DASE Dissertation Supervisors

香 港 大 學
THE UNIVERSITY OF HONG KONG

Mr. Bill K.P. Chan

Supervision Area:

- **Data science and engineering**

Expertise	Samples of Dissertation Title
Process Simulation and Modelling Simulation Optimization Applications in Warehouses and Logistics Systems Operations	• Improving Printer Production Line Performance Based on Lean Production - A Case Study • Simulation-based Optimization Using Cross-Entropy and Simple Random Search on Buffer Allocation Problem • Efficiency Improvement and Simulation of AGV for E-commerce Warehouse Operation • Simulation-based Optimization to Minimize the Non-Value-Added Time of a Digital Production Factory: A Case Study • Simulation-based Lean Six Sigma Approach to Improve Dishwash Operation in Airline Catering Service Provider

Dr. Leith Chan

Supervision Areas:

- Data science and engineering
- Healthcare systems engineering
- Robotics and automation
- Supply chain management
- Transportation and autonomous driving

Expertise	Samples of Dissertation Title
Virtual Reality; Mixed Reality; 3D User Interface; Integration of VR/MR in Systems Engineering	• Anatomy Education Application based on Mobile Augmented Reality • Design and Implementation of a VR-Based Training System for Canine Acupuncture in Traditional Chinese Veterinary Medicine • Enhancing Egocentric Depth Perception in Virtual Reality through Color-Based Techniques

Prof. H.P. Chen

Supervision Areas:

- Data science and engineering
- Healthcare systems engineering
- Robotics and automation

Expertise	Samples of Dissertation Topics
Intelligent industrial robotics Machine learning in manufacturing automaton Autonomous industrial mobile manipulation Construction robotics	• Wire Arc Additive Manufacturing Process Optimization • Robot Learning in Complex Assembly Processes • Semantic Understanding in Defect Repairing • Optimization of Manufacturing Processes Using Machine Learning • Large Part Manufacturing Automation Using Mobile Industrial Mobile Manipulation • Intelligent Robotics for Construction Automation • Defect Inspection in Reflective/transparent objects • Human Behavior Understanding • Human Robot Interaction

Dr. Jiangcheng Chen

Supervision Areas:

- Healthcare systems engineering
- Robotics and automation

Expertise	Samples of Dissertation Title
Wearable robotics; Bioelectrical signal processing; Human-robot interaction.	• Design and control of a bionic soft actuator • Surface EMG signal-based human motion perception • Physical human-robot interactive force control • Performance evaluation of wearable assistive robots

Dr. Jiayu Chen

Supervision Areas:

- Data science and engineering
- Robotics and automation

Expertise	Samples of Dissertation Title
Robotics; Reinforcement Learning; Foundation Models	• Offline Reinforcement Learning for Plasma Control in Nuclear Fusion • Continual Reinforcement Learning for Robotic Control • Reinforcement Learning-Based Pretraining for General-Purpose Robotic Agents • Multi-agent Reinforcement Learning with Sparse Reward Signals and Limited Central Information • Continual Multi-agent Reinforcement Learning

Prof. Yao Cheng

Supervision Areas:

- **Data science and engineering**
- **Transportation and autonomous driving**
- **Supply chain management**

Expertise 1	Samples of Dissertation Title
Planning and Operation Decisions for **EV Energy Replenishment Infrastructures** and **Solar Energy Systems**	•Optimal Locations for EV Charging Stations in Shen Zhen: a case study. •Optimal location and sizing for PV-storage charging station on expressways. •A Dynamic Battery Charging and Allocation Strategy for Battery •An Optimal End-of-Life Photovoltaic Module Reverse Logistics Recycling Network •Uncertainty Forecasting of Photovoltaic Power Generation based on Combined SSA-LASTM-KDE Models •Optimal Spare Parts Inventory Policies for Photovoltaic Power Station Inverters.

Expertise 2	Samples of Dissertation Title
Resilient Networked Systems Design	•Resilience Design and Critical Node Identification of a Port-and-Distribution Network. •Critical Platforms and Tracks in Metro Systems. •Resource sharing strategy for supply chain partners with horizontal collaboration. •Optimization study of post-disaster grid repair scheme considering economic benefits.

Dr. H.H. Cheung

Supervision Areas:

- Data science and engineering
- Healthcare systems engineering
- Robotics and automation
- Supply chain management
- Transportation and autonomous driving

Expertise	Samples of Dissertation Title
3D Printing; Smart Manufacturing & Logistics; E-commerce; Mixed Reality, Digital Twin, Cyber Physical Systems, RFID, IoT, Robotics, and AI for Innovative & Smart applications;	• Development of a machine learning approach for material replenishment and implementation issues of automated guided vehicles enabled warehouse in Towngas • A study on 3D Printing in aviation industry • A digitized scanning approach for mass customization in product development • Mixed reality for product development • A study on additive manufacturing for dental application • Research on customer satisfaction of fresh e-commerce business – based on the perspective of Shenzhen citizen • A B-IoT temperature monitoring system for vaccine cod chain • A feasibility study of RFID-based system for government logistics • An IoT-based supply chain system for enhancing O2O apparel retailing • An RFID-enabled track-and trace approach for enhancing toy industry product safety • A fuzzy logic enabled trust analytics models for e-commerce • A study on optimization of online airlines marketing strategy in China

Dr. S.H. Choi

Supervision Areas:

- Data science and engineering
- Supply chain management

Expertise	Samples of Dissertation Title
E-business and e-commerce; RFID and NFC applications (product anti-counterfeiting, supply chain and retail management); Digital technologies for manufacturing (CADCAM, 3D printing, virtual prototyping and digital manufacturing); Carbon control in manufacturing	• Inventory Management for e-commerce under Seasonal Demand Uncertainty • Supply chain management for B2C e-commerce of fresh agricultural products • An NFC-based mobile platform for trading of second-hand items in university campuses • Optimization of semi-automated order picking in bonded warehouses for cross-border e-commerce • Order allocation of crowdsourced last mile logistics service for e-commerce • A study of direct digital manufacturing of hearing aids • Internet of things for logistics optimization of fresh agricultural products • A comparison of emission trading systems in China and Europe Union • Single-item single-level production planning with carbon emission policies

Prof. Shiyan Hu

Supervision Areas:

- Data science and engineering
- Robotics and automation

Expertise	Samples of Dissertation Title
Robotics and Automation Data Analytics Internet-of-Things and Cyber-Physical Systems	• Multi-Sensor Data Fusion for Robotic Vision System • Reinforcement Learning based Locomotion Policy Training for Cooperative Biped and Quadruped Robots • Multi-Robotic Arm Collaborative Control System • Dynamic Semantic Mapping for Vision Language Navigation • Multi-Model Task Feedback for Cooperative Vision Language Navigation • Generative AI for Diagnostic and Prognostic Analysis of Robotic Arms • Carbon Credit Tokenization for Carbon Market: Carbon Cost Optimization with Deep Learning Based Estimation • RWA in DeFi: AI Driven Sentiment Analysis for RWA Trading in On-Chain Financial Markets

Dr. W.J. Huang

Supervision Area:

- **Data science and engineering**

Expertise	Samples of Dissertation Title
Risk Analytics; Data-driven Decision-Making; Sequential Decision-Making; Applications in Smart Transportation/Urban Sustainability/Humanitarian Operations/Logistics and Supply Chain Management/Revenue Management;	• Choice-based network revenue management with resource satisficing; • Risk-averse reinforcement learning in inventory control; • Black-box optimization for multiple-point pollution source identification; • Zero-order online learning for pollution source identification

Prof. Y.H. Kuo

Supervision Areas:

- Data science and engineering
- Healthcare systems engineering
- Supply chain management
- Transportation and autonomous driving

Expertise	Samples of Dissertation Title
Computer vision; Virtual reality; Data-driven modelling, simulation, and optimization; Transportation and traffic systems; Logistics management; Healthcare systems engineering; Human behavior inference	• Computer vision-based transportation & logistics applications • VR scenario creation for job training • Human behavior inference via AI • Workforce planning through mathematical optimization • Public transportation design and operations optimization • Electrical vehicle charging network optimization • Improving patient flow at a hospital emergency department using simulation, optimization, and machine learning • Impacts of COVID-19 on the efficiency of a healthcare system • Examining Changes in Hong Kong's Urban Rail Transit Network and Passenger Demand Due to COVID-19 • Optimizing Passenger Flow in Urban Rail Transit Networks with Simulation During Disruptions

Prof. Jiayang Li

Supervision Areas:

- Data science and engineering
- Transportation and autonomous driving

Expertise	Samples of Dissertation Title
Transportation; Optimization; Game Theory; Operations Research	• Bilevel programming • Federated learning • Large language models for traffic system modeling • Automated vehicle management • Electric vehicle management • Transit assignment and design • Railway operations • Emergency management in transportation systems

Prof. Shaochong Lin

Supervision Areas:

- Data science and engineering
- Transportation and autonomous driving
- Supply chain management

Expertise	Samples of Dissertation Title
Logistics and Supply Chain Management, Smart Transportation	• Data-driven inventory and promotion optimization; • Smart parking planning for multiple parking lots; • Machine learning approach to predict aircraft boarding and optimization; • Collaborative scheduling optimization in workshop assembly

Prof. Jun Liu

Supervision Areas:

- Data science and engineering
- Healthcare systems engineering
- Robotics and automation

Expertise	Samples of Dissertation Title
• Micro/nano robotics • AI for smart manufacturing • Smart sensor and actuators	• Origami-based micro actuators for single cell manipulation • Machine learning methods for vision and acoustic based measurement for fault analysis • Novel magnetic microrobot for high payload output • Construction robot for gypsum wall laying tasks • Acoustic manipulation of small objects • Microrobotic manipulation of single cells • Insect-inspired microrobots for underground navigation • Origami-based hopping microrobots

Prof. Shinan Liu

Supervision Areas:

- Data science and engineering
- Healthcare systems engineering
- Robotics and automation

Expertise	Samples of Dissertation Title
• Machine Learning Systems • Security and Privacy • Cyber-physical Systems	• Deep Generative Compression for Retention of Enterprise Data • Synthetic Data Generation in Security-Critical Systems • Privacy-Aware ML Pipelines for Wearable Healthcare Devices • Cybersecurity Risks in Networked Medical Devices • Multi-Modal Data Fusion for Clinical Decision Support Systems • ML Systems for Robust Localization under GPS Spoofing Attacks • Adaptive Intrusion Detection in Autonomous Vehicle Networks

Dr. Xin Ma

Supervision Areas:

- Healthcare systems engineering
- Data science and engineering
- Robotics and automation

Expertise	Samples of Dissertation Topics
Human Sensing and Data Processing, Dynamics modeling and Control for Human and Robots, Applications in Robotics and Healthcare	• Human and robot interactions • Digital twin of the human musculoskeletal system • Balance assessment for fall prevention • VR-based balance assessment for construction sites • Development of wearable assistive robots • Computer vision and image processing

Dr. Jonathan W.C. Ng

Supervision Area:

- Supply chain management

Expertise	Samples of Dissertation Title
Operations management; supply chain management; planning and control of container terminals	• Effective Truck Scheduling Method for a Cold Chain Logistics Company • Supplier Evaluation System for a Smartphone Accessory Manufacturer

Prof. K.L. Or

Supervision Areas:

- Healthcare systems engineering
- Data science and engineering

Expertise	Samples of Dissertation Title
Human factors engineering Health Informatics Human-computer interaction	• Deep learning for diabetic retinopathy and beyond: severity classification, lesion segmentation, and systemic disease prediction from fundus images • From understanding to alleviating emotional distress: a dual-stage study of social media mining and ai interaction effects • Developing an application software based on cognitive behavioral therapy for people in depressed and anxious moods • Predicting medication adherence in diabetes and hypertension patients using machine learning algorithms • Relationship between heart rate variability and eye movement signals during the process of administering medication: a lab-based eye-tracker simulation study

Prof. Max Z.J. Shen

Supervision Areas:

- Data science and engineering
- Transportation and autonomous driving
- Supply chain management

Expertise	Samples of Dissertation Title
Operations Management, Data-driven Decision Making, Smart Transportation	• Demand prediction with opaque selling • Flight arrival time prediction based on deep learning and gate reassignment optimization • Demand forecast and sizing optimization for rail-water intermodal transport • Decision-making models and application of electricity-selling-company based on electricity price forecasting

Prof. Chen SUN

Supervision Areas:

- Data science and engineering
- Robotics and automation
- Supply chain management
- Transportation and autonomous driving

Expertise	Samples of Dissertation Title
Prediction and planning; Safe control; AI-safety Validation; In-Cabin Monitoring; AI-assisted Diagnosis and Prognosis; Smart Robotic Assist	• Multi-Agent Trajectory Prediction with Social Interaction Modeling for Urban Intersection Scenarios • Uncertainty-Aware Trajectory Prediction Incorporating Human Driving Style Recognition • Robust Performance-Prescribed Control for Connected Autonomous Vehicle Platoons • Agile Flight Controllers for Drones with Performance Guarantees in Dynamic Environments • Generating Adversarial Linguistic Corner Cases for Large Language Models • Personalized In-Vehicle Health Monitoring and Intervention • Real-Time Fault Diagnosis and Remaining Useful Life Prognosis in Robotic Infrastructure Inspection • Enhancing Social Navigation and Situational Awareness for Blind Users • Integrating Large Language Models and Adaptive HRI for Intelligent Navigation Assistance for the Visually Impaired

Prof. Ning Xi

Supervision Areas:

- Data science and engineering
- Healthcare systems engineering
- Robotics and automation

Expertise	Samples of Dissertation Topics
Robotics, Automation Intelligent Systems, Sensing and Data Processing; Internet and application.	• Human and robot Interactions • Robot learning and programming; • Internet based automation; • Sensors and data processing; • Mobile robot navigation; • Computer vision and image processing

Prof. Yang Xu

Supervision Areas:

- Data science and engineering
- Robotics and automation
- Healthcare systems engineering

Expertise	Samples of Dissertation Title
Novel additive manufacturing processes;	• Super-high resolution additive manufacturing system • High-speed additive manufacturing of highly viscous materials • Multi-material additive manufacturing platform for electronic device fabrication
AI-assisted process planning and control methodologies;	• Sensing-rich in-situ monitoring system for robust 3D printing processes • Data-driven approach to optimize mask images in digital light processing • Physics-informed machine learning algorithm for predicting polymerization process
Additive Manufacturing-empowered applications/devices.	• Design and manufacturing of high-strength yet ductile functional ceramics • 3D Printing-enabled design and manufacturing strategies for batteries

Prof. M.C. Yue

Supervision Areas:

- Data science and engineering
- Supply chain management

Expertise	Samples of Dissertation Topics
Optimization, Data Science, Machine Learning, Operations Research, Decision Making under Uncertainty	• Optimization for Machine Leaning • Optimization Approaches for Decision Making under Uncertainty • Convex Optimization: Theory, Algorithms and Applications • Online Optimization and Its Applications

Prof. Fangni Zhang

Supervision Areas:

- Data science and engineering
- Transportation and autonomous driving
- Supply chain management

Expertise	Samples of Dissertation Topics
Transportation systems modeling and optimization;	• On-demand parcel and food delivery using drones
	• Path and trajectory planning for urban air mobility
	• Truck-and-drone collaboration for post-disaster rescue
	• Low-altitude airspace allocation and pricing mechanisms
	• Urban traffic learning and prediction
Logistics systems planning and optimization	• Automated last-mile delivery system design and optimization
	• Smart parking management with Large-Language Models (LLMs)
	• Integrated parking and charging scheduling for electric vehicles
	• Mobility and V2G services of electric vehicles
Transport/urban data analytics	• Mobility service platform with Modular Vehicles
	• Collaborative passenger and freight transportation
	• Cross-border ecommerce supply chain and logistics

Prof. Ray Y. Zhong

Supervision Areas:

- Data science and engineering
- Transportation and autonomous driving
- Supply chain management

Expertise	Samples of Dissertation Title
• Smart Prefabrication Construction Supply Chain Management • Big Data Analytics • Internet of Things (IoT)-enabled Manufacturing • ESG for Logistics Industry • Construction Informatics/Analytics	• Data-based building information model (BIM) platform analysis for logistics of prefabrication components • An integrated quality management system based on big data analytics for shop-floor production • Optimization of logistics in RFID-enabled factories with big data • Construction Waste Recycling: Assessing ESG Impacts Using Data LCSA Analysis Method • Deep learning-based logistics optimization for Housing construction in Hong Kong

Dissertation Topics

Part-time teachers

Dr. P.C. Chen

Supervision Areas:

- **Data science and engineering**
- **Supply chain management**

Expertise	Samples of Dissertation Title
Finance; Operations, Risk Management; Interface of Finance, Operations and Risk Management	• Pair Trading: Five Factors Model Approach • The Role of Unverified Soft Information in Lending: Evidence from Peer-to-peer lending Market • Systemic Risk in Irregular Financial Networks

Ir. Herman WC Chiu

Supervision Area:

- **Transportation and autonomous driving**

Expertise	Samples of Dissertation Title
Airport cargo terminals: planning, operations and automation; Container terminals: planning, operations and automation	• Developing a Tool for Designing a new Container Terminal • Assessing the capacity and reviewing improvements in layout, operations and equipment of an air cargo terminal in Hong Kong • Developing strategies in job/vehicle scheduling, container stacking, routing and traffic planning for autonomous vehicles

Dr. L.K. Chu

Supervision Areas:

- Data science and engineering
- Supply chain management

Expertise	Samples of Dissertation Title
Financial investment, risk management in supply chains	• A Robo-adviser for the Hedging of Steel Price Risk Using Market-traded Commodities • An Automated Financial Investment Adviser in China's GEM (Growth Enterprise Market)

Prof. G.Q. Huang

Supervision Area:

- **Supply chain management**

Expertise	Samples of Dissertation Title
Smart logistics; Smart manufacturing; Smart fit-out construction; Game-theoretic analysis	• A Pokémon Go Style Warehouse Staff Incentive System • Exploring the Furniture Warehouse Store Model in China: Case Studies of METRO and IKEA

Dr. S.W.K. Ng

Supervision Area:

- **Supply chain management**

Expertise	Samples of Dissertation Title
Green Procurement, Supply Management, Smart Logistics, E-Commerce, Auto-Warehousing/Distribution, Operations Improvement and Supply Chain Leadership, ESG/Sustainability, Change, Operations & Business Re-engineering, Six-Sigma & Quality Development, One Belt, One Road, New Quality Productive Forces, Human/Talent Engagement, and People Engineering & Productivity.	• Change, re-engineering and improvements in Procurement, Logistics, Operations and Supply Chain Leadership and Development, Performance Measurement & KPIs in Supply Flows; • Suppliers Management and Operations Improvements in Supply Chain Process; • Global Outsourcing, Auto Supply Chain, Merger & Acquisitions, Risk Management; Crisis Control, Negotiation, and Mediations; • Partnership; PPP; Costs Engineering; Engineering Contracts Management; Digitalization & Technologies in Supply Chain, and Lean and Six Sigma Quality; • Logistics, and Green Operations Improvements, from First Parties to Fourth Parties in the Value Chain and Profit Centre; • Business Ethics; Blockchain; Social responsibilities; Green Supply Chain: Global Standards; ESG; 2030 and 2060 Carbon Targets; • Professional Standard; Sustainability under ISO20400, ISO23412 UN17 Goals etc.; Procurement Consortium; and • Operations Improvements in Applications of 3D, TQM, LSS, HRM under Post- Pandemics and New & Challenging Environment.

Prof. J.T. QI

Supervision Area:

- **Robotics and automation**

Expertise	Samples of Dissertation Title
Environmental perception and understanding	• Collaborative Environmental Perception and Understanding by Multiple Drones (Positioning, Mapping, Search) • High-Precision Identification and Positioning of High-Speed Small Aerial Targets (Countermeasures) • Research on Ground Small Target Detection Algorithms in Complex Scenarios
Autonomous and Swarm Control of Robotic Systems	• End-to-End Data-Driven Autonomous Control for Highly Agile Drone Flight • Vision-Inertial Fusion Navigation for Drones in GPS-Denied Environments • Cooperative Transportation of Suspended Loads by Multi-UAV Systems
Air Traffic and Safety Management	• Dynamic Path Planning for Drones Based on Hybrid Airspace Traffic Prediction • Airspace Resource Allocation and Conflict Resolution for Multi-UAV Cooperative Missions

Dr. Shujia Qin

Supervision Area:

- Data science and engineering

Expertise	Samples of Dissertation Title
Artificial intelligence; Machine learning; Computer vision; Signal processing.	• Bidirectional feature pyramid attention-based temporal convolutional network model for motor imagery electroencephalogram classification • Transformer-Based Action Mode Classification for Cerebral Organoids on Micro-Electrode Arrays • Vision-based perpendicularity monitoring for pile driving • Compressive video recovery using block-match multi-frame motion estimation based on single-pixel cameras • A Model of Two-Way Selection System for Human Behavior

Dr. J.W. Wang

Supervision Areas:

- Data science and engineering
- Supply chain management

Expertise	Samples of Dissertation Title
Resilience engineering; Financial engineering ; Service systems engineering (transportation, health care, finance); Mathematical modeling, intelligent optimization and simulation.	• Analysis of Cryptocurrency Market: Dependence and Interaction with Stock Market • Rebalancing Strategies for Stock-REITs-Cryptocurrency Portfolios • Express Satisfaction Measurement Model and Logistics Optimization in Cross-Border E-Commerce from Mainland China to Hong Kong • Optimizing the operational staffing for the complex outpatient care system of a large-scale hospital • NSGA-II based Package Logistics using Integrated Truck and Drone Routing

Dr. Y. M. Wong 王耀文

Supervision Area:

- **Supply chain management**

Expertise	Samples of Dissertation Title
Global Logistics, Courier, China's E-commerce Cases, Cold Chain, Green Logistics, AGV/ AMR/ AI Applications, Warehouse Automation, Belt & Road Initiative, Low Altitude Economy/ Drone, Airport Cargo Terminals	• Agility of the material management system to cope with sales order fluctuations • Research on the synergy of Luxury E-commerce and Store Locations Selection • Smart warehousing storage and retrieval design with a case study of dyeing factory • Reverse Logistics Modeling for End-of-Life Lithium-Ion Batteries and Its Impact on Recycling Viability • Optimization of container multimodal transport routes between China and Europe • Subway Logistics System Design in Guangzhou-Foshan • Multichannel network logistics with combined local and offshore warehouses