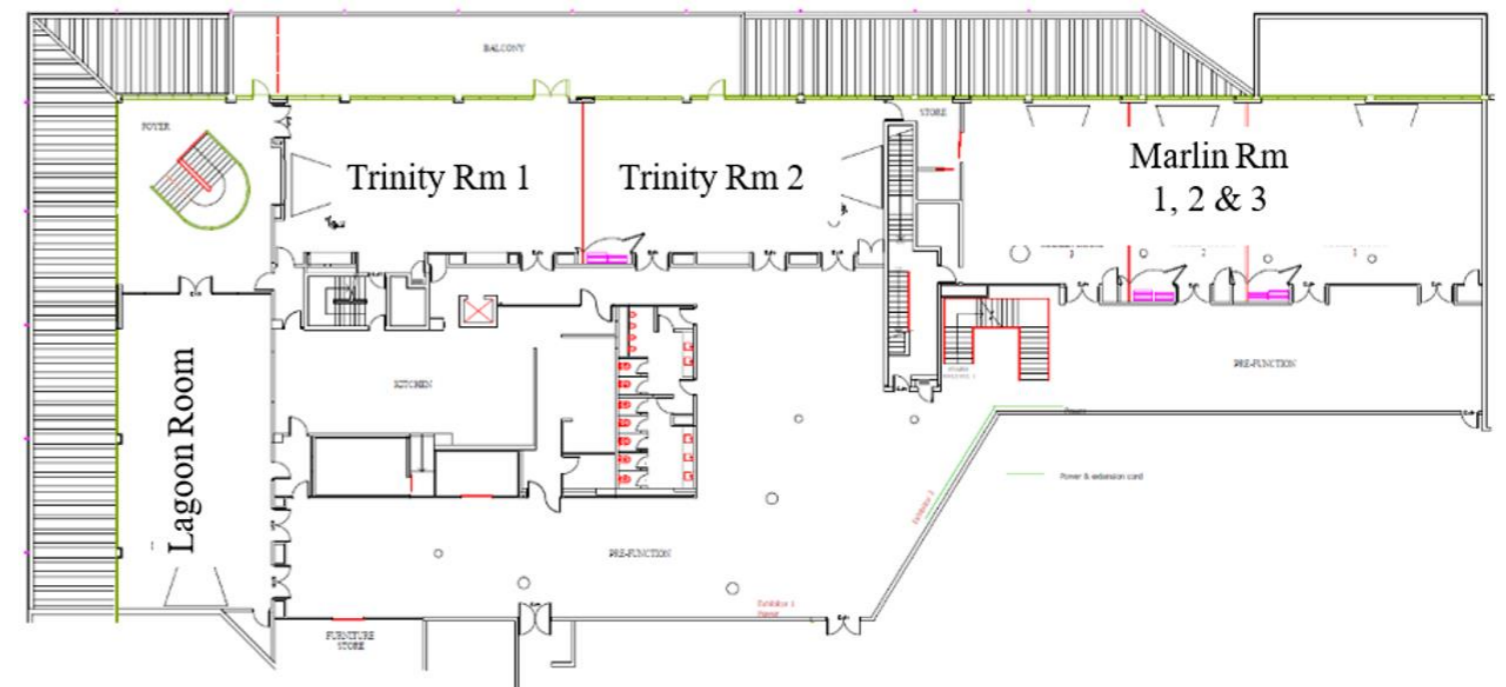
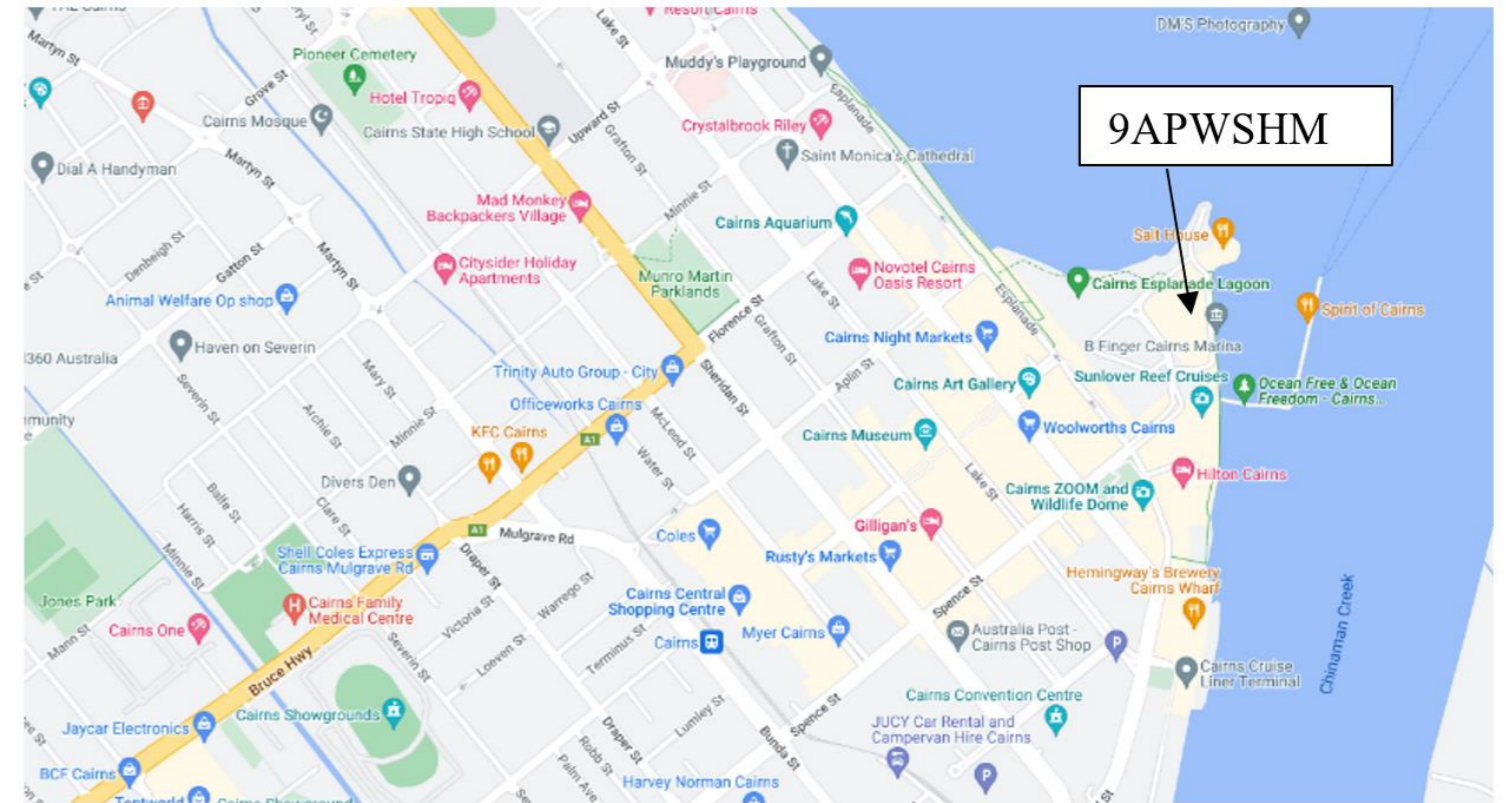


## Workshop Program

9<sup>th</sup> Asia Pacific Workshop on Structural Health Monitoring  
Cairns, Queensland, Australia

### Some Administrative Details:

- Registration will commence on Tuesday, 6<sup>th</sup> December 2022, (4 pm – 6.30 pm).
- Please upload your presentation slides during *the first 10 minutes of the break* prior to your session.
- Delegates are strongly encouraged to check during *the first 10 minutes of the break* before their session any of the unfamiliar audio-visual equipment, to ensure that your presentation slides (preferably on thumb disks) can be displayed on the screen.
- For the morning session the delegates can check the AV equipment from 8 am Wednesday (7<sup>th</sup> of December) to Friday (9<sup>th</sup> of December).
- The morning, afternoon tea and lunches will be served in the foyer next to the Trinity Rm 2. Delegates who have registered specific dietary requests, your meal will be appropriately labelled on the table or platter. If not, please enquire with the waiting staff.
- A notification will be given 10 minutes before the next session starts.
- The Welcome Reception on the 7<sup>th</sup> of December will be in the Marlin Rm 1,2 &3 starting at 7 pm. Delegates who have registered specific dietary requests, please inform the waiting staff where you will be seated so that your meal can be served to you.
- The Conference Dinner on the 8<sup>th</sup> of December will be in the Trinity Rm 1 & 2 starting at 7 pm. Delegates who have registered specific dietary requests, please inform the waiting staff where you will be seated so that your meal can be served to you.



## 9<sup>th</sup> Asia-Pacific Workshop on Structural Health Monitoring

Wednesday 7 <sup>th</sup> December			
8:00 - 8:30		Registration	
8:30 - 8:45		Conference Opening	
		Session Chair: Dr Nik Rajic (DSTG)	
8:45 - 9:30		Keynote 1: Model-driven Quantitative Nonlinear Ultrasonics, Professor Zhongqing Su, The Hong Kong Polytechnic University (Trinity Room)	
		Trinity Room	Lagoon Room
Session		Guided waves & Acoustic Emission	AI and Deep Learning for SHM
Chair		Dr Scott Moss (DSTG)	Dr Suzana Turk (DSTG)
9:30 - 9:55	51	Localized Damage Detection in Wind Turbine Rotor Blades Using Airborne Acoustic Emissions, <i>Alexander Lange, Leibniz Universitaet Hannover</i>	35 Anomaly Data Detection in Structural Vibration Monitoring Based on CNN-LSTM Model, <i>Xiulin Zhang, Harbin Institute of Technology (*)</i>
9:55 - 10:20	21	Improving the Performance of a Lamb Wave Sensing Array via Relaxor Ferroelectric Single Crystal Transduction, <i>Matthew Schipper, Defence Science and Technology Group</i>	46 Wavefield Character in High Rise Building under Earthquake Shake and CNN-Based Damage Detection, <i>Aijia Zhang, Saitama University</i>
10:20 - 10:45	19	Laser Ultrasonic Wave Spatial Gradient Features for Damage Detection, <i>Michael Todd, University of California San Diego</i>	49 High-Precision Dimensional Measurement of a Curtain Wall Cross-Section Using Image Super-Resolution, <i>Jun Su Park, Yonsei University</i>
10:45 - 11:10		Break	
Session		Guided waves/nonlinear acoustics	AI and Deep Learning for SHM
Chair		Prof Ye Lu (Monash University)	Prof Mike Todd (UCSD)
11:10 - 11:35	45	Microstructure Characterization of Polycrystal with Surface Acoustic Waves Using Wavenumber-Filtering, <i>Zheng Fan, Nanyang Technological University</i>	66 An Optimized Asset Management Petri Net Model for Railway Sections, <i>Ali Saleh, University of Granada</i>
11:35 - 12:00	26	Estimating the Probability of Detection of Cracks in Metal Plates Using Lamb Waves, <i>Faez Aziz Masurkar, A*STAR Research Entities</i>	74 Machine Learning: Approaches to Predicting Reliability and Developing Maintenance Strategies, <i>Subash Singh, Monash University</i>
12:00 - 12:25	69	Detecting Contact Acoustic Nonlinearity in TOFD Measurements via Quasistatic Loading, <i>Alessandro Carcione, University of Queensland</i>	75 Deep Learning Assisted Techniques for Vibration Based Structural Health Monitoring, <i>Jun Li, Curtin University</i>
12:25 - 12:45	77	A Hybrid Spectral Element/Finite Element Method for Modelling Crack-Induced Contact Acoustic Nonlinearity, <i>Feilong Li, The Hong Kong Polytechnic University</i>	18 Evaluation of Building Damage Due to Natural Disaster Using CNN and GAN, <i>Haruka Yamada, Tokyo University of Science</i>
12:45 - 13:45		Lunch	
Session		Guided Waves/New SHM Techniques	SHM Applications
Chair		Prof Martin Veidt (University of Queensland)	Dr Cedric Rosalie (DSTG)
13:45 - 14:10	37	Damage Detection in Hybrid Metal-Composite Plates Using Ultrasonic Guided Waves Based on Outliers Estimate, <i>Faez Masurkar, A*STAR Research Entities</i>	5 Vibration Monitoring of Railway Bridge Pier and Probability of Scour Occurrence, <i>Daigo Kawabe, Kyoto University</i>
14:10 - 14:35	8	Methods for Condition Monitoring of Civil Infrastructures, <i>Mohsen Mousavi, University of Technology Sydney</i>	7 Data-Driven Models for Strain-Based Damage Identification in Composite Wind Turbine Blades, <i>Julián Sierra-Pérez, Universidad Pontificia Bolivariana</i>
14:35 - 15:00	36	Construct the Seismic Response Analysis Model of an Existing Nuclear Facility Using 4SID, <i>Rino Kato, Ibaraki University</i>	17 Prediction of Speed Limit on the Railway Track Using Track Quality Index and Multibody Dynamics Simulation, <i>Hera Widyastuti, Institut Teknologi Sepuluh Nopember</i>
15:00 - 15:25	33	Evaluation of a Practical Automatic Damage Assessment System Using a Single Accelerometer for Wooden Frame Houses, <i>Yuichi Furukawa, Keio University</i>	85 Comparative Strain Survey of an Aerospace Structure Using Distributed Fibre Optic Strain Sensing Technology, <i>Gerard Natividad, Defence Science and Technology Group</i>
15:25 - 16:00		Break	
		Civil Structures/New SHM Techniques	Applications SHM/Civil structures
		Prof Ken Loh (UCSD)	Prof Fan Zheng (Nanyang Technological University)
16:00 - 16:25	53	Bridge Damage Detection by Means of Displacement-Based Bridge Weigh-In-Motion, <i>Takumi Yokoyama, Kyoto University</i>	78 A Nanometer-Precision In-Situ 3D Ultrasonic Imaging Platform for Studying Localised Corrosion, <i>Yunda Chen, The Hong Kong Polytechnic University</i>
16:25 - 16:50	55	A Mechanical Method of Classifying the State of Solid Matter beneath a Floating Cover over an Anaerobic Lagoon, <i>Nha-Dat Bui, Monash University</i>	6 Long-Term Cable Vibration Monitoring and Cable Tension Estimation of a Cable-Stayed Bridge, <i>Chul-Woo Kim, Kyoto University</i>
16:50 - 17:15	12	Experimental Test of Patch Antenna Sensor for Simultaneous Crack and Temperature Sensing, <i>Xianzhi Li, Tongji University</i>	20 Dual-Polarised Ground-Penetrating Radar Method for Sizing Reinforcing Bars in Concrete, <i>Hai-Han Sun, Nanyang Technological University</i>
17:15 - 17:40	14	Experimental Non-destructive Detection on Grout Defects in a Prefabricated Concrete Frame, <i>Xuan Zhang, Tohoku Institute of Technology</i>	
19:00 - 20:30		Welcome Reception (Marlin Room)	

## 9<sup>th</sup> Asia-Pacific Workshop on Structural Health Monitoring

Thursday 8 <sup>th</sup> December				
8:00 - 8:45		Registration		
		Session Chair: Prof Akira Mita (Keio University)		
8:45 - 9:30		Keynote 2: Unified Sensing System for Total Awareness of Personnel and Environments, Dr Liming Salvino, University of Michigan		
		Trinity Room		Lagoon Room
Session		Civil structures		New SHM Techniques
Chair		Dr Matthieu Gresil (Monash University)		Dr Francis Rose (DSTG)
9:30 - 9:55	38	Seismic Damage Assessment of Building with Strong Nonlinearity Based on Particle Filter, <i>Takenori Hida, Ibaraki University</i>	64	Carbon Black Enhanced Cementitious Composites for Self-Sensing Micro Strain, <i>Ye Lu, Monash University</i>
9:55 - 10:20	52	Development of Deflection Measurement Method Using Smart Cables with Distributed Fiber Optic Sensors, <i>Takumi Nakashima, Kajima Corporation</i>	79	Fully Convolutional Network-Based Ultrasonic Inversion for Multi-Layered Bonded Composites, <i>Jing Rao, ADFA</i>
10:20 - 10:45	50	Detection of Corrosion-Induced Damage in Concrete Using Rayleigh Wave-Based Method, <i>Weixia Cheng, Nanyang Technological University</i>	3	Subwavelength Defect Detection Using Contactless Laser Ultrasonics with a Dimension-Expanded De-noising Algorithm, <i>He Yi, The Hong Kong Polytechnic University</i>
10:45 - 11:10		Break		
Session		Composite structures		Human performance monitoring
Chair		Prof Zhongqing Su (Hong Kong Polytechnic University)		Prof Ken Loh (UCSD)
11:10 - 11:35	16	The Effect of Positional Instability on the Detection of Barely Visible Impact Damage in Composites Using a Mobile Thermographic Inspection Robot, <i>Mark Richards, Defence Science and Technology Group</i>	32	Development of Indoor Seismic Damage Simulator for Evaluation of Human Injury, <i>Haruki Sakuma, Ibaraki University</i>
11:35 - 12:00	67	Damage Detection Using Distributed Strain Information of Composite Storage Tank, <i>Il-Bum Kwon, Korea Research Institute of Standards and Science</i>	42	Action Difficulty Evaluation for High-Rise Buildings Based on Questionnaire and Strong-Motion Records, <i>Nina Suzuki, Tokyo University of Science</i>
12:00 - 12:25	71	Graphene Enhanced Epoxy Vitrimers: A Potential Matrix for Multifunctional Composite Materials, <i>Matthieu Gresil, Monash University</i>	63	Wireless Respiration and Physical Activity Monitoring Using a Nanocomposite Chest Band, <i>Ken Loh, University of California San Diego</i>
12:25 - 12:45	81	Fatigue Response of Conformal Load Bearing Antenna Structures, <i>Shouxun Lu, Monash University</i>	72	Enhancing Tactical Athlete Training and Performance Using Motion Tape Wearable Sensors, <i>Yun-An Lin, University of California San Diego</i>
12:45 - 13:45		Lunch		
Session		Vibro-acoustics/ Human-centred ambient and environmental sensing		Human performance monitoring
Chair		Prof Julián Sierra-Pérez (Universidad Pontificia Bolivariana)		Dr Liming Salvino (University of Michigan)
13:45 - 14:10	22	Aeroacoustic Energy Harvesting Using Relaxor Ferroelectric Single Crystals, <i>Matthew Schipper, Defence Science and Technology Group</i>	76	Elderly Falling Risk Assessment, <i>Ning Xi, The University of Hong Kong</i>
14:10 - 14:35	56	Higher-Order Effects of Amplitude-Modulation Vibro-Acoustic Technique for Characterization Thermal Damages in Cement-Based Material, <i>Tingyuan Yin, University of Adelaide</i>	40	Investigation of Vibrational Assessment on Osseointegration Process with a Novel Implant Design, <i>Shouxun Lu, Monash University</i>
14:35 - 15:00	25	Modeling and Utilizing Habits Using Process Mining for Building Spatial Design Systems, <i>Naohiro Haraguchi, Keio University</i>	84	A Novel Penetrator for Preventing Tissue Structure Damage during Pleural Decompression Procedure, <i>Shifeng Bai, Monash University</i>
15:00 - 15:25	27	An Optimal Sensor Placement Method for Physical Function Assessment in Living Space, <i>Moeko Yamane, Keio University</i>	13	Monitoring the Bone Degradation-Induced Loosening of Osseointegrated Percutaneous Implant Using Vibration Analysis, <i>Qingsong Zhou, Monash University</i>
15:25 - 16:00		Break		
		Human-centred ambient and environmental sensing		Human performance monitoring
		Prof Mike Todd (UCSD)		Dr Liming Salvino (University of Michigan)
16:00 - 16:25	31	Effects of Architectural Space Design on Predicting Turning in Daily Life, <i>Yurie Matsunami, Keio University</i>		Bone degradation and risk of fracture, <i>Peter Ebeling (AO), Monash Health/Monash University</i>
16:25 - 16:50	41	Augmented Architectural Space System for the Creation of Casual Connections with People, <i>Yurina Suetomi, Keio University</i>	83	Extracorporeal Long Bone Healing Assessment Based on a Vibration Analysis Approach: A Human Trial, <i>Wingkong Chiu, Monash University</i>
			70	PANEL: Human System Performance Assessment and Augmentation Special Session
19:00 - 21:30		Conference Dinner (Lagoon Room)		

## 9<sup>th</sup> Asia-Pacific Workshop on Structural Health Monitoring

Friday 9 <sup>th</sup> December				
<b>8:00 - 8:45</b>		Registration		
Session Chair: Prof Nobuo Takeda (Tokyo University)				
<b>8:45 - 9:30</b>		<b>Keynote 3: Challenges and Opportunities in SHM, Professor Maria Q. Feng, Columbia University</b>		
		Trinity Room		Lagoon Room
<b>Session</b>		<b>Aerospace &amp; Civil Structures</b>		<b>New SHM Techniques</b>
<b>Chair</b>		<b>Dr Marsukar (A*STAR)</b>		<b>Prof W.K. Chiu (Monash Uni)</b>
<b>9:30 - 9:55</b>	57	A Wireless Multi-Parameter Monitoring Device for Aircraft, (Pre-recorded) <i>Wang Chongqi, Nanjing University of Aeronautics and Astronautics</i>	43	Quantitative Characterisation of Acoustic Emission Source for Composite Failure Mechanism under Quasi-Static Three-Point Bending, <i>Sze Kai Low, Monash University</i>
<b>9:55 - 10:15</b>	82	Numerical and experimental studies on the joint performance of bonded, fastened and hybrid thin metal joints used in aircraft structures, <i>Amir Ekladious, Monash University</i>	44	Inverse Finite Element-Based Shape Reconstruction Method for Large-Scale Space Antenna, <i>Tianxiang Huang, Nanjing University of Aeronautics and Astronautics</i>
<b>10:15 - 10:40</b>	34	Ice Monitoring of Aluminum Conductor Steel-Reinforced Cables Using Guided Waves, <i>Yuqi Wu, Harbin Institute of Technology (*)</i>	60	Design of Compact and Portable Piezoelectric Guided Wave Structure Health Monitoring System, <i>Qiyun Xu, Nanjing University of Aeronautics and Astronautics</i>
<b>10:40 - 11:05</b>	30	Guided Waves-Based SHM Using an ML-Based Parametric ROM, <i>Paul Sieber, ETH Zurich (*)</i>	80	Structural Health and Performance Monitoring of Float Cover at the Western Treatment Plant: Our Chronology, <i>Wingkong Chiu, Monash University</i>
<b>Closing Ceremony</b>				