APORS
Association of Asia-pacific Operational Research Societies
A Regional Grouping within IFORS

OR: Continuing Relevance in Challenging Times

The 2020 Pre–APORS Online Conference

September 23 — 25, 2020

Message from the APORS President

Francis Z. Miranda

Welcome to the **first virtual conference** of the Association of Asia-Pacific Operational Research Societies (APORS), which also serves as a prelude to our **12th Triennial Conference** in 2022. Our theme for this online conference is **OR: Continuing Relevance in Challenging Times**.

Indeed, we are living in challenging times. And it is not only about the coronavirus pandemic. If we look around, there are many more problems we are facing now such as the climate change crisis, other environmental issues, the increasing gap between the rich and poor, food security, and geo-political conflicts. In all these cases, we have limited resources to address the issues. And this is where Operations Research comes into play. We can use OR to better optimize decisions to benefit the greater good.

The International Federation of Operational Research Societies defines OR as the discipline of applying advanced analytical methods to help make better decisions. I would like to take it further and say that OR is a discipline that uses analytics to make life and society better.

I would like to thank our key plenary speakers, national contributors from the 12 APORS member societies, paper presenters, participants, the organizing committee and the rest of the ORSP Board for making this event possible. I hope that we will all be inspired by this conference. May we work together in using OR to help alleviate the world's societal problems!

A Message from the Organizing Committee

Operations Research was born in response to the circumstances brought by World War II. Since then, OR has not looked back, addressing various business, economic, health, development and sustainability issues of the modern world. This includes the coronavirus pandemic, said to be the most challenging since WWII. Hence, the theme, *OR: Continuing Relevance in Challenging Times*.

Originally scheduled for next year, the Association of Asia Pacific Operations Research Societies Triennial Conference makes way for the IFORS Conference that, in turn, was originally planned for 2020. The APORS then meets in 2022 and this pre-conference is a way of making sure that the APORS keeps the OR flame alive in the region!

Thanks to virtual conferencing, host ORSP was able to gather for APORS the most notable figures from the four regions of the IFORS world as its keynote speakers. These keynotes on the first day sets the tone for the subsequent day's presentations of each of the APORS national society paper contributions. The third day features a carefully selected set of contributed papers, ending with a Tutorial.

Paper presentations from the 12 member societies of the Asia-Pacific Region namely: Australia (ASOR), China (ORSC), Hong Kong (ORSHK), India (ORSI), Iran (IORS), Japan (ORSJ), Korea (KORMS), Malaysia (MSORMS), Nepal (ORSN), New Zealand (ORSNZ), Philippines (ORSP), and Singapore (ORSS) as well as the contributed papers highlight the continuous importance of OR tools in addressing pressing issues such as the on-going pandemic as well as OR applications in the public and private sectors, and in such sustainability issues as evacuation planning, solid waste management, power systems, vehicle routing, to name a few.

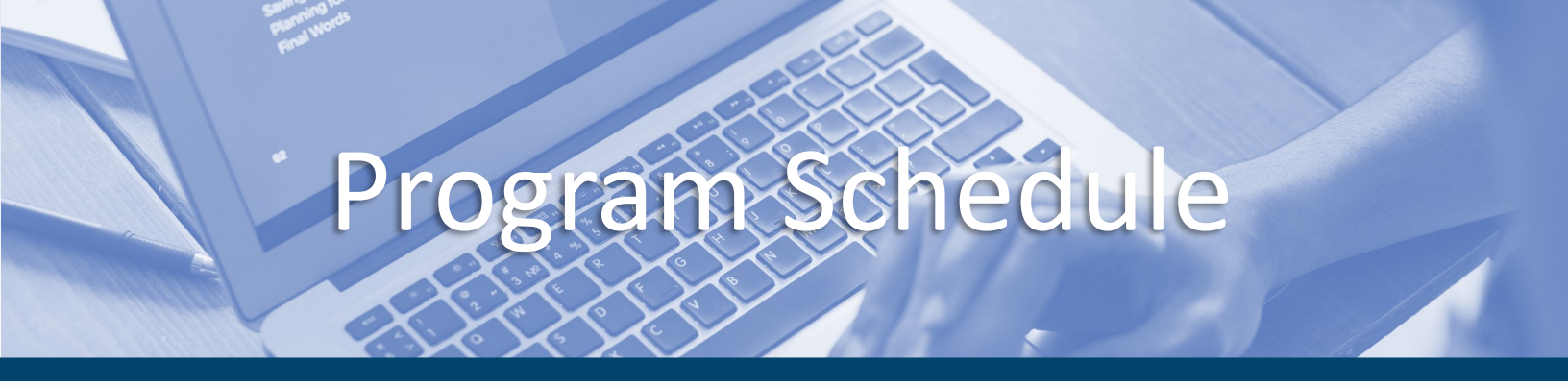
We hope you are as excited as we are - enjoy the Conference!

Rex Aurelius C. Robielos
Chair
Pre APORS Conference

Elise A. del Rosario
Pre APORS Organizing Committee Adviser
Past President, IFORS

Marie Shella T. Mariscal
President
Operations Research Society of the Philippines

Program Schedule



Program Schedule

Day 01: Wednesday, Sept 23 2020

UTC		Phil Time		Keynote Speaker		Title of Talk
from	to	from	to			
30	100	830	900	Welcome / Introductions - Francis Miranda and Rex Robielos Morning Session Chair - Elise del Rosario		
100	200	900	1000	NORTH AMERICA	Karla Hoffmann	Successful OR Consulting: A Case in Telecommunications
200	300	1000	1100	LATIN AMERICA	Andres Weintraub	OR: Changing the Way Firms Operate
300	600	1100	1400	LUNCH BREAK Afternoon Session Chair - Marie Shella T. Mariscal		
600	700	1400	1500	EUROPE	Grazia Speranza	New Challenges in Transportation and Supply Chain Management
700	800	1500	1600	ASIA PACIFIC	Simon Dunstall	Increasingly Complex Applications of OR In an Increasingly Complex World — Case Studies From Australia

Program Schedule

Day 02: Thursday, Sept 24 2020

UTC		Phil Time		National OR Society	National Paper Contribution	Speaker
from	to	from	to			
100	110	900	910	INTRODUCTION - Francis Miranda Morning Session Chair I - Jed Loma		
110	130	910	930	New Zealand	Modelling Covid-19 Patient Flows and Hospital Capacity in New Zealand	Michael O' Sullivan
130	150	930	950	Australia	Doing Time-Critical OR in Challenging Times: Lessons Learnt from COVID-19 Surge Modelling for the Australian Royal Flying Doctor Service	Hannah Johns
150	210	950	1010	Malaysia	Solid Waste Management and System Dynamics: A Trend Analysis on Application of Methodology	Zulkifli Mohd Nopiah
210	230	1010	1030	MINI BREAK Morning Session Chair II - Dennis Beng Hui		
230	250	1030	1050	Singapore I	Federated Learning Applications	Sim Cheng Hwee
250	310	1050	1110	China	A Highly Efficient Second-Order Optimization Method for Feature Selection and Grouping in High-Dimensional Data Analysis	Ziyan Luo
310	330	1110	1130	Philippines	OR and Analytics Applied: The San Miguel Corporation Experience	Marie Shella Tan Mariscal
330	350	1130	1150	Hong Kong, SAR China	Data Analytics and Simulation Optimization for Hospital Emergency Department Operations	Yong-Hong Kuo
350	410	1150	1210	Singapore	Models and Algorithms for Vehicle Routing Problems with Profits	Aldy Gunawan

Program Schedule

Day 02: Thursday, Sept 24 2020

UTC		Phil Time		National OR Society	National Paper Contribution	Speaker
from	to	from	to			
410	510	1210	1310	LUNCH BREAK Afternoon Session Chair I - Dennis Cruz		
510	530	1310	1330	India	Decision Support in Screening and Testing Populations in a Pandemic	Vijay Chandru
530	550	1330	1350	Japan	Aiming for Applying OR to the Public Sector	Tatsuo Oyama
550	610	1350	1410	Nepal	Demography factors and Economic Growth in South Asia	Govinda Tamang
610	630	1410	1430	Iran	A robust and efficient approach for solving constrained nonlinear least squares problems	Nezam Mahdavi-Amiri
630	650	1430	1450	MINI BREAK Afternoon Session Chair II - Rizaldy Capulong		
650	710	1450	1510	Korea	Industry Applications of MS/OR in Korea	Hyun-Soo Han
710	730	1510	1530	India	Handling Double Whammy in Covid Time: Demand and Supply disruption and Recovery through OR Models	Nita H. Shah
730	750	1530	1550	Nepal	OR Models and Efficient Solutions for Maximum Evacuation Planning Problem	Urmila Pyakurel
750	810	1550	1610	Australia	Visualising Solutions in Power System Planning Problems via Decomposition	Semini Wijekoon
810	830	1610	1630	China	Supply Chain Network Management in Mitigation of Covid-19	Dongdong Ge

Program Schedule

Day 03: Friday, Sept 25 2020

UTC		Phil Time		Title of Talk	Speaker
from	to	from	to		
100	110	900	910	INTRODUCTION - Nestley Sore	
110	210	910	1010	Philippine Plenary Speaker: Jack Xu	
210	230	1010	1030	MINI BREAK Morning Session Chair– Rex Robielos	
230	250	1030	1050	Reducing Non-Revenue Water (NRW) in a Water Distribution Company using Root-Cause Analysis and Prim's	Denizli Jade M. Praza Dhon Dungca
250	310	1050	1110	Production Planning in a Garments Factory using ExtendSim Simulation andManpower Scheduling to Increase Productivity	Jamil O. David Dhon G. Dungca
310	330	1110	1130	Solving the Air Cargo Space Allocation Problem of a Digital Logistics Company by Mathematical Programming	Marilyn C. Mabini
330	350	1130	1150	Preliminary Work in Developing an Evacuation Support Tool for a Metropolitan University	Therese Anne Rollan Leorey Marquez
350	410	1150	1210	Food Hero Baguio- Facilitating Food Retrieval and Distribution System to Charitable Institutions	Geraldine G. Nerona

Program Schedule

Day 03: Friday, Sept 25 2020

UTC		Phil Time		Title of Talk	Speaker
from	to	from	to		
410	510	1210	1310	LUNCH BREAK Afternoon Session Chair - Juanito Chan	
510	530	1310	1330	An Integrated Executive Information System using Augmented Analytics	Sergio R. Peruda Jr
530	620	1330	1420	Tutorial Session: Algebraic Modeling Languages and Large-Scale Optimization Servers in the Cloud	Vicente P. Reventar III
620	640	1420	1440	CLOSING REMARKS - Francis Miranda	

Plenary Speakers

Day 01: Plenary Speaker

Karla Hoffman

Volgenau School of Engineering - George Mason University, USA

1:00—2:00 UCT, 9:00-10:00 PH Time

Karla L. Hoffman is IFORS VP representing the North American region (NORAM). The fourth President of INFORMS and an INFORMS fellow, she is a professor of systems engineering and OR in the Volgenau School of Engineering of George Mason University, USA. Her research has focused on practical applications of operations research and optimization to problems including transportation scheduling, airport landing slot allocation, spectrum auctions, and telecommunications budgeting.

Among her latest distinctions include the 2018 INFORMS Franz Edelman Award for her work with the US Federal Communications Commission on spectrum allocation. Other awards include the Department of Commerce Silver Medal and the Applied Research Award of the National Institute of Standards and Technology as well as the Kimball and Omega Rho Lecturer Awards. Hoffman graduated from Rutgers University with a BS in Mathematics, earned her MBA from George Washington University, where she completed her doctorate in operations research from the engineering school.

Successful OR consulting: A Case in Telecommunications

Abstract

In this presentation, we present how the optimization team at the Federal Communications Commission (FCC) has been using mathematical optimization to:

a) assist in the design and running of the highly-successful Incentive Auction that resulted in revenues of close to $20 Billion.

b) schedule the reassignment of over 1000 broadcast TV stations to new channels for over-the-air broadcasting in the United States and Canada in order to free up spectrum for mobile use and 5G and

c) describe our continued work for the FCC for both auctions and spectrum availability mapping.

We will present "lessons learned" and suggest how optimization can be used within government settings to assist in policy decisions.

Day 01: Plenary Speaker

Andres Weintraub

Department of Industrial Engineering— University of Chile

2:00—3:00 UCT, 10:00-11:00 PH Time

Andrés Weintraub was president of IFORS from 1998-2000. He is a full Professor at the Department of Industrial Engineering, University of Chile. His OR interests include: Models in forestry and mining, Transportation and Logistics, Applied Integer Programming.

A member of the coveted Academy of Sciences of Chile, the US National Academy of Engineering as well as an INFORMS Fellow, Prof. Weintraub has won international (Edelman Prize Competition, Harold Larnder Prize) as well as local recognitions, which include: Chilean Forest Engineers Association's Contribution to Forest Engineering, Chilean Engineers Institute's Distinguished Activities Prize, National Prize in Applied Science and Technology of Chile.

He obtained his Electrical Engineering degree from the University of Chile and both his M.A.in Statistics and Ph. D. in Industrial Engineering-Operations Research from the University of California, Berkeley.

OR: Changing the Way Firms Operate

Abstract

An important question in the OR field is how important OR is in actual decision making. Given the number of people working in the field, what has been its impact? This presentation shows the significant impact of OR in various applications done by our group. The areas span a variety of applications covering forest and mine planning, distribution of meals to schools, management of containers scheduling for a large shipping company, organizing fire truck dispatching, and most entertainingly, scheduling matches for the football (soccer) season. The OR based-implementation for these institutions and industries, in most cases, had been in place for decades with impacts measured in the hundreds of millions of dollars.

Day 01: Plenary Speaker

Grazia Speranza

Department of Economics and Management
University of Brescia, Italy

6:00—7:00 UCT, 14:00-15:00 PH Time

M. Grazia Speranza is the current President of IFORS. She is a full professor of OR in the Department of Economics and Business at the University of Brescia, Italy, where she served as Vice Chancellor and Dean. Her research areas include the application of mathematical optimization to the combination of inventory management with vehicle routing and to portfolio optimization.

A former president of the EURO and of the INFORMS Transportation Science and Logistics Society, she is co-author of the book Linear and Mixed Integer Programming for Portfolio Optimization. She has authored around 200 papers published in international journals and volumes, and served as editor of several journals.

Prof. Speranza earned her master's degree in applied mathematics and her advanced degree in applied mathematics from the University of Milan.

New Challenges in Transportation and Supply Chain Management

Abstract

Information and Communication Technologies (ICT) enable individuals to access, store, manipulate and transmit data. The Internet of Things (IoT) makes also objects and places capable of receiving, storing and transmitting data. A systemic approach to problems and advanced analytical methods are more vital than ever. We know that, through analytics and optimization, companies can increase their profit or offer better services to their customers. There is, however, a new challenging research direction to be taken into account. In fact, the concept of 'sustainability', that was coined in the late eighties and has increasingly attracted the attention of citizens and institutions, has now become central to companies. The pandemic that has hit the entire globe is a dramatic event that confirms that the objectives of the decision-making processes have to change. In this talk some research directions and results in the field of transportation and supply chain management will be discussed.

Day 01: Plenary Speaker

Simon Dunstall

CSIRO Data61, Australia

7:00—8:00 UCT, 15:00-16:00 PH Time

Simon Dunstall is the President of the Australian Society for Operations Research. He is a Principal Research Scientist and a Deputy Research Director at CSIRO Data61, which aims to promote a flourishing national ecosystem of researchers, developers and innovators in digital technologies and data-driven businesses. The Decision Sciences program has 110 staff and a much larger network of collaborators, and has foci including social media analytics, information systems engineering, natural hazard risk modelling, and finance and superannuation research.
Dr. Dunstall is a researcher in analytics and optimisation. His most recent work includes the development of infrastructure network planning systems for transport and electricity systems, the application of optimisation and real options methods to decisions in ecology and energy management, and the development and application of methods for quantifying and managing bushfire/wildfire risks. He obtained his bachelor's degree in Mechanical and Manufacturing Engineering and his PhD in Engineering Science.

Increasingly Complex Applications of OR In an Increasingly Complex World: Case Studies From Australia

Abstract

It has become much more common to see OR techniques being applied as part of complex scientific, industrial or commercial workflows, and in real-time and/or in-situ analytics systems. The problems we are being asked to tackle are getting more challenging and more complex, and increasingly require us to integrate with computational and automation technologies including physics-based modelling, spatio-temporal analytics, cloud computing, IoT and edge computing. This is particularly the case in environmental, agricultural, natural hazards and transportation applications. Furthermore there is a perceptible correlation between the gravity of some of the most pressing challenges of our time and what is demanded of us (as OR professionals) to understand, integrate and capitalize on what other sciences and technologies bring to the table. In this presentation I will illustrate these points by way of a series of case studies involving OR advances mainly but not exclusively centred on Australia: these case studies addressing challenges in forest fires, smart cities, energy systems and health.

Day 03: Plenary Speaker

Xiaoyun (Jack) Xu

Department of Operations & Information Technology - Ateneo Graduate School of Business, Philippines

1:00—2:10 UCT, 9:00-10:10 PH Time

Xiaoyun (Jack) Xu is a Professor at the Department of Operations & Information Technology of the Ateneo Graduate School of Business. Before joining Ateneo, Dr. Xu was an Associate Professor at the Department of Industrial Engineering and Management at Peking University. His research team has received continued support from numerous funding sources in China and the US. Over the past decade, Dr. Xu has published extensively in a list of top tier journals and conferences in the fields of Industrial Engineering and Operations Research. He also provides consulting services to many industry leaders in a wide range of industries.

Building More Crisis Resilient Supply Chains: A Case Study on Philippine Food Security During Pandemic

Abstract

This paper provides an early assessment of the implications of the COVID-19 pandemic for food supply chains in the Philippines. The disruptions from both the demand and supply sides are discussed, including change of purchase behavior of customers, closure of food service industry, transportation interruptions, processing facility closure, and labor shortage. Coping strategies at both central and local government levels are reviewed, along with an early assessment their operational effectiveness. Several hard-learned lessons are discussed. Finally, the paper highlights two important emerging trends in Philippine food supply chain during the pandemic, namely, the growth of online grocery shopping and increasing popularity of local food supply chains. The paper discusses the continuing challenges faced by the entire food industry in the Philippines.

Day 02

National APORS Paper Contributions

National APORS Paper Contributions

Operations Research Society of New Zealand (ORNZ)

Modelling Covid-19 Patient Flows and Hospital Capacity in New Zealand

Ilze Ziedins
Associate Professor
University of Auckland, New Zealand

The Australian Society for Operations Research (ASOR)

Doing Time-Critical OR in Challenging Times: Lessons Learnt from COVID-19 Surge Modelling for the Australian Royal Flying Doctor Service

Dr. Hannah Johns
The Florey Institute of Neuroscience and Mental Health and Melbourne Medical School
University of Melbourne, Australia

Management Science/Operations Research Society of Malaysia (MSORSM)

Solid Waste Management and System Dynamics: A Trend Analysis on Application of Methodology

Zulkifli Mohd Nopiah
Faculty of Engineering and Built Environment
Universiti Kebangsaan, Malaysia

Operations Research Society of Singapore (ORSS)

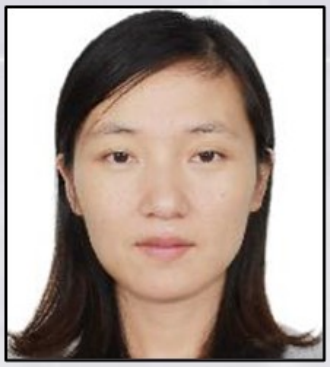
Federated Learning Applications

Sim Cheng Hwee
Managing Director, Integrated Decision Systems Consultancy Pte Ltd
Past President, Operations Research Society of Singapore

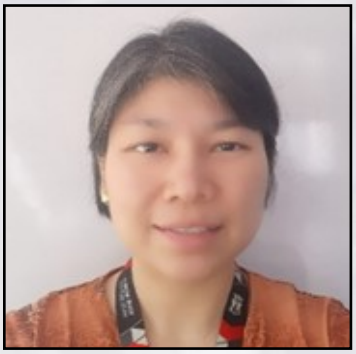
National APORS Paper Contributions

Operations Research Society of China (ORSC)

A Highly Efficient Second-Order Optimization Method for Feature Selection and Grouping in High-Dimensional Data Analysis



Ziyan Luo
Associate Professor
Beijing Jiaotong University, People's Republic of China



Operations Research Society of the Philippines (ORSP)

OR and Analytics Applied: The San Miguel Corporation (SMC) Experience

Marie Shella Mariscal
Manager, Operations Research Department, Corporate Information & Technology Management , San Miguel Corporation, Philippines
President, Operations Research Society of the Philippines

Operational Research Society of Hongkong (ORSHK)

Data Analytics and Simulation Optimization for Hospital Emergency Department Operations

Yong-Hong Kuo
Assistant Professor
Department of Industrial and Manufacturing Systems Engineering
The University of Hong Kong, Hong Kong, SRA China

Operational Research Society of Singapore (ORSS)

Models and Algorithms for Vehicle Routing Problems with Profits

Aldy Gunawan
Assistant Professor, School of Information Systems
Singapore Management University, Singapore

National APORS Paper Contributions

Operational Research Society of India (ORSI)

Decision Support in Screening and Testing Populations in a Pandemic

Vijay Chandru
INAE Distinguished Technologist
Centre for Biosystems Science & Engineering

The Operations Research Society of Japan (ORSJ)

Aiming for Applying OR to the Public Sector

Tatsuo Oyama
Adjunct Professor
National Graduate Institute for Policy Studies
Tokyo, Japan

Operational Research Society of Nepal (ORSN)

Demography Factors and Economic Growth in South Asia

Govinda Tamang
Associate Professor, Central Department of Management
Tribhuvan University, Nepal
President, Operational Research Society of Nepal

The Iranian Operations Research Society (IORS)

A Robust and Efficient Approach for Solving Constrained Nonlinear Least Squares Problems

Nezam Mahdavi-Amiri
Distinguished Professor, Faculty of Mathematical Sciences
Sharif University of Technology, Iran
Representative to IFORS, The Iranian Operations Research Society

National APORS Paper Contributions

The Korean Operations Research and Management Science Society (KORMS)

Industry Applications of MS/OR in Korea

Hyun-Soo Han
Professor, School of Business
Hanyang University, Korea

Operational Research Society of India (ORSI)

Handling Double Whammy in Covid Time: Demand and Supply Disruption and Recovery Through OR Models

Nita H. Shah
Professor and Head, Department of Mathematics
Gujarat University, India
Vice President, Operational Research Society of India

Operational Research Society of Nepal (ORSN)

OR Models and Efficient Solutions for Maximum Evacuation Planning Problem

Urmila Pyakurel
Associate Professor, Central Department of Mathematics
Tribhuvan University, Nepal

The Australian Society for Operations Research (ASOR)

Visualising Solutions in Power System Planning Problems via Decomposition

Semini Wijekoon
Research Fellow, Department of Data Science and AI
Faculty of Information Technology

National APORS Paper Contributions

Operations Research Society of China (ORSC)

Supply Chain Network Management in Mitigation of Covid-19

DongDong Ge
Professor
Shanghai University of Finance and Economics, People's Republic of China

Day 02
Abstracts

Day 02: Abstracts

Time : UTC 110 to 130
National OR Society : Operations Research Society of New Zealand (ORNZ)
National Paper Contribution : *Modelling Covid-19 Patient Flows and Hospital Capacity in New Zealand*
Speaker : Michael O' Sullivan
Co-Authors : Ilze Ziedins and Cameron Walker

Abstract

New Zealand made an early decision to try to eliminate rather than just suppress Covid-19 within its borders. This paper presents an overview of some of the models that were developed to help in assessing the burden of care on the health care system, particularly hospitals, under various scenarios for Covid-19 growth. We present both deterministic and stochastic models of patient flow through ward and ICU, with the deterministic models including staff absences due to illness in the model. Simpler whole of population models for hospital occupancy are complemented by more detailed individual hospital and ICU models. The flow of new patients into these models was generated with a range of deterministic and stochastic models. The stochastic models of growth include a whole of population model, and a more detailed model, at mesh block level, for growth within the region of one or more District Health Boards. We will discuss both the models and their implications for strategies to combat Covid-19 in New Zealand.

Time : UTC 130 to 150
National OR Society : The Australian Society for Operations Research (ASOR)
National Paper Contribution : *Doing Time-Critical OR in Challenging Times: Lessons Learnt from COVID-19 Surge Modelling for the Australian Royal Flying Doctor Service*
Speaker : Hannah Johns

Abstract

At the start of the COVID-19 pandemic, there was a great deal of uncertainty in the Royal Flying Doctor Service (RFDS) about how the pandemic would impact its operations when it reached Australia. There was little data to indicate how the pandemic would impact operational demand for services, making it extremely challenging to plan for adequate service provision. This uncertainty was confounded by the time-critical nature of planning for COVID-19, as decisions about resource allocation needed to be made before more evidence would become available.

The RFDS is one of the largest aeromedical services in the world, with 77 aircraft and 140 healthcare vehicles, located across its 23 Australian bases. To support RFDS decision-making, we developed and validated an interactive Discrete Event Simulation model underpinned by RFDS aeromedical activity data from 2015 to 2019. The model was subsequently used in factorial in silico experiments to perform relevant "what if" analyses and systematically investigate the supply of RFDS aeromedical services under various hypothetical surge in demand scenarios. This estimated the level of resources which would be required to ensure that RFDS operations were robust against a surge in demand. The modelling project assisted decision-makers in planning for the COVID-19 pandemic before it reached Australia, and helped secure adequate resources to ensure continual operation of the Service throughout the pandemic.

In this presentation we reflect on the main lessons learnt while doing this time-critical OR in challenging times.

Day 02: Abstracts

Time	: UTC 150 to 210
National OR Society	: Management Science/Operations Research Society of Malaysia (MSORSM)
National Paper Contribution	: *Solid Waste Management and System Dynamics: A Trend Analysis on Application of Methodology*
Speaker	: Zulkifli Mohd Nopiah
Co- Authors	: Faridah Zulkipli, Noor Ezlin Ahmad Basri and Cheng Jack Kie

Abstract

The aim of this paper is to analyze the trend of System Dynamics (SD) methodology application in solid waste management (SWM). System dynamics is a simulation method which has been applied in many areas of research such as engineering, education, management, risk assessment and others. This method was originally founded by J.W. Forester in 1950s. Due to continuous improvement and research, this method grew dramatically especially in solid waste management. System Dynamics helps in developing a holistic model of real system under study by running a simulation experiment. The trend analysis is based on literature review and analyzed using statistical descriptive method. A sample of literature review from 1950s up to current year is collected and presented in tabular form with the discussion on the timeline process flow. The findings show an increase in trend on the application of SD over time. SD has become one of best methods in improving the efficiency of decision making in SWM. An SD practitioner is able to address urgent decisions in less time, make more accurate long-term planning decisions, and minimize the risk of failures.

Time	:UTC 230 to 250
National OR Society	:Operations Research Society of Singapore (ORSS)
National Paper Contribution	:*Federated Learning Applications*
Speaker	:Sim Cheng Hwee

Abstract

Although they participate in benchmarking and industry-level initiatives, organizations traditionally operate independently in competition with peers. Many organizations are wary of sharing even anonymized data as privacy leaks can still arise with privacy-law-compliant processes and systems. Federated learning had emerged as a new approach for organizations to learn collaboratively in a secure manner without having to part with their data. This paper explains how federated learning complements other trust technologies, outlines some applications of federated learning in healthcare and procurement and explores how it could transform how organizations will operate in the future.

Day 02: Abstracts

Time	: UTC 250 to 310
National OR Society	: Operations Research Society of China (ORSC)
National Paper Contribution	: *A Highly Efficient Second-Order Optimization Method for Feature Selection and Grouping in High-Dimensional Data Analysis*
Speaker	: Ziyan Luo

Abstract

:

The octagonal shrinkage and clustering algorithm for regression (OSCAR), equipped with the L_1-norm and a pair-wise L_∞-norm regularizer, is a useful tool for feature selection and grouping in high-dimensional data analysis. The computational challenge posed by OSCAR, for high dimensional and/or large sample size data, has not yet been well resolved due to the non-smoothness and non-separability of the regularizer involved. In this paper, we successfully resolve this numerical challenge by proposing a sparse semismooth Newton based augmented Lagrangian method to solve the more general SLOPE (the sorted L-one penalized estimation) model. By appropriately exploiting the inherent sparse and low-rank property of the generalized Jacobian of the semismooth Newton system in the augmented Lagrangian subproblem, we show how the computational complexity can be substantially reduced. Our algorithm offers a notable computational advantage in the high-dimensional statistical regression settings. Numerical experiments are conducted on real data sets, and the results demonstrate that our algorithm is far superior, in both speed and robustness, to the existing state-of-the-art algorithms based on first-order iterative schemes, including the widely used accelerated proximal gradient (APG) method and the alternating direction method of multipliers (ADMM).

Time	: UTC 310 to 330
National OR Society	: Operations Research Society of the Philippines (ORSP)
National Paper Contribution	: *OR and Analytics Applied: The San Miguel Corporation (SMC) Experience*
Speaker	: Marie Shella T. Mariscal

Abstract

For the past 49 years of existence, the Operations Research Group of San Miguel Corporation has been providing the SMC Management scientific solutions to its strategic and operating problems through the application of OR tools and techniques, and recently, also Analytics. This talk presents how two of the most recent projects of the group, one using Simulation and another using Analytics, assist SMC in facing the country's challenges on traffic and COVID-19 pandemic.

Day 02: Abstracts

Time	: UTC 330 to 350
National OR Society	: Operational Research Society of Hongkong (ORSHK)
National Paper Contribution	: *Data Analytics and Simulation Optimization for Hospital Emergency Department Operations*
Speaker	: Yong-Hong Kuo

Abstract

Hospital emergency department (ED) overcrowding is a severe and long=standing issue confronting many countries and cities around the world. Ideally, EDs are established to provide immediate medical care to critically ill or severely injured patients. Thus, timeliness and efficiency are their core attributes. However, due to various causes of overcrowding, it is challenging for EDs to guarantee the provision of timely medical care for patients. In this talk, I will present a collaborative project with an ED in Hong Kong on improving their patient flows and system efficiency. Machine learning models have been applied to provide real-time and personalized patient waiting times. A simulation model that captures all complicating factors in reality (e.g., time and category-dependent arrival rates of patients, multiple shift-times of doctors and re-entrant flows to the many "service stations" of the system) has been developed to examine possible solutions that could relieve the overcrowding situation. The presentation will discuss the challenge that several key types of data were unavailable such that the stochastic components in the system could not be directly estimated. Computational results show that our simulation model can produce results consistent with the actual observations. Simulation optimization approaches have been developed to determine resource allocation decisions in the ED. Some insights into managing ED operations derived from the simulation results will also be covered.

Time	: UTC 350 to 410
National OR Society	: Operational Research Society of Singapore (ORSS)
National Paper Contribution	: *Models and Algorithms for Vehicle Routing Problems with Profits*
Speaker	: Aldy Gunawan

Abstract

This presentation introduces readers to several variants of routing problems with profits. In these routing problems. each node has a certain profit, and not all nodes need to be visited. Since the orienteering problem (OP) is by far the most frequently studied problem in this category of routing problems, the presentation mainly focuses on the OP. The goal of the OP is to determine a subset of nodes, and the order in which, to visit so that the total collected profit is maximized and a given time budget is not exceeded. We will provide a comprehensive review of variants of the OP, such as the team OP, the team OP with time windows, the profitable tour problem, and the prize-collecting travelling salesperson problem. In addition, we will briefly present mathematical models and techniques for solving these OP variants. Finally, we will review the latest applications of these problems in the fields of logistics, tourism and others.

Day 02: Abstracts

Time	: UTC 510 to 530
National OR Society	: Operational Research Society of India (ORSI)
National Paper Contribution	: *Decision Support in Screening and Testing Populations in a Pandemic*
Speaker	: Vijay Chandru

Abstract

COVID-19 is a wicked strategy problem that seems to be here to stay, and the situation warrants that we need to be prepared to face it for a longer period of time. Efficient and repetitive community level diagnosis is going to be the mainstay of this war against COVID. This presentation aims to give a technical overview of a decision support framework that leverages various diagnostic tests currently approved for use and screening methods which include digital technologies of contact tracing, smart pooling and epidemiological surveillance to keep communities safe.

Time	: UTC 530 to 550
National OR Society	: The Operations Research Society of Japan (ORSJ)
National Paper Contribution (Title)	: *Aiming for Applying OR to the Public Sector*
Speaker	: Tatsuo Oyama

Abstract

Operations Research (OR) is defined to be a scientific approach to make a reasonable desirable and optimal decision. OR, focusing on mathematical modeling techniques, has been applied and used to solve various types of societal problems arising in public policy and social systems analyses. We consider that there exist three major roles for OR, thus we expect that we can solve various societal problems occurring in the public sector by using OR techniques through playing three major analytical roles even though these obtained solutions might not be exact, complete, optimal and the final decisive solution. Three major roles follow: (i) quantitative data analysis, (ii) mathematical modeling analysis, (iii) theory building analysis. We illustrate our challenges in applying OR playing those three roles.

Day 02: Abstracts

Time	: UTC 550 to 610
National OR Society	: Operational Research Society of Nepal (ORSN)
National Paper Contribution	: *Demography Factors and Economic Growth in South Asia*
Speaker	: Govinda Tamang
Co-Author	: Pravat Uprety

Abstract

The increase in the age dependency ratios leads to slowdown in the economic growth of the country. The investment capability of the country gets decreased due to increase in saving behavior and investment in housing. In this study, the trend of the fertility rate, mortality rate, life expectancy at birth, age dependency ratios and economic growth of the south Asian countries is analyzed. A study on their relationships revealed interesting insights. The frontier analysis has been carried out by using DEA.

Time	: UTC 610 to 630
National OR Society	: The Iranian Operations Research Society (IORS)
National Paper Contribution	: *A Robust and Efficient Approach for Solving Constrained Nonlinear Least Squares Problems*
Speaker	: Nezam Mahdavi-Amiri

Abstract

A combined trust region–line search projected structured algorithm for solving constrained nonlinear least squares problems is developed, based on an adaptive projected structured exact penalty scheme due to Mahdavi-Amiri and Bartels. Both global convergence and a local superlinear rate of convergence have been established for several variants of the algorithm. Implementational details are explained and the resulting program in MATLAB is tested on well-known small and large residual least squares test problems available in the literature along with randomly generated test problems due to Bartels and Mahdavi-Amiri. Numerical results attest the robustness and efficiency of the algorithm. Using the Dolan-More performance profiles, comparisons of our obtained numerical results with the ones obtained by a number of well-known general nonlinear programming methods affirm outperformance of the algorithm. The results indeed confirm the practical significance of our adaptive penalty updating scheme, combined trust region–line search strategy, and special structured consideration for the approximate projected least squares Hessians.

Day 02: Abstracts

Time	: UTC 650 to 710
National OR Society	: The Korean Operations Research and Management Science Society (KORMS)
National Paper Contribution	: *Industry Applications of MS/OR in Korea*
Speaker	: Hyun-Soo Han

Abstract

In this talk, overall status of MS/OR industrial applications in Korea is presented. In conjunction with informatization and digital transformation framework. Limited survey figures on the implementation of analytic IT applications adopting MS/OR techniques and industrial contributions are illustrated. The talk includes some discussions on distinctive industry-wise characteristics of MS/OR techniques and their contributions on managerial effectiveness. OR/MS service providers' experiences, gathered through in-depth interviews, is also presented. The presentation concludes with the recent trend of MS/OR adoption for small and medium sized enterprises, and its interfaces with smart IT technologies.

Time	: UTC 710 to 730
National OR Society	: Operational Research Society of India (ORSI)
National Paper Contribution	: *Handling Double Whammy in Covid Time: Demand and Supply Disruption and Recovery Through OR Models*
Speaker	: Nita H. Shah

Abstract

The pandemic COVID-19 has posed significant risk for supply chain players of Personnel Protective Equipment (PPE) used for health warriors. This risk has a global impact and it is a challenge to model and evaluate its intensity and uncertainties. Manufacturers are facing shortage of raw materials, which are to be routed from the logistical hubs to destinations across the globe. The other challenge are the labour who either moved to their hometown due to lockdown or quarantined due to boundary crossing. The massive increase in the demand of PPEs faced by constrained supply and production capacity needs to be optimized. The objective of the study is to develop a revised plan scheduling model that maximizes manufacturing of PPE kits with minimum labour and production capacity.

Day 02: Abstracts

Time : UTC 730 to 750
National OR Society : Operational Research Society of Nepal (ORSN)
National Paper Contribution : *OR Models and Efficient Solutions for Maximum Evacuation Planning Problem*
Speaker : Urmila Pyakurel
Co-Authors : Tanka Nath Dhamala and Mohan Chandra Adhikari

Abstract

Evacuation planning problem deals with the process of removing residents of areas where accidents have occurred to safe places as fast and efficiently as possible. Due to the increasing number disasters worldwide, the OR models and solution approaches developed for the problem play a vital role in saving the maximum number of evacuees within a given time. In this talk, the maximum evacuation planning problem will be presented in two aspects, i.e., without intermediate storage and with intermediate storage. The effectiveness of their solutions by using the empty lanes of network will be discussed.

Time : UTC 750 to 810
National OR Society : The Australian Society for Operations Research (ASOR)
National Paper Contribution : *Visualising Solutions in Power System Planning Problems via Decomposition*
Speaker : Semini Wijekoon

Abstract

Power system planning is a large-scale mixed-integer programming (MIP) problem that determines the most cost-effective mix of generation and transmission for the future electrical grid. We utilise a decomposition framework based on an existing scenario decomposition approach to solve this problem computationally efficiently, in which candidate investment solutions are generated, evaluated and then eliminated to prove optimality. Visualisation of these solutions helps one to understand the solution space, properties of high-quality solutions, and choose which solutions to generate. The insights are used to guide the search, design problem-specific heuristics and improve the overall performance of the decomposition approach. This talk aims to present visualisations of solutions from different perspectives and how they can be used to improve performance.

Day 02: Abstracts

Time	: UTC 810 to 830
National OR Society	: Operational Research Society of China (ORSC)
National Paper Contribution	: *Supply Chain Network Management in Mitigation of Covid-19*
Speaker	: Dongdong Ge

Abstract

Covid-19 has stuck at the core of the global value chain hub regions and has disrupted supply chains around the world with a series of problems: reduced demands, higher uncertainty, longer transfer cycle time, facility relocation, shortage in labor and critical materials... These challenges certainly urge a more robust, more flexible and more effective supply chain network management (SCNM) system. In this talk, we present several ad-hoc smart SCNM solutions for some Asian companies in mitigation of the pandemic. These data-driven smart solutions integrate multiple tools in machine learning, robust optimization, and operations management and perform well in the face of the challenges of Covid-19.

Day 03
Abstracts

Day 03: Abstracts

Time	: UTC 110 to 210 PHIL TIME 910 to 1010
Contributed Paper	: *Building More Crisis Resilient Supply Chains: A Case Study on Philippine Food Security During Pandemic*
Presenter	: Xiaoyun (Jack) Xu Ateneo Graduate School of Business

Abstract

This paper provides an early assessment of the implications of the COVID-19 pandemic for food supply chains in the Philippines. The disruptions from both the demand and supply sides are discussed, including change of purchase behavior of customers, closure of food service industry, transportation interruptions, processing facility closure, and labor shortage. Coping strategies at both central and local government level are reviewed, along with an early assessment their operational effectiveness. Several hard-learned lessons are discussed. Finally, the paper highlights two important emerging trends in Philippine food supply chain during the pandemic, namely the growth of online grocery shopping and increasing popularity of local food supply chains, and discusses the continuing challenges faced by the entire food industry in the Philippines.

Time	: UTC 230 to 250 PHIL TIME 1030 to 1050
Contributed Paper	: *Reducing Non-Revenue Water (NRW) in a Water Distribution Company using Root-Cause Analysis and Prim's Minimal Spanning Tree*
Authors & Presenters	: Denizli Jade M. Praza & Dhon Dungca Holy Angel University

Abstract

While it is true that the objective of any water distribution company is to supply and provide clean water to its clientele at the right time, it also must ensure efficiency in its operations to reduce costs and prevent losses – one of which is what we call the Non-Revenue Water or NRW. This refers to the clean water that has been produced by the water distribution system but was considered lost somewhere in the pipelines while water is being distributed to households. Using PDCA Cycle and Root-Cause Analysis (through Fishbone Analysis), the proponents of this study were able to identify the contributing factors that cause the leakages of an anonymous water distribution company, namely: too much pressure, durability of fittings, and the use of substandard materials. In order to address these problems, checking and repairing must be done with the use of Prim's Minimal Spanning Tree to determine paths and minimize repetition of work, reduce downtime, and speed-up the checking and repairing process. Results show that with this rehabilitation process, the 67% of NRW from the total clean water produced will decrease to 18%. An increase of 85% in the net income will also be realized amounting to PhP 2.6M.

Day 03: Abstracts

Time	: UTC 250 to 310 PHIL TIME 1050 to 1110
Contributed Paper	: *Production Planning in a Garments Factory using ExtendSim Simulation and Manpower Scheduling to Increase Productivity*
Authors & Presenters	: Jamil O. David & Dhon G. Dungca
	Holy Angel University

Abstract

Although the garments industry in the Philippines ranks as one of the country's largest manufacturing sector in terms of output value and exports, garments-manufacturing companies are faced with demand uncertainties due to seasonality, holidays, and trends. If the company is not well aware of the maximum output they can produce, it will lead to low productivity in the business. This study analyzed the productivity of a certain garments-manufacturing company in Tarlac using a simulation software, ExtendSim, in order to meet the desired production quota for the day. Time study was also conducted as basis for the parameters needed for the simulation model. The proponents identified the bottlenecks and reshuffled manpower to where they are needed instead of hiring additional manpower and rendering overtime. As a result, backlogs of each workstation were reduced and the overall production output increased by 41%. Workers' efficiency increased as well by 50-60%. Moreover, a potential increase of 65% in revenue can be realized from the new setup. To further increase workers' productivity as they are being reshuffled, training on each process will have to be done on a regular basis.

Time	: UTC 310 to 330 PHIL TIME 1110 to 1130
Contributed Paper	: *Solving the Air Cargo Space Allocation Problem of a Digital Logistics Company by Mathematical Programming*
Presenter	: Marilyn C. Mabini
Co-Authors	: Ma. Alessandra D. Abaya, Kowji Ann Iekki P. Bajao, Kyra Ashley T. Manuel, Maria Bianca Paris U. Murphy
	University of Santo Tomas

Abstract

This paper presents an integer quadratic programming model to solve the air cargo allocation problem of a digital logistics company based in Makati City, Philippines, and serving customers in Luzon, Visayas, and Mindanao. The model seeks to minimize the average annual cost of booking air cargo space which the company must pay, and determine the optimal monthly space to be reserved with airline companies in a year. The formulation includes constraints to accommodate the demands at destinations where air cargo is the company's chosen mode of transporting its orders, and to satisfy the desired order multiples. The model was solved for three destinations selected by the company's Operations Department. Results indicate a marked reduction in the average annual air cargo booking cost.

Keywords: *air cargo space allocation, logistics, block space agreement, mathematical programming*

Day 03: Abstracts

Time	: UTC 330 to 350 PHIL TIME 1130 to 1150
Contributed Paper	: *Preliminary Work in Developing an Evacuation Support Tool for a Metropolitan University*
Presenter	: Therese Anne Rollan
Co-Authors	: Leorey Marquez, Rachel Edita Roxas, Emmanuel Malaay, Angelica De la Cruz
	CSIRO Data61, Research Way, Clayton, Victoria, Australia National University

Abstract

A major Philippine earthquake, as the so-called "Big One" of the 100-kilometer long West Valley Fault with a 400 to 500 years recurrence period, can be expected to hit the Metropolitan Manila anytime soon since its last strike on 1658. With a foreseeable maximum magnitude of 8, the disaster will affect more than 12 million people of the capital city Manila and the other 15 cities. Because of this, the high urgency of accomplishing an evacuation support tool to aid in planning and training especially in high density structures such as educational institutions is realised. Within a proximity to the fault, more than 30 colleges and universities are located within a 6-kilometer Manila subdistrict known as the "University Belt".

This paper presents the early phase of the University Evacuation Decision Support System (Evac DSS), a collaborative project between CSIRO Australia Data61 and the National University (NU) Manila, a medium-sized institution in the "University Belt". Following the launch, a series of online seminars were conducted with the facilitators from Data61 and participants from NU. The activities involved active discussions and conversations on emergency evacuation planning and support tool development, and hands-on technical training on relevant GIS methods and agent-based evacuation simulation.

Day 03: Abstracts

Time	: UTC 350 to 410 PHIL TIME 1150 to 1210
Contributed Paper	: *Food Hero Baguio- Facilitating Food Retrieval and Distribution System to Charitable Institutions*
Author & Presenter	: Geraldine G. Nerona Saint Louis University

Abstract

Food Hero Baguio is an extension program of the Industrial Engineering department of Saint Louis University. The goal of this program is two-fold: First is to prevent wholesome, surplus food production of establishments from ending up as wastes that contribute to climate change. Second is to divert these surplus foods to charitable institutions to help in mitigating the problem of hunger in the city. The Least-Cost Method of the Transportation model was used to establish logistical aspects, descriptive-comparative method was used to ascertain improvements in the self-ratings of food establishments and charitable institutions. After the first 6 months of implementation, the partner food establishments of the Food Hero program were able to significantly increase their awareness and participation in the Food donation act of 2009 from *slight* to *very much* by donating their surplus food for charity purposes. Also, the surplus food was able to significantly increase the frequency of food donations and was able to provide food assistance to charitable institutions from *slight* to *very much*. It is recommended to create activities that will increase the volunteerism of students and faculty to further disseminate awareness and participation of the community in the Food donation act.

Time	: UTC 510 to 530 PHIL TIME 1310 to 1330
Contributed Paper	: *An Integrated Executive Information System using Augmented Analytics*
Presenter	: Sergio R. Peruda Jr. Asia Pacific College

Abstract

The Department of the Interior and Local Government is committed to developing programs and projects that will strengthen the capacities of local government units down to the community level, ensure public safety, and promote strong, harmonious, and livable society. With this, a huge volume of data from different field units is being handled by the Department, and there is a need to improve data consolidation, organization, and management, and develop a facility that analyzes and extracts significant insight, which will be beneficial in decision-making. The team presents a plan to develop an integrated Executive Information System that will utilize augmented analytics to automate information generation, including visual and statistical reports, necessary for policy formulation and decision-making of DILG Executives. This provides accessible facility in monitoring the status of the on-going projects such financial and physical accomplishments. Likewise, it includes analysis of information from the LGU "201" Profile System, the Programs and Projects Monitoring System, and the Barangay Information System and the General Administration Information System which is essential in monitoring the physical accomplishments and financial disbursements of all Department projects vis-à-vis the project target deliverables from planning phase to the monitoring and finally, reporting phase.

Day 03: Abstracts

TUTORIAL SESSION:

Time : UTC 530 to 620 PHIL TIME 1330 to 1420

Contributed Paper : *Algebraic Modeling Languages and Large-Scale Optimization Servers in the Cloud*

Presenter : Vicente P. Reventar III

Ateneo de Manila University

Abstract

This tutorial will discuss the current state of the art of using algebraic modeling languages like AMPL, GAMS and ILOG to express mathematical optimization problems like linear programming, integer programming, mixed integer programming and quadratic programming models so they can be solved by stand alone optimization programs like ILOG-Cplex(https://www.ibm.com/ph-en/products/ilog-cplex-optimization-studio), FICO's Xpress-MP(https://www.fico.com/en/products/fico-xpress-solver) and GUROBI (https://www.gurobi.com/) . The tutorial will also give an overview of open-sourced solvers from COIN-OR (https://www.coin-or.org/) and Google's OR-Tools (https://developers.google.com/optimization). Lastly, a demonstration on how to use these tools via a cloud-based optimization servers like NEOS (https://developers.google.com/optimization) will also be part of the tutorial.

Organizer:
ORSP Board of Directors

ORSP Board of Directors

Marie Shella T. Mariscal

PRESIDENT

Shella is an Operations Research Manager at San Miguel Corporation. She has a BS degree in Industrial Engineering (minor in Mechanical Engineering) from De La Salle University. She has completed the Leadership and Management Development Program in Ateneo de Manila University with Academic Citation, completed the Basic Management Program in the Asian Institute of Management with Superior Performance, and taught at the De La Salle University.

Edwin J. Loma

VICE-PRESIDENT

Jed is the Head of the Master in Management program of Asia Pacific College, a joint venture between IBM Philippines and SM Foundation. He is also the Executive Director of the Institute of Business Analytics, an organizational performance development company, and the VP Business Development of Great People Learning Laboratories, an educational technology company. He has a BS in Management Engineering and Master in Business Administration degrees from the Ateneo de Manila University, and is a candidate for a Doctor in Business Administration degree at De La Salle University. He was a President of SAP University Council of the Philippines and an Expert Trainer of IBPAP's Service Management Program.

Nestley I. Sore

DIRECTOR, Student Affairs

Nestley, a certified Professional Industrial Engineer, is currently the Director of Office for Programs and Standards in Adamson University. She obtained her BS in Industrial Engineering from Adamson University and her Master's degree in IE from UP Diliman. She had also been affiliated with PAASCU, CHED, and Philippine Technological Council (PTC) as an assessor and accreditor. Nestley received the title of ASEAN Engineer last December 2012 during the 30th Conference of the ASEAN Federation of Engineering Organizations (CAFEO) held in Phnom Penh, Cambodia.

ORSP Board of Directors

Francis Norman Z. Miranda

DIRECTOR

Francis is the Regional Director for Research, Data Science and Quality at GfK for Asia Pacific, Middle East and Africa, covering close to 40 markets. He has more than 20 years of experience in various industries doing operations research, market research, data science and analytics. He has a BS degree in Industrial Engineering from De La Salle University and a MS degree in Industrial Engineering from Purdue University. He was recently elected President of the Association of Asia Pacific Operations Research Societies (APORS) for the period 2019-2021.

Dennis T. Beng Hui

DIRECTOR

Dennis is a former Chair and faculty of Industrial Engineering at De La Salle for more than 20 years and currently the Managing Director of Technopoly, a management consulting firm. He is a six sigma master black belt and a certified lego serious play facilitator. He holds a BS in Industrial Management Engineering and an MS in Industrial Engineering both from DLSU Manila.

Dennis Cruz

DIRECTOR

Dennis is an Assistant Professor in the Industrial Engineering Department of De La Salle University. He is currently the Associate Dean of DLSU Gokongwei College of Engineering. He is an ASEAN Engineer and a Professional Industrial Engineer. He obtained his Bachelor of Science degree in Industrial Engineering Minor in Chemical Engineering from De La Salle University and his Master of Science degree in Industrial Engineering from the same university. His areas of interest include Supply Chain Management, Facilities Planning, Mathematical Modelling, and Optimization. He is presently pursuing his Doctor of Philosophy degree In Industrial Engineering in De La Salle University.

ORSP Board of Directors

Juanito S. Chan

DIRECTOR

Jacky is a workplace-based professor at the Ateneo Graduate School of Business, handling Applied Mathematics, Business Statistics, Management Decision Models, Operations Management and Lean Six Sigma courses. He was guest professor at Taiz University, Delft (an affiliate of Delft University of Technology, Netherlands), where he taught OR. A freelance consultant on Business Process Improvement, Operations Research, Quality Engineering and Lean Six Sigma, he is a registered ASEAN Engineer of the ASEAN Federation of Engineering Organizations (AFEO).

Vicente R. Reventar

DIRECTOR

Vic is currently a lecturer at the Department of Quantitative Methods and Information Technology department at the John Gokongwei School of Management at the Ateneo de Manila University. He teaches system dynamics, gaming and management games, IT Trends and project management fundamentals. He also teaches solution methods for large scale optimization models.

Rex R. Robielos

DIRECTOR

Rex is the Dean of the School of Industrial Engineering and Engineering Management at Mapua University. Before joining Mapua, he was Section Manager of Operations Research Group, Analog Devices General Trias. He has a BS in Applied Mathematics from the University of the Philippines Los Baños, and a Diploma and MS in Industrial Engineering from the University of the Philippines Diliman. He is pursuing Ph.D in Industrial Management (candidate) at National Taiwan University of Science and Technology in Taiwan. He is the current Secretary of Human Factors and Ergonomics Society of the Philippines and Director of the Philippine Institute of Industrial Engineers.

ORSP Board of Directors

Xiaoyun Xu

DIRECTOR

Xiaoyun (Jack) Xu is a Professor at the Department of Operations & Information Technology of the Ateneo Graduate School of Business. Before joining Ateneo, Dr. Xu was an Associate Professor at the Department of Industrial Engineering and Management at Peking University. His research team has received continued support from numerous funding sources in China and the US. Over the past decade, Dr. Xu has published extensively in a list of top tier journals and conferences in the fields of Industrial Engineering and Operations Research. He also provides consulting services to many industry leaders in a wide range of industries.

Rizaldy Capulong

DIRECTOR

Rizaldy Capulong is Executive Vice President and Head of the Investments Sector of the Social Security System (SSS). His notable achievements include extending the fund lives of the Social Security Program through a series of recommended reforms backed by actuarial studies and contributing to the development of investment and actuarial practice in social security around the country and around the world by serving as a resource person/expert/speaker for various government. NGO bodies, events/conferences on investments or actuarial practice in social security. He is an Associate of the Actuarial Society of the Philippines as well as the Society of Actuaries of North America and held the position of ORSP Board Director from 2000-2004.

Elise A. del Rosario

EXECUTIVE DIRECTOR

Elise is Past President of the International Federation of Operational Research Societies (IFORS) and a founding member of the ORSP. Upon retirement from San Miguel Corporation as Vice President in charge of Operations Research, Elise went into consulting – mostly pro-bono work with the Philippine government – through the ORSP Committee for Public Service. Currently, she is the CFO of her family's One Small Step Forward Foundation, dedicated to uplifting Philippine public elementary school education. On the OR side, she still actively speaks at local and international conferences and acts as editor for various scientific publications. She obtained her BS degree in IE from UP, her Master's degree in IE & Mgt from Asian Institute of Technology, Bangkok and was an International Research Fellow at the Stanford Research Institute, USA.

The 12th Triennial Conference of Association of Asia Pacific Operational Research Societies

Cebu, Philippines

2022