a government ministry. In particular, Corinne's research interests broadly lie in understanding the role of the social context in accounting for human actions and its structural impacts on the natural environment. After office hours, Corinne enjoys practising yoga in its gentle forms, caring for her pet turtle, reading Doraemon, and being in the company of her family.*



RC4 Alumnus, NUS Business School 2026

### Tan Qing Heng

#### *Student led research initiatives within RC4 STEER Himalaya*

##### Synopsis

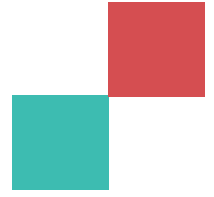
In this talk, the speaker will delve into how the RC4's Study Trip for Engagement and Enrichment (STEER) examined the interconnectedness of rural livelihoods, natural resources, and migration in the Kumaon hills of the Western Himalaya in India. The presentation will demonstrate how students, local stakeholders, and educators worked together to use participatory systems modeling to unpack topics such as remittances from migration, the diversification of livelihoods through initiatives such as nature-based livelihoods, and the access to and benefits of policy. This ongoing work has helped identify gaps in policy and the needs for community resilience in a vulnerable region like the Indian Himalayan Region.

*Qing Heng is a Year 3 Business Administration student who is interested in research and entrepreneurial ventures as part of Residential College 4 (RC4). As part of his research, he is currently focused on investigating the role of migration as an adaptation to social-ecological changes in the Kumaon Hills of the Indian Himalayan Region. He is also a key member of the social enterprise 'The STEER Challo,' a web/mobile application that has emerged from the RC4 STEER Himalaya 2022 and 2023 trips, to help promote responsible ecotourism involving local community stakeholders.*



Panel:

# Technology, Innovation & Entrepreneurship



**A/P Tan Tin Wee**



Founder, National Supercomputing Centre & Resident Fellow, Residential College 4, NUS

**Moderator**

Associate Professor Tan Tin Wee served as a Resident Fellow at Sheares Hall for 10 years before becoming the Master of Eusoff Hall, a position he held for another 10 years. He was the Founding Director and Chief Executive of the National Supercomputing Centre, on secondment from the Department of Biochemistry at NUS. Lauded as an internet pioneer in Singapore, who founded the multilingual internet domain name system, and was instrumental in its internationalization. Assoc. Prof. Tin Wee was inducted into the Internet Society's Internet Hall of Fame in 2012. He has a wealth of corporate and entrepreneurial experiences, and lends important help as a mentor & facilitator in the "Technology, Innovation & Entrepreneurship" course at RC4.

He is also a classical guitarist and volunteers with Caregivers Alliance as a dementia caregiver trainer, and helps with Waterways Watch, SG75 and ASEAN HPC Task Force.

## Panel Members



**Dr. Justin Choo**  
Founder & CEO,  
Knorex



**Mr Leon Toh**  
Managing Partner,  
Damson Capital



**Mr Cheng Huimin**  
Founder, Vilota  
(RC4 Alumnus, NUS FoE'19)



# Panel: Technology, Innovation & Entrepreneurship

## PANEL SPEAKERS:



Founder & CEO, Knorex

### Justin Choo

*From Academia to Impact: The Journey of Knorex in AI-Powered Advertising*

#### Synopsis

Justin Choo, the founder and CEO of Knorex, launched the company while working at the Data Mining labs, tackling Bioinformatics challenges, before scaling the company globally with the US now being its largest market. As a leader in AI-powered cross-channel advertising technology, Knorex's award-winning platform, Knorex XPO, delivers real-time advertising capabilities to reach marketers' desired audience across the Open Internet and Walled Gardens. Justin's journey demonstrates how academic rigor, a tech-savvy mindset, strong community support, and an entrepreneurial spirit can turn ideas into an impactful business. Through grit and adaptability, Justin led his company to navigate through countless upheavals and the complexities of building a data-driven B2B enterprise software business, showcasing how education, creativity, and an innovative ecosystem can empower individuals to launch ventures that address real-world challenges, driving change in industries worldwide.

*Dr. Justin Choo is the Founder and CEO of Knorex Group, where he provides strategic leadership and vision for the company's growth and innovation. With a wealth of expertise in adtech and business, he plays a key role in driving Knorex's global commercial expansion. With over 14 years of experience in the digital marketing industry, Dr. Choo possesses deep knowledge of advertising and marketing technologies. His direct experience working with advertising agencies, brands, and media publishers spans entities ranging from small enterprises to multinational corporations. His multi-disciplinary skill set and operational experience have been instrumental in delivering cutting-edge solutions and driving business success. In 2004, Dr. Choo co-founded FINEX Solutions Pte. Ltd., which specialized in providing an innovative real-time stock charting and trading system named ChartNexus to the retail community and stock brokerages. After a successful exit, he joined the data mining department, conducting research in Bioinformatics using AI/ML technology at Singapore's Agency for Science, Technology and Research (A\*STAR), a globally renowned research institution. Dr. Choo holds a Ph.D. in Bioinformatics and a Bachelor's degree (Honors) in Computer Science, both from the National University of Singapore.*

### Leon Toh

*Bridging Gaps: Collaborating for Success in Impact Investing*

#### Synopsis

Leon Toh will share his insights on the transformative role of impact investing in technology and social enterprises. Drawing from his extensive experience, he will discuss how aligning financial returns with positive social and environmental outcomes can drive meaningful change. Leon will explore strategies to bridge the gap between investors and entrepreneurs, highlighting the importance of mutual understanding and collaboration in fostering successful ventures. Additionally, he will emphasize the crucial role of education and community in cultivating entrepreneurial mindsets, inspiring the next generation to launch ventures that succeed commercially and contribute to societal well-being.

*Leon Toh is an impact investor and social entrepreneur with over eight years of experience in supporting purpose-driven startups in Asia. He is the Managing Partner of Damson Capital, an impact investment holding company and business advisory that focuses on developing social enterprises that can deliver strong financial returns and scalable social impact. With a vision to advance the UN Sustainable Development Goals (SDGs) through enterprise-based solutions, Leon leads Damson's strategy, portfolio management, and stakeholder engagement across Asia. He also co-founded EDEN + ELIE, a design-led, socially conscious jewellery brand that empowers and supports individuals from communities in need. Additionally, he serves as the Chairman of Westbike Messenger Service, a zero-emission bicycle courier that employs marginalized youth in Indonesia's inner cities.*



Managing Partner, Damson Capital

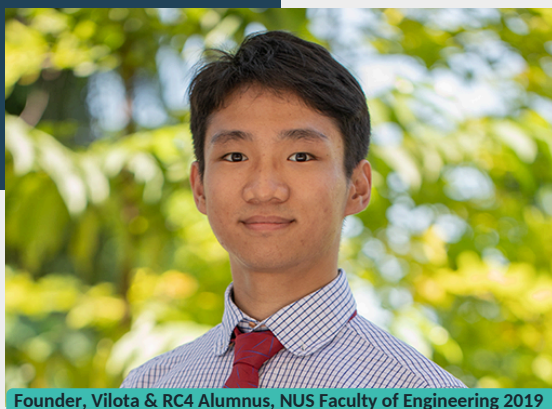
### Cheng Huimin

*From RC4Space to Vilota: An Entrepreneurial Journey*

#### Synopsis

In this engaging session, Cheng Huimin, founder of Vilota, will take us through his entrepreneurial journey, which began during his time at Residential College 4 (RC4) at the National University of Singapore. Huimin began his entrepreneurial journey during his colleague days. Starting with experiments in RC4Space, Huimin honed his skills in innovation and entrepreneurship, leading to the creation of Vilota, a venture driven by technology and creativity. He will share insights into the challenges he faced while transitioning from student experiments to building a deep-tech startup. Being immersed in RC4 community and activities for the whole undergraduate life, Huimin's talk will offer valuable lessons on how an academic environment can serve as a launchpad for real-world entrepreneurial success.

*Cheng Huimin is the founder of Vilota, a tech-driven startup focused on delivering innovative solutions in the space of robotic visual perception. An alumnus of Residential College 4 (RC4) at the National University of Singapore, Huimin began his entrepreneurial journey during his colleague days. Most prominently, he and his colleague mate found RC4's first cognitio pod RC4Space, and actively operated it. His experiments and projects during his time at RC4 laid the groundwork for his early career as researcher and staff supervisor, and eventually founding of Vilota as a venture, which is on its 4th year since founding in 2021. Huimin's journey reflects the power of innovation and perseverance, as he continues to inspire others through his passion for technology and entrepreneurship.*

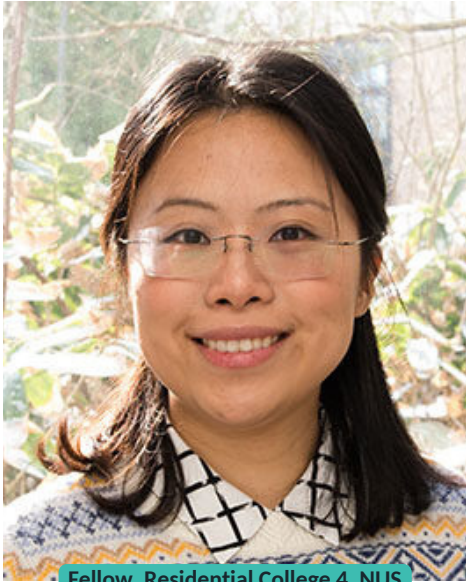


Founder, Vilota & RC4 Alumnus, NUS Faculty of Engineering 2019

# Panel: Student Papers



## Dr. Cindy Fu Jingcheng



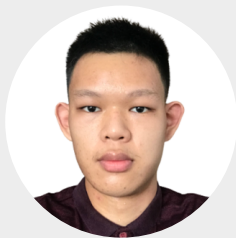
Fellow, Residential College 4, NUS

**Moderator**

Dr. Cindy Fu is a Lecturer at Residential College 4, NUS. She was a postdoctoral fellow in the Department of Economics, NUS. She completed her Ph.D. in economics from the University of Nottingham, where she also taught as a teaching fellow for two years. She lectured on quantitative methods, and advised many undergraduates for their dissertation projects. She is enthusiastic about empowering students with research and analytical skills and preparing them for their diverse academic interests and career paths.

Dr. Fu is a behavioral labour economist whose research aims at informing education and labour market policies and helping individuals make better choices. She has worked on peer effects in job search, gender differences in the labour market performance, and the rising education inequality during the pandemic. More information on her current research can be found on her personal website.

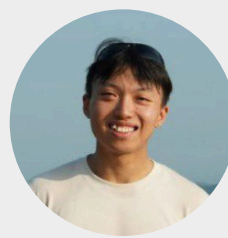
## Panel Members



**Mr Edwin Setiadi Sugeng**  
RC4 Alumnus,  
NUS FoE'22



**Mr Ernest Cuong**  
RC4 Alumnus,  
NUS SoC'24



**Mr William Tok Chang Yu**  
RC4 Alumnus,  
NUS FASS'24



**Mr Toh Chin Howe**  
RC4 Alumnus,  
NUS FASS'23



**Mr Pierre Ng Chong Heng**  
RC4 Student,  
NUS CHS'27



**Mr Sky Wong Jiale**  
RC4 Student,  
NUS BIZ'26



**Mr Ho Sze Yuan**  
RC4 Student,  
NUS CDE'26



**Ms Winnie Tan Yeong Chyi**  
RC4 Student,  
NUS BIZ'27

# Panel: Student Papers

## PANEL SPEAKERS:



RC4 Alumnus, NUS Faculty of Engineering 2022



RC4 Alumnus, NUS School of Computing 2024

### Edwin Setiadi Sugeng & Ernest Cuong

#### *Co-creation of course and game-based learning through research- Enabling disaster resilience education in RC4*

Supervisor - Dr Navarun Varma

##### Synopsis

Edwin and Ernest's collaborative research in RC4 assisted in re-design of a course, and design of tutorials and innovative pedagogical tools for it. Edwin's research interests, stemming from participation in the course Thinking in Systems - Disaster Resilience, led to his self-learning project on Jakarta flood and publication in Landscape Architecture Frontiers. After this research, he assisted the instructor to redesign a course on Water Governance and helped the cohorts of the course in applying system dynamics to explore Jakarta flood issue. Ernest built on Edwin's research by creating an Urban Flood Game that simulates flood management and response. This game, piloted with students and ASEAN Youth Volunteers, enhances understanding of flood systems. Moving forward, they plan to further test the game's pedagogical impact in fostering disaster resilience education.

Edwin is an alumni of Residential College 4. During his stay, he worked with Dr Navarun Varma to understand the flood in Jakarta, Indonesia using systems thinking and system dynamics modelling. He is currently a PhD candidate at the Department of Mechanical Engineering, NUS

Ernest is an alumnus of Residential College 4 and NUS School of Computing. Inspired by Edwin and Dr Navarun Varma's project on Jakarta Flood, he created a flood game to make learning system dynamics more fun and intuitive

### William Tok Chang Yu

#### *Understanding Major Depressive Disorder Dynamics in Singapore Using a Systems Thinking/System Dynamics (ST/SD) Approach*

Supervisor - Dr Naviyn P. Balakrishnan

##### Synopsis

This talk examines the prevalence of Major Depressive Disorder (MDD) in Singapore, utilizing a Systems Thinking/System Dynamics (ST/SD) approach to analyze causal factors and trends from 2000 to 2050. The model consists of population, depression, and stress sectors, identifying stress as a key factor influencing depression. Through sensitivity analysis, the research explores two primary policies: increasing workplace and familial support to reduce stress, and enhancing screening measures to identify undiagnosed cases. The combined policies show promising results in reducing depression rates, making this report a valuable guide for future preventive measures and policy implementations in Singapore.

William was a student at RC4 from 2020 to 2024. He has a keen interest in public policy and societal behavior, which led him to pursue a degree in Sociology. To deepen his understanding of public policy, he took RC4's Project module under the supervision of Dr. Naviyn Prathu Balakrishnan in 2021, focusing on modeling techniques. He is currently serving as a Staff Officer at MINDEF, where he handles National Service Affairs. During his time at RC4, William has been an active student leader, serving in various capacities, including Director of Clubs & Societies in the 7th College Students' Committee, Resident Assistant, and key founder of the RC4 Mentorship Program.



RC4 Alumnus, NUS Faculty of Arts & Social Sciences 2024

### Toh Chin Howe

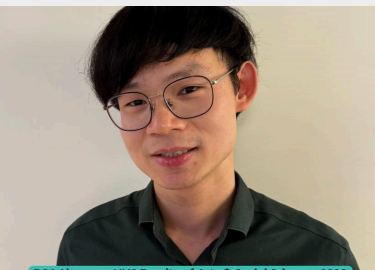
#### *Understanding The Water-Energy-Food (WEF) Nexus Through Systems Thinking*

Supervisor - Dr Bellam Sreenivasulu

##### Synopsis

As populations grow and economies scale increasingly, the world faces threats of resource scarcity. It is probably unrealistic to demand for the world to simply use less resources; people have to continue surviving and growing amidst competition. A symbiotic relationship between growth and preservation of resources should focus on optimisation and efficiency. Systems dynamics demonstrates great potential as an approach to understand how we can achieve balanced and optimal usage of our resources. Our project, 'Modelling the Water-Energy-Food Nexus', sought to appreciate the interconnectivity of Singapore's resources through systems modelling, and provide insights on future trends based on current data.

Chin Howe graduated from the Faculty of Arts and Social Sciences in 2023, majoring in Psychology. He currently works in Human Resources, Singapore General Hospital. As an inquisitive individual, his interests span across diverse areas. Systems thinking has been an interesting tool for him to dissect and examine life's curiosities. Chin Howe worked on the project, 'Modelling the Water-Energy-Food (WEF) Nexus', under the supervision of Dr. Bellam Sreenivasulu in 2020. With Dr. Bellam Sreenivasulu's support, the project was presented at the 39th International Systems Dynamics Conference. Together, they proudly share their research findings, hoping to inspire further exploration of a highly relevant topic.



RC4 Alumnus, NUS Faculty of Arts & Social Sciences 2023

### Pierre Ng Chong Heng, Sky Wong Jiale, Ho Sze Yuan, Winnie Tan Yeong Chyi

#### *Myanmar's 2021 Coup: Unravelling the Forces Driving a Nation Toward Near Collapse*

Supervisor - Ms Elizabeth Ong

##### Synopsis

The presentation explores the 2021 military coup in Myanmar and its role in pushing the country towards near collapse. Using a systems-thinking approach, it examines feedback loops of political instability, economic decline, and ethnic conflict, which were exacerbated by the coup. The study employs causal loop diagramming and portrays the Tatmadaw's (Myanmar military) efforts to consolidate power, the resulting civil disobedience, economic downturn, and international isolation. To illustrate the collapse, theories of societal collapse, such as Jared Diamond's framework, were drawn in, to highlight the interplay between environmental degradation and governance failures, leading to Myanmar's current state of near collapse.

Pierre Ng is a second-year student at the National University of Singapore's College of Humanities and Science (CHS), where he is pursuing a degree in Chemistry and a minor in Physics. Upon graduation, he intends to further his studies at the National Institute of Education (NIE) to pursue a career in teaching.

Sky Wong is a second-year Bachelor of Business Administration (BBA) student at the National University of Singapore. As an avid strategist with a strong commitment to social impact, Sky consults for non-profits as an Associate Consultant at Thrive Social Consulting, presenting insights and strategies for the social sector in Singapore.

Ho Sze Yuan is a second-year student pursuing a degree in Engineering Science at the National University of Singapore's College of Design and Engineering (CDE). He is passionate about Impact Driven Innovation and hopes to pursue a career in MedTech in the future.

Winnie is a Year 2 business student at the National University of Singapore. She is actively engaged in the course 'Societal Collapse and Resilience' at Residential College 4, where she explores global examples of societal breakdown. Winnie is passionate about innovative approaches to business solutions and aims to apply her knowledge in addressing complex challenges.



RC4 Student, NUS College of Humanities & Science 2022



RC4 Student, NUS Business School 2026



RC4 Student, NUS College of Design & Engineering 2026



RC4 Student, NUS Business School 2027

# Panel: Communities & Engagement

## *Systems and Networks: Building and Engaging Community*



### A/P Chng Huang Hoon



Director, Chua Tian Poh Community Leadership Centre & Associate Professor, Residential College 4, NUS

### Moderator

Dr Chng Huang Hoon is an Associate Professor (Department of English, Linguistics and Theatre Studies) at the National University of Singapore (NUS). She has degrees in Linguistics (PhD, University of Texas at Austin) and Philosophy (B.A. Honours, NUS). She has held several academic leadership positions in NUS, including Associate Provost (Undergraduate Education, 2012-2020), Director of the Centre for the Development of Teaching and Learning (2008-2012), Assistant Dean (External Relations, FASS, 2004-2008), Deputy Director (American Studies Centre, 1998-2000). She currently serves as the Director of the Chua Tian Poh Community Leadership Centre at NUS (2019-present). She has served on the Board of Directors of the International Society for the Scholarship of Teaching and Learning (ISSOTL) since 2018, first serving as Regional Vice President for AsiaPacific (2018-2019) and then on the Presidential team (2019-2022). She has established a related education network in Asia called SoTL-Asia. She divides her time between academic administration and teaching, and has resumed teaching undergraduate students from 2021. She is currently teaching a Senior Seminar called "How would YOU lead?" at Residential College 4, University Town, National University of Singapore.

Her most recent papers include "Living and learning in radical spaces: Trust, affect, and needs in the student-faculty partner dyad" (2024, Teaching and Learning Together in Higher Education, 1(42)) and "The possibility of pedagogical partnership: Co-creating teaching and learning through a Singapore cultural lens" (2022, Journal of Educational Innovation, Partnership and Change, 8(2)), both with Toh Tai Chong; "One Singapore Institution's Evolution from Service to Partnership: A Case Study" (2021, with KC Lee) in Student Support Services, University Development and Administration (H. Huijser et al., eds.); "Undergraduate research in the university curriculum: An institutional perspective", (with 2021, Wu Siew Mei), in Patrick Blessinger and Nancy Hensel (eds.), International Perspectives on Undergraduate Research: Policy and Practice; and "Leading change from different shores: The challenges of contextualizing the scholarship of teaching and learning" (with Katarina Mårtensson and Brenda Leibowitz, Teaching & Learning Inquiry, 2020). She has served on numerous academic journal boards over the years, including the International Journal for Academic Development (IJAD); Asian Journal of the Scholarship of Teaching and Learning (AJSoTL); and International Journal of Students as Partners (IJSaP). She is currently on the Editorial Board of Teaching and Learning Inquiry (TLI) and has served as a SoTL consultant for Ashesi University in Ghana (2021-2022). She is currently serving on the Advisory Group for the Global Hub for Scholarship and Educational Research for Heriot-Watt University in Edinburgh, UK. She also volunteers (in partnership with Solve n+1) at St Andrew's Adult Home, befriending and advocating for adult autistics (May- October 2024).

### Panel Members



**Dr. Lynette Tan**  
Residential College 4, NUS



**Ms Martha Henrietta Soetedjo**  
RC4 Alumnus,  
NUS FoS'26



**Dr. Toh Tai Chong**  
College of Alice and Peter Tan, NUS



**Mr Lee Zheng Yao Daniel**  
RC4 Alumnus,  
NUS FoS'24

# Panel: Communities & Engagement

## Systems and Networks: Building and Engaging Community

### PANEL SPEAKERS:



Master, Eusoff Hall & Director of External Programmes, Residential College 4, NUS

### Lynette Tan Yuen Ling

#### Synopsis (Co-speaker with Martha H. Soetedjo)

In 2026 Singapore's population will attain "super-aged" status, the biggest social transformation facing this generation. Two new systems thinking and community engagement courses were launched at Residential College 4 in semester 2 of AY2023-2024 to facilitate learning for students to gain a deeper understanding of this pressing social issue. This talk explores teaching strategies over 7 inter-generational and tri-generational sessions, where 32 undergraduates met with 24 elders from FaithActs and Esther Active Ageing Centre, and 35 Secondary 2 students from Queenstown Secondary School, to co-create effective activities that promote healthy longevity – the aim of the Health District @ Queenstown.

Lynette is Director of External Programmes at Residential College 4 and Fellow of the NUS Teaching Academy. In her teaching, Lynette navigates the potential of systems thinking in intersection with film as well as community engagement. Her other teaching and research interests include AI and technology in education, Hollywood and Singapore Cinema, Gender Studies, and Post-colonial Studies. In recognition for excellence in teaching, Lynette won multiple teaching awards at the university level and has been placed on both the ATEA (Annual Teaching Excellence Award) and RCTEA (Residential Colleges Teaching Excellence Award) honour rolls at NUS.



RC4 Alumnus, NUS Faculty of Science 2026

### Martha Henrietta Soetedjo

#### Synopsis (Co-speaker with Dr Lynette Tan)

In 2026 Singapore's population will attain "super-aged" status, the biggest social transformation facing this generation. Two new systems thinking and community engagement courses were launched at Residential College 4 in semester 2 of AY2023-2024 to facilitate learning for students to gain a deeper understanding of this pressing social issue. This talk explores teaching strategies over 7 inter-generational and tri-generational sessions, where 32 undergraduates met with 24 elders from FaithActs and Esther Active Ageing Centre, and 35 Secondary 2 students from Queenstown Secondary School, to co-create effective activities that promote healthy longevity – the aim of the Health District @ Queenstown.

Martha is a third-year Data Science and Economics student and an alumni of Residential College 4. Her passion lies in data-driven analyses and generating insights from experiential research. She hopes to utilise her skills and knowledge to contribute to the community through creating holistic solutions in the future.



Director of Residential Life, College of Alice and Peter Tan, NUS

### Toh Tai Chong

#### Synopsis

In this panel, Tai Chong will share more about his work in community-based marine conservation. In particular, he will share his ongoing work with communities in Timor Leste through visuals and narratives. Using this case study, he will illustrate why engagement and systems thinking are important in marine conservation. Beyond these two pillars, he will also speak about integration of disciplines and experiences, and illustrate how these 3 pillars enable impactful work in the field. As an advocate of integrative learning, he will draw links to teaching and learning, and how educators can use this tool in their classrooms to create more impactful learning experiences for our students.

Dr. Toh Tai Chong is a marine biologist and he holds teaching positions in the College of Alice & Peter Tan (CAPT) and the Chua Thian Poh Community Leadership Centre (CTPCLC). For the past decade, he has been working with local communities in Southeast Asia to conserve and restore coral reefs. Outside of work, he is the co-founder of Our Singapore Reefs and he works closely with private and public sectors to reduce the impacts of marine debris. He leads students on overseas studies trip to Botswana and will be initiating one to Timor Leste soon.



RC4 Alumnus, NUS Faculty of Science 2024

### Lee Zheng Yao Daniel

#### Synopsis

This talk will feature how Systems Thinking/System Dynamics, through Group Model Building (GMB), engaged RC4 communities to understand stress among university students. Through participatory workshops, diverse students collaborated to map out key stress factors and their complex interactions. Our collective model revealed three critical subsystems: Stress, Motivation, and Awareness. This approach deepened our understanding and provided insights into the dynamics of student stress. The insights from the model were further discussed with various stakeholders in the college and university, including student leaders, college management, and the Residential Wellness team. As a result, the project catalyzed important milestones in the mental wellness space of RC4, leading to the creation of a Peer Student Support group and a wellness space.

Daniel Lee, an RC4 alumnus, is currently an NLP Algorithm Engineer at Shopee. He graduated in 2024 with degrees in Data Science and Analytics, and Computer Science. During his time at RC4, Daniel led various initiatives, including the Freshmen Orientation Camp, Mentorship Program (one of the founders), and Student Life Analysis Research. He is dedicated to fostering a supportive community and believes that effective stress management is crucial for resilient mental health. This conviction inspired his independent study project under the supervision of Dr. Navin Prabhu Balakrishnan, which engaged the RC4 community in discussions about stress through Participatory Systems Thinking.

# Organising Committee



**Advisor**

A/P Peter Pang  
*College Master*  
*Residential College 4*



**Advisor**

A/P Lakshminarayanan  
Samavedham  
*NUS College of Design & Engineering &*  
*Founding Master*  
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**Coordinator**

Dr. Naviyn P. Balakrishnan  
*Director of Student Life*  
*Residential College 4*



**Co-Chair**

Dr. Navarun Varma  
*Director of Studies*  
*Residential College 4*



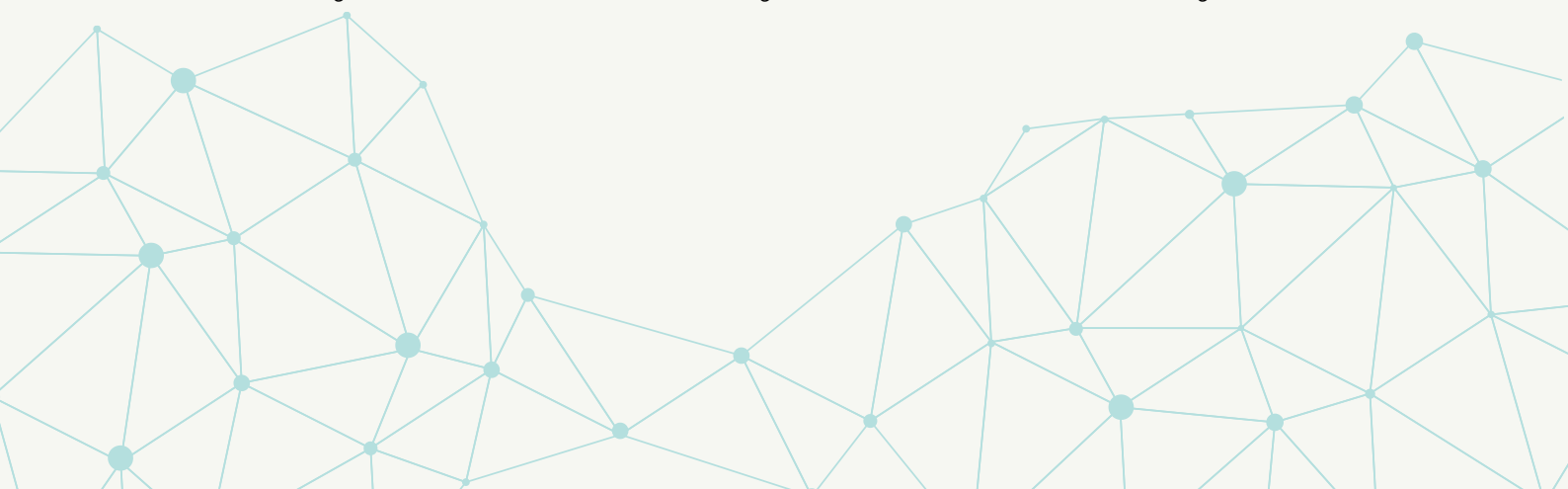
**Co-Chair**

Dr. Cindy Fu Jingcheng  
*Fellow*  
*Residential College 4*



**Admin Lead**

Ms Tan Si Min  
*Assistant Manager*  
*Residential College 4*





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Small Systems, Big Hearts

# Thank you!

Residential College 4 would like to give special thanks to:

**Our organisational partners, speakers, NUS staff & students, RC4 alumni & students, and all the participants**

for your support

**Stay in touch!**

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