

# ISGSR 2022

8th International Symposium for Geotechnical Safety & Risk

14 - 16 December 2022 - Newcastle, Australia



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## Program

### Wednesday, 14 December 2022 (Short Courses)

13:30-18:00	<b>Registration</b> <i>Open space on the second floor, Nuspace</i>
09:00-12:15	Short course "Quantitative Risk Assessment in Geotechnical Engineering" <b>Prof. D.V. Griffiths, Colorado School of Mines</b> <i>Room: X205</i>
12:15-13:30	Lunch
13:30-16:45	Short course "Quantitative Risk Assessment in Geotechnical Engineering" <b>Prof. D.V. Griffiths, Colorado School of Mines</b> <i>Room: X205</i>
17:00-18:00	<b>GEOSNet Board Meeting</b> <i>Room: X201</i>
18:00-20:00	<b>Reception (Beverage &amp; Canape),</b> <i>open space on the second floor, Nuspace</i>

Thursday, 15 December 2022

08:00-18:00	<b>Registration</b> <i>Open space on the second floor, Nuspace</i>				
08:30-09:00	<b>Opening Ceremony</b> <i>Room: X101</i>				
09:00-09:40	<b>Wilson Tang Lecture – “Geotechnical Probability: From FOSM to RFEM”</b> <b>Prof. D. V. Griffiths, Colorado School of Mines, USA</b> Chair: Mark Jaksa <i>Room: X101</i>				
09:40-10:10	<b>Keynote – “Applications of Artificial Intelligence in Geotechnical Engineering”</b> <b>Prof. Mark Jaksa, University of Adelaide, Australia</b> Chair: D. V. Griffiths <i>Room: X101</i>				
10:10-10:30	<b>Tea Break (Photo-taking)</b>				
<b>Sessions</b>	<b>(IS3) Modelling spatial variability in geotechnical engineering</b> Chairs: Jinsong Huang, D.V. Griffiths, Shuihua Jiang <i>Room: X101</i>	<b>(IS5) Geological uncertainties in geotechnical analysis and design &amp; (IS1) Probabilistic site investigation</b> Chairs: C. Hsein Juang, Jia-Jyun Dong & Wenping Gong <i>Room: X201</i>	<b>(IS11) Landslide Risk Assessment &amp; Geo-Hazards Induced by Rainfall, Earthquake and Other Factors</b> Chairs: Limin Zhang & Wengang Zhang <i>Room: X202</i>	<b>(IS6) Advances of Theory, Methodology and Applications in Geotechnical Reliability-based Design</b> Chairs: Zijun Cao, Jian Ji & Dian-Qing Li <i>Room: X205</i>	<b>(IS2) Data Driven Site Characterization Methods and Their Benchmarking</b> Chairs: Takayuki Shuku & KK Phoon <i>Room: X207</i>
10:30–10:45	<b>(IS3-21)</b> Reliability Analysis of a Shallow Foundation Considering Soil Spatial Variability <i>A.T. Siacara, H.M. Kroetz, A.T. Beck, and M.M. Futai</i>	<b>(IS5-14)</b> Geological Uncertainty Quantification Using Image Warping and Bayesian Machine Learning <i>Hui Wang and Xingxing Wei</i>	<b>(IS11-01)</b> Uncertainty Quantification of Landslide Susceptibility Mapping Considering Landslide Boundary Geometry <i>Sahand Khabiri and Yichuan Zhu</i>	<b>(IS6-01)</b> Reliability Analysis of Width-Constrained Piled Slopes Considering Three-Dimensional Spatial Variability of Soil Strength <i>Zhibin Sun, Hao Zhuang, Daniel Dias, and Tingting Zhang</i>	<b>(IS2-03)</b> Benchmarking Study of Three-Dimensional Subsurface Modelling Using Bayesian Compressive Sampling/Sensing <i>Borui Lyu, Yue Hu, and Yu Wang</i>
10:45-11:00	<b>(IS3-03)</b> Locally Connected Neural Networks as Surrogate Models for Stochastic Analysis with Spatial Variability <i>Xuzhen He, Fang Wang, and Daichao Sheng</i>	<b>(IS5-01)</b> Design of Rock Socketed Piles in Complex Geological Environments: Two Case Studies from Central and North Queensland <i>Katherine Farry, Natasha Joynson, and Sharath Kudumula</i>	<b>(IS11-06)</b> Deformation Characteristics and Stability of the Sanzhouxi Landslide in the Three Gorges Reservoir <i>Beibei Yang</i>	<b>(IS6-02)</b> Reliability-Based Design Optimization of Pile Stabilized Earth Slopes Aided by Pareto Optimality <i>Yining Hu and Jian Ji</i>	<b>(IS2-01)</b> Comparison of Data-Driven Site Characterization Methods through Benchmarking: Methodological and Application Aspects <i>Takayuki Shuku and Kok Kwang Phoon</i>

11:00-11:15	(IS3-05) Effect of Spatial Variability in Asphalt Layer on Critical Pavement Response <i>Li Xiao and Jianfeng Xue</i>	(IS5-02) The Application of the RMEI Scour Assessment for a Heterogeneous Rockmass in an Unlined Spillway Channel <i>Juan Michelangeli and Graeme Jardine</i>	(IS11-05) Risk Evaluation for Earth-Fill Dams by Response Surface Method <i>Shiyong Zheng, Shin-Ichi Nishimura, and Toshifumi Shibata</i>	(IS6-03) Multi-Objective Inverse Reliability Design Approach in Geotechnical Engineering <i>Jian Ji, Zhe-Ming Zhang, and Zhao-Cheng Wang</i>	(IS2-08) A Method for Probabilistic Assessment of Slope Bearing Capacity Considering Stratigraphic Uncertainty <i>Hui Wang and Zehang Qian</i>
11:15-11:30	(IS3-06) Efficient Reliability Analysis of Slopes in Spatially Variable Soils Based on Active-Learning Multivariate Adaptive Regression Spline <i>Zhi-Ping Deng, Min Zhong, Min Pan, Jing-Tai Niu, and Ke-Hong Zheng</i>	(IS5-03) Machine Learning of Subsurface Geological Model for Assessment of Reclamation Induced Consolidation Settlement <i>Chao Shi and Yu Wang</i>	(IS11-18) Influence of the Evapo-Transpiration Contribution by Long-Stem Planting on the Stability Assessment of a Back-Filled Slope <i>Ilaria Bertolini, Carmine Gerardo Gragnano, Guido Gottardi, and Olivier Buzzi</i>	(IS6-04) System Reliability Analysis of Unsaturated Soil Slopes under Rainfall: Rotational or Translational Failure? <i>Wen-Wang Liao, Wen-Gui Huang, and Jian Ji</i>	(IS2-02) Comparative Study of Kriging-Based Geostatistical Models for Probabilistic Site Characterization Using Benchmarking Examples <i>Cong Miao, Zi-Jun Cao, Chang Tang, and Te Xiao</i>
11:30-11:45	(IS3-07) Field Measurements-Based Probabilistic Stability Analysis of an Earth Dam <i>Xiangfeng Guo, Daniel Dias, Claudio Carvajal, Laurent Peyras, and Pierre Breul</i>	(IS5-04) Uncertainty Estimation of P Wave Velocity and Layer Boundaries Using Seismic Refraction with Synthetic Horizontal Layered Geological Model <i>Danastris LP Tampubolon, Zhuo-Kang Guan, Kuo-Chen Hao, Jia-Jyun Dong, and Chia-Huei Tu</i>	(IS11-13) Assessment of Wall Deflection Induced by Braced Excavation in Spatially Variable Soils via Convolutional Neural Network <i>Chongzhi Wu and Wengang Zhang</i>	(IS6-07) Seismic Performance Analysis and Anti-seismic Measures for High Concrete Face Rockfill Dam Based on Stochastic Dynamic Theory <i>Zhuo Rong, Rui Pang, and Bin Xu</i>	(IS2-05) Application of Gaussian Process Regression Using Multiple Random Fields to Benchmarking Data <i>Yukihisa Tomizawa and Ikumasa Yoshida</i>
11:45-12:00	(IS3-09) Application of Image Segmentation for Predicting Slope Failure Mechanism in Spatially Variable Soils <i>Ze Zhou Wang, Jinzhang Zhang, Siang Huat Goh, and Hongwei Huang</i>	(IS5-05) Investigation of Complex Ground Conditions at Sydney Park for the Sydney Metro City & Southwest Running Tunnels <i>M.L. Teoh, S.J. Clarke, and S. Simmonds</i>	(IS11-15) Automatic Landslide Inventory Generation Using Deep Learning <i>Lu-Yu Ju, Te Xiao, and Limin Zhang</i>	(IS6-10) Evaluation of Traditional Jacked Penetration Model for Offshore Wind Turbine Suction Foundation in Sand <i>Xingming Zhong, and Peiyuan Lin</i>	(IS2-06) Gaussian Process Regression and Kernel Selection for Missing Geotechnical Data Prediction <i>Jiawei Xie, Jinsong Huang, and Cheng Zeng</i>
12:00-12:15	(IS3-10) Characterization of Vertical Spatial Variability of Soils Using CPTu Data Exploration <i>Izabela Couto Campello, Maria Das Graças Gardoni, Karla Cristina Araujo Pimentel, and Andre Assis</i>	(IS5-06) Using Geostatistical Approach to Assess the Hydrogeological Model Uncertainty on Groundwater Flow and Land Subsidence in Huwei Township, Taiwan <i>Duc-Huy Tran and Shih-Jung Wang</i>	(IS11-16) Constructing a Loess Landslide Run-Out Prediction Input Parameter Database through Multi-Objective Optimization Back Analysis <i>Peng Zeng, Lin Zhang, Liangfu Zhao, Xiaoping Sun, and Xiujun Dong</i>	(IS6-11) Equivalence between Safety Factor-Based and Reliability-Based Design Requirements for Gravity Retaining Wall Design <i>Qiang Zhou, Zi-Jun Cao, and Dian-Qing Li</i>	(IS2-09) Data-Drive Site Characterization for Benchmark Examples Using Sparse Bayesian Learning <i>Jianye Ching</i>
12:15-12:30	(IS3-11) Probabilistic Investigation of Infinite Undrained Slopes with Seismic Loading and Linearly Increasing Mean Strength <i>Desheng Zhu, Lei Xia, D. V. Griffiths, and Gordon A. Fenton</i>	(IS1-06) Bayesian Subsurface Mapping Using CPT Data <i>Antonios Mavritsakis, Timo Schweckendiek, Ana Teixeira, and Eleni Smyrniou</i>	(IS11-17) Introducing a Pattern-Based Approach for Landslide Susceptibility Prediction <i>Chenxu Su, Cong Dai, Bijiao Wang, Yunhong Lv, and Shuai Zhang</i>	(IS6-12) An Efficient Adaptive Response Surface Method for Reliability Analysis of Geotechnical Engineering Systems Using Adaptive Bayesian Compressive Sensing and Monte Carlo Simulation (ABCS-MCS) <i>Peiping Li and Yu Wang</i>	
12:30-13:40	<b>Lunch</b>				

13:40-14:10	<p align="center"><b>Keynote – “Global, Regional, or Municipal Database? Which Is Better?”</b>  <b>Prof. Jianye Ching, National Taiwan University, Taiwan</b>  Chair: Michael Hicks  <i>Room: X101</i></p>				
14:10-14:40	<p align="center"><b>Keynote – “Recent Advances on Uncertainties and Solutions for a Reliable and Effective Prediction of Rockfall Hazard and Risk”</b>  <b>Prof. Anna Giacomini, University of Newcastle, Australia</b>  Chair: Jinsong Huang  <i>Room: X101</i></p>				
<b>Sessions</b>	<p><b>(IS17) Inverse analysis and data assimilation in geotechnical engineering</b>  Chairs: Ikumasa Yoshida, Shin-ichi Nishimura, Yu Otake &amp; Zijun Cao  <i>Room: X101</i></p>	<p><b>(IS1) Probabilistic site investigation</b>  Chairs: Yu Wang &amp; Jianye Ching  <i>Room: X201</i></p>	<p><b>(IS8) Machine learning in geotechnical engineering</b>  Chairs: Dongming Zhang, Zhongqiang Liu, Hongwei Huang &amp; Pijush Samui  <i>Room: X202</i></p>	<p><b>(IS12) Uncertainty &amp; Reliability Analysis in Rock Engineering &amp; (IS6) Advances of Theory, Methodology and Applications in Geotechnical Reliability-based Design</b>  Chairs: Anna Giacomini  <i>Room: X205</i></p>	<p><b>(IS16) Probabilistic Analysis of Seepage and Internal Erosion</b>  Chairs: D.V. Griffiths &amp; Bryant A. Robbins  <i>Room: X207</i></p>
14:40-14:55	<p><b>(IS17-02)</b> Hydraulic Conductivity Field Marginalization in HMC Based Estimation of Piping Zone Boundary  <i>Kazunori Fujisawa, Michael C. Koch, Misato Osugi, and Akira Murakami</i></p>	<p><b>(IS1-03)</b> Probabilistic Characterization of 3D Non-stationary Spatial Variability from Limited Boreholes Using Bayesian Supervised Learning  <i>Yue Hu and Yu Wang</i></p>	<p><b>(IS8-15)</b> Prediction of Slope Failure through Integrating Statistical Design of Experiments and Artificial Neural Networks  <i>Yuderka Trinidad González, Vernon R. Schaefer, and Derrick K Rollins</i></p>	<p><b>(IS12-03)</b> Probabilistic Approach for Evaluating Relationship between Rock Drilling Energy and P-Wave Velocity  <i>Takayuki Shuku, Yasuhiro Yokota, Kensuke Date, Masako Ishii, Minato Tobita, Takeru Kumagai, Kazuhiko Masumoto, and Yasuyuki Miyajima</i></p>	<p><b>(IS16-06)</b> Fragility Curves for Analysis of Levees Subject to Concentrated Leak Erosion  <i>Jonathan Simm, Mohamed Hassan, and Ben Gouldby</i></p>
14:55-15:10	<p><b>(IS17-04)</b> Kriging-Based Conditional Random Field for Regional Liquefaction Potential Mapping Considering Statistical Uncertainty  <i>Cong Miao, Zi-Jun Cao, Chang Tang, and Te Xiao</i></p>	<p><b>(IS1-05)</b> Probability Density Function and Credible Region Estimation for Multivariate Uncertain Irregular Geotechnical Data  <i>Zi-Tong Zhao, He-Qing Mu, and Ka-Veng Yuen</i></p>	<p><b>(IS8-03)</b> Prediction of Parallel Desiccation Cracks of Clays Using a Classification and Regression Tree (CART) Technique  <i>Abolfazl Baghbani, Susanga Costa, Tanveer Choundhury, and Roohollah Shirani Faradonbeh</i></p>	<p><b>(IS12-04)</b> Stability Analysis of Rock Slopes with Stochastic Fractures Using Finite Element Limit Analysis  <i>A.M. Lester, A.V. Lyamin, N.C. Podlich, J. Huang, and A. Giacomini</i></p>	<p><b>(IS16-01)</b> Probabilistic Seepage Analysis of Embankments with Different Types of Random Fields  <i>Fengdong Chi, Pierre Breul, Claudio Carvajal, and Laurent Peyras</i></p>
15:10-15:25	<p><b>(IS17-05)</b> Observation Updating of Model Parameters for Consolidation Settlement Using Adaptive Surrogate Model  <i>Tomoka Nakamura and Ikumasa Yoshida</i></p>	<p><b>(IS1-07)</b> Determination of Optimal CPT Locations for Characterizing Nonstationary Spatial Variability of Geotechnical Properties Using Efficient Bayesian Compressive Sensing  <i>Tengyuan Zhao, Yu Wang, and Ling Xu</i></p>	<p><b>(IS8-04)</b> Development of a Support Vector Machine (SVM) and a Classification and Regression Tree (CART) to Predict the Shear Strength of Sand-Rubber Mixtures  <i>Abolfazl Baghbani, Firas Daghistani, Hossam Abuel Naga, and Susanga Costa</i></p>	<p><b>(IS12-01)</b> The Impact of Slope Roughness on the Uncertainty in Probabilistic Rockfall Modelling  <i>Indishe Senanayake, Philipp Hartmann, Klaus Thoeni, Abigail Watman, and Anna Giacomini</i></p>	<p><b>(IS16-03)</b> Design of a Probabilistic FEM Analysis Using the Sellmeijer Model for Backward Erosion Piping  <i>Ligaya Wopereis, Esther Rosenbrand, Raymond van der Meij, and Willem Kanning</i></p>



15:25-15:40	(IS17-06) Evaluation of Deformation Behavior of a Natural Slope Using Particle Filter <i>Toshifumi Shibata, Shin-ichi Nishimura, and Takayuki Shuku</i>	(IS1-09) Three-Parameter Lognormal Distribution to Estimate Ultimate Bearing Capacity of Pile Foundations with Extrapolation of Load-Settlement Curves <i>Naoki Suzuki</i>	(IS8-11) An Unsupervised Framework for Mud Pumping Detection and Severity Analysis Using In-Service Train Data in Railway Track <i>Cheng Zeng, Jinsong Huang, and Jiawei Xie</i>	(IS6-06) Stability Design for Spalling Behavior in Deep Hard Rock Tunnel under Uncertainty Using Inverse-Reliability Strategy <i>Xiang Li, Sen Miao, Bo Yang, and Xibing Li</i>	(IS16-04) Probability of Reactivation of a Sand Boil near a River Embankment of the Po River (Italy) <i>Ilaria Bertolini, Guido Gottardi, Michela Marchi, and Laura Tonni</i>
15:40-15:55	(IS17-07) Inverse Process of Multichannel Analysis of Surface Wave by Using Ensemble Kalman Filter <i>Yuxiang Ren, Shinichi Nishimura, Toshifumi Shibata, and Takayuki Shuku</i>	(IS1-10) Probabilistic Experimental Design for Measuring Soil-Water Characteristic Curve Using a Bayesian Approach with One-Stage Optimization <i>Shao-Lin Ding, Rui Tao, Zi-Jun Cao, and Dian-Qing Li</i>	(IS8-13) Machine Learning-Based Prediction of Drilling and Blasting Tunnel Initial Support Patterns <i>Jinghan Chang, Hongwei Huang, Dongming Zhang, Tongjun Yang, and Zhenhua Xing</i>	(IS6-08) Probabilistic Slope Stability Assessment with Adaptive Monte Carlo Importance Sampling <i>Anton van der Meer, Rob Brinkman, and Wim Kanning</i>	(IS16-07) Approach to Estimate the Probability That Internal Erosion Will Initiate a Breach through an Embankment Applied to Levees with an Important Linear and Heterogeneous Facies <i>Chloé Chancel, Robin Canac, Pierre Alain Rielland, Michel Pinhas, and Akim Salmi</i>
15:55-16:10	(IS17-08) Linear-System-Type Surrogate Model for Large-Scale Earth-Retaining Work Based on Dynamic Mode Decomposition <i>Taiga Saito, Shinnosuke Kodama, and Yu Otake</i>	(IS1-04) Bayesian Hierarchical Spatial Modeling of Soil Properties <i>Iason Papaioannou, Sebastian Geyer, and Daniel Straub</i>	(IS8-14) High Arch Dam Displacement Prediction Model Based on Long Short-Term Memory Networks with Attention Mechanism <i>Fei Kang, Ben Huang, Junjie Li, and Sizeng Zhao</i>	(IS6-13) Reliability Analysis of Pile Considering Spatial Variability of Soil Properties <i>Yuchuan Yao, Xiaohui Tan, Xin Lin, Xiaole Dong, Haichun Ma, and Zhitang Lu</i>	(IS16-05) Uncertainty in the Critical Secant Gradient Function for Prediction of Backward Erosion Piping <i>B.A. Robbins and D.V. Griffiths</i>
16:10-16:30	<b>Tea Break</b>				
Sessions	(IS11) Landslide Risk Assessment & Geo-Hazards Induced by Rainfall, Earthquake and Other Factors & (IS17) Inverse analysis and data assimilation in geotechnical engineering Chairs: Limin Zhang & Wengang Zhang <b>Room: X101</b>	(IS5) Geological uncertainties in geotechnical analysis and design Chairs: C. Hsein Juang, Jia-Jyun Dong & Wenping Gong <b>Room: X201</b>	(IS4) Reliability assessment of subsoil modelling in geoen지니어링 applications Chairs: W. Pula, G. Vessia, D. Di Curzio & M. Chwala <b>Room: X202</b>	(IS10) Application of risk and reliability methods in case studies Chairs: Andy YF Leung <b>Room: X205</b>	(IS7) Bayesian analysis of geotechnical data Chairs: Iason Papaioannou, Daniel Straub & Zijun Cao <b>Room: X207</b>
16:30-16:45	(IS11-21) Evolution and optimization of stabilizing piles for a reservoir landslide in the Three Gorges Reservoir region, China <i>Wenmin Yao</i>	(IS5-16) Investigation of Stratigraphic Uncertainty for Three-Dimensional Geological Modelling <i>Wei Yan, Wan-Huan Zhou, and Ping Shen</i>	(IS4-02) Shallow Foundation Settlement Using a Hardening Soil Model for Spatially Variable Soil <i>Teshager D.K., Chwata M., and Pula W.</i>	(IS10-04) Response Surface Based-Robust Design of Supported Excavation Considering Multiple Failure Modes <i>Li Hong, Wengang Zhang, and Xiangyu Wang</i>	(IS7-01) Outlier Detection for Incomplete Multivariate Soil Property Data <i>Jianye Ching</i>

16:45-17:00	(IS11-22) The Landslide Screening Criteria in Hong Kong Considering Rainfall Intensity and Topography <i>Liang Gao</i>	(IS5-13) Regional Reliability Sensitivity Analysis Considering Spatial Variability of Soil <i>Xin Lin, Xiaohui Tan, Suozhu Fei, Zhihao Sun, and Jie Zhang</i>	(IS4-03) Probabilistic Analysis of an Anchored Diaphragm Wall Installed in Normally Consolidated Sands <i>Marek Kawa, Wojciech Pula, and Andrzej Truty</i>	(IS10-05) 3D Underground Stratification Using GLASSO <i>Kota Kageie and Takayuki Shuku</i>	(IS7-10) Bayesian Gaussian Mixture Model Learning with Subset Simulation <i>Guanting Zeng</i>
17:00-17:15	(IS11-23) Reliability Analysis of Unsaturated Soil Slope Stability Using Spatial Random Fields-Based Bayesian Method <i>C. H. Wang, H. D. Du, and S. T. Hu</i>	(IS5-07) Effect of Soil Mechanical Properties on Shield Tunnel Deformation <i>Yanjie Zhang and Wenping Gong</i>	(IS4-04) Uncertainty Propagation Assessment in CPTu-Based Lithological Modeling Using Stochastic Co-simulation <i>Diego Di Curzio and Giovanna Vessia</i>	(IS10-09) Settlement Prediction of Teven Road Trial Embankment Using Back Analysis Methods <i>Shan Huang, Jinsong Huang, Richard Kelly, and Ahm Kamruzzaman</i>	(IS7-02) Bayesian Updating of Slope Reliability under Rainfall Infiltration with Field Observations <i>Shui-Hua Jiang, Xian Liu, and Iason Papaioannou</i>
17:15-17:30	(IS17-01) On the Use of Inverse Analysis for the Estimation of Soil Hydraulic and Retention Parameters from Monitoring Data of a River Embankment <i>Ilaria Bertolini, Carmine Gerardo Gragnano, and Guido Gottardi</i>	(IS5-08) Have We Underestimated the Influence of Geological Uncertainty on Tunnel Deformational Performance in the Uncertain Stratum? <i>Jinzhong Zhang, Dongming Zhang, and Hongwei Huang</i>	(IS4-07) Efficient and Conservative Estimation of Failure Probability of Strip Footing on Spatially Variable Soil Using Random Finite Element Limit Analysis <i>Wojciech Pula, Hubert Szabowicz, and Marek Kawa</i>	(IS10-02) Some Aspects of the Norwegian Risk Evaluation System for Quick Clay Based on Recent Landslide Events <i>Amanda DiBiagio, Håkon Heyerdahl, and Ragnar Moholdt</i>	(IS7-11) Bayesian Emulation of Computer Experiments of Infrastructure Slope Stability Models <i>Aleksandra Svalova</i>
17:30-17:45	(IS17-09) A Comparison between EnKF and MCMC-Based Bayesian Updating for Consolidation Settlement Prediction <i>Yuanqin Tao, Mengfei Yu, and Honglei Sun</i>	(IS5-10) The Influence of a Thin Weak Clay Layer on the Close-Ended Pile Behaviors in Sand <i>Fei Chai, Jianfeng Xue, Fang-Bao Tian, Kevin Duffy, and Ken Gavin</i>	(IS4-05) Multi-Block Failure Mechanism Approach with Broken Lines in Bearing Capacity Estimation of Spatially Variable Soil <i>Marcin Chwała and Wengang Zhang</i>	(IS10-06) Mine Subsidence Characterization and Susceptibility Mapping to Guide Risk Mitigation <i>Sam Mackenzie</i>	(IS7-03) The Effect of a Simplified Geotechnical Model for Predicting Surface Settlement Incorporating Bayesian Back Analysis <i>Merrick Jones, Shan Huang and Jinsong Huang</i>
17:45-18:00		(IS5-12) An Improved Coupled Markov Chain Model for Simulating Geological Uncertainty <i>Wei Ca and Annan Zhou</i>		(IS10-08) Reliability of a Soil-Nailed Slope Considering Regional Shear Strength Information <i>M. K. Lo, Y.F. Leung, C.L. Chan, and E.H.Y. Sze</i>	
17:30 – 19:00	<b>TC304 MEETING (Room X301)</b>				
18:00 – 19:00	<b>Moving to Banquet Venue (Room 210, Q Building, The University of Newcastle, 16B Honeysuckle Dr, Newcastle NSW 2300)</b>				
19:00 – 22:00	<b>Banquet &amp; Awards</b>				



Friday, 16 December 2022

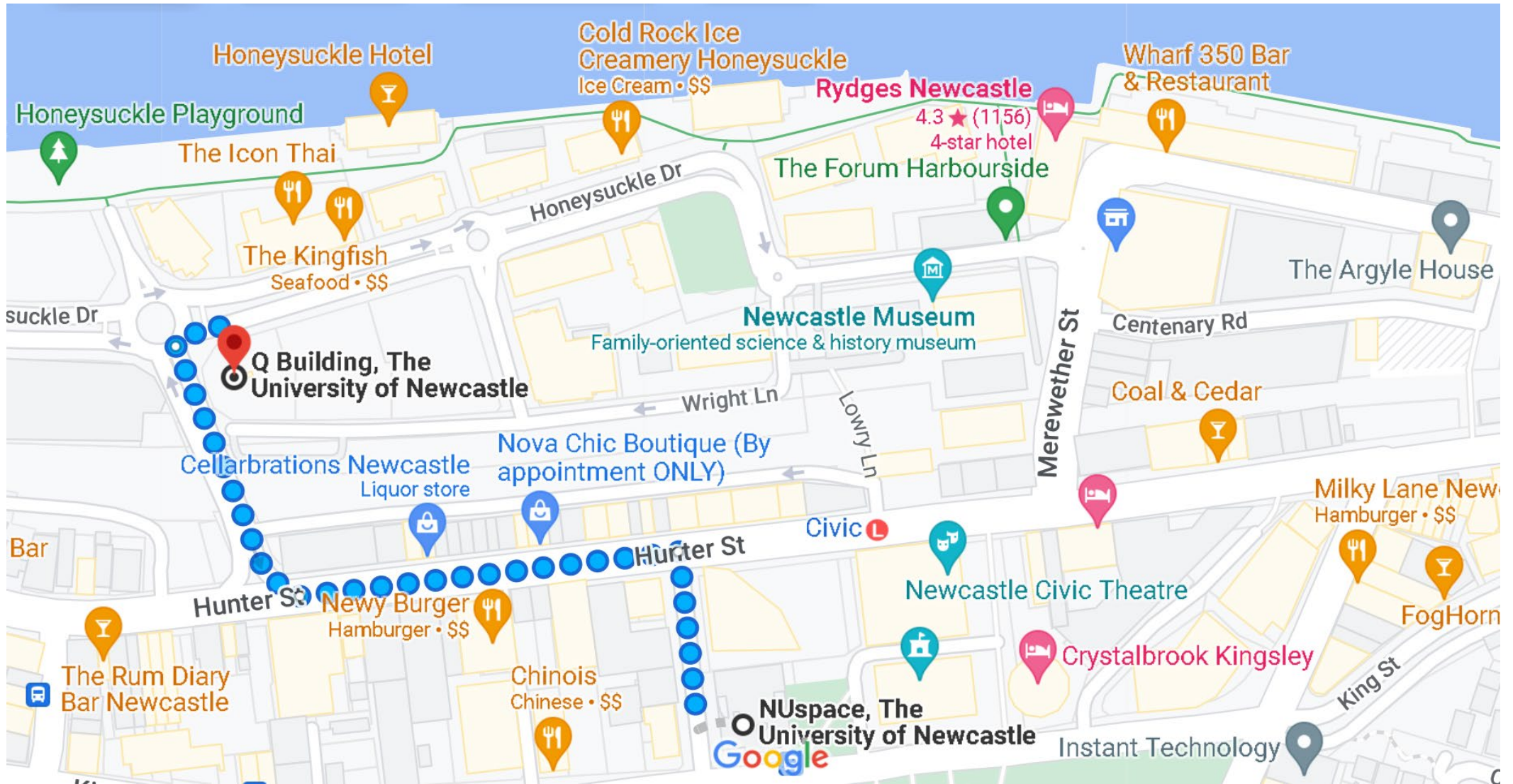
08:30-09:00	<b>Registration</b> <i>Room: X101</i>				
09:00-09:40	<b>Suzanne Lacasse Lecture – “It Is All about Decisions”</b> <b>Prof. Robert B. Gilbert, University of Texas, USA</b> Chair: Jianye Ching <i>Room: X101</i>				
09:40-10:10	<b>Keynote – “Bridging the Gap between Research and Practice”</b> <b>Dr. Stephen Buttlng, National Geotechnical Consulting, Australia</b> Chair: Richard Kelly <i>Room: X101</i>				
10:10-10:30	<b>Tea Break</b>				
<b>Sessions</b>	<b>(IS3) Modelling spatial variability in geotechnical engineering</b> Chairs: Jinsong Huang, D.V. Griffiths, Shuihua Jiang <i>Room: X101</i>	<b>(IS20) Risk assessment in offshore geotechnical engineering</b> Chairs: Jinhui Li & Pan Hu <i>Room: X201</i>	<b>(IS8) Machine learning in geotechnical engineering &amp; (IS10) Application of risk and reliability methods in case studies</b> Chairs: Dongming Zhang, Zhongqiang Liu, Hongwei Huang & Pijush Samui <i>Room: X202</i>	<b>(IS22) Soil heterogeneity in 3D: characterisation and modelling</b> Chairs: Yajun Li & Jian Chen <i>Room: X205</i>	<b>(IS21) Risk assessment and reliability based design in geotechnical engineering practice &amp; (IS3) Modelling spatial variability in geotechnical engineering</b> Chairs: Stephen Buttlng & Richard Kelly <i>Room: X207</i>
10:30–10:45	<b>(IS3-16)</b> The Effectiveness of Spatial Interpolation of Sparse PCPT Data to Optimise Offshore Design <i>Michael O’Neill, Fraser Bransby, and Phil Watson</i>	<b>(IS20-03)</b> A Probability-Based Upscaling Model of Grading Evolution of Calcareous Sand <i>Zhao-Feng Li, Fu Liang, and Jin-Hui Li</i>	<b>(IS8-05)</b> Analysis of Deformation of Segmental Lining during Shield Tunneling Based on Real-Time Monitoring <i>Jiaqi Chang, Dongming Zhang, and Hongwei Huang</i>	<b>(IS22-01)</b> Three-Dimensional Cross-Correlated Random Field Modelling Based on Hierarchical Archimedean Copulas <i>Yuan Lu and Jian Chen</i>	<b>(IS21-01)</b> Geotechnical Risk Management and Contingency Plan for a Sheet Pile Wall Next to an Existing Highway Henry Zhang and Stephen Li
10:45-11:00	<b>(IS3-13)</b> Random Finite Element Analysis for Reliability-Based Assessment of Cement-Treated Soil Columns <i>Tsutomu Namikawa</i>	<b>(IS20-04)</b> A Large Deformation Random Finite-Element Study on the Pull-Out Capacity of Two Typical Offshore Anchors <i>Shi-Jie Xu, Jiang-Tao Yi, and Jun Hu</i>	<b>(IS8-06)</b> Optimization of Borehole Location for Site Investigation Based on Coupled Markov Chain <i>Qihao Jiang, Hua Shao, Jin-Zhang Zhang, Cong Nie, and Dongming Zhang</i>	<b>(IS22-04)</b> Influence of Anisotropic Soil Spatial Variability in the Horizontal Plane on 3D Slope Reliability <i>Divya Varkey, Michael A. Hicks, and Philip J. Vardon</i>	<b>(IS21-03)</b> Gaussian Random Fields for Modelling the Influence of Soil and Dredging Variation on Shear-Keys of Immersed Tunnels <i>C.M.P. ‘t Hart, O. Morales-Nápoles, and S.N. Jonkman</i>

11:00-11:15	(IS3-17) The Impact of Spatial Variability on Deep Foundation Design for Tall Buildings <i>Sujatha Manoj and Harry Poulos</i>	(IS20-07) Prediction of Punch-through Risk of Spudcan Foundation Based on Bayesian Method <i>Yuan-Yuan Wang, Zhao-Feng Li, Wu-Zhang Luo, and Jin-Hui Li</i>	(IS8-07) A Machine Learning Prediction Model for Rockburst Based on Oversampling Algorithm and Bayesian-XGBoost <i>Qing Kang and Yong Liu</i>	(IS22-08) Experimental Research on Dynamic Parameters of Unit Cell of Deep Mixed Column-Reinforced Soft Clay at Different Stress Levels <i>Guanbao Ye, Liangkai Qin, Zhen Zhang, Wenqiang Zheng, and Yong Chen</i>	(IS21-05) Simulations Used in Geotechnical Practice <i>Burt Look and Wade He</i>
11:15-11:30	(IS3-19) Study on the Variation of Physical and Mechanical Parameters of Gravel Soil Accumulation along Elevation under Rainfall <i>Xiaoliang Xu, Jiafu Zhang, and Xiaoping Wang</i>	(IS20-09) Three-Dimensional Marine Geological Modeling for Land Reclamation <i>Te Xiao, Li-Min Zhang, Hai-Feng Zou, and Yue-Bin Liu</i>	(IS8-09) A Case Study: Monitoring and Prediction for Convergence of Shield Tunnel with Wireless Sensor Network and Long Short-Term Network. <i>Linghan Ouyang, Jiaping Li, Cong Nie, and Dongming Zhang</i>	(IS22-03) Three-Dimensional Random Field Modeling of Soil Properties Considering Cross-Correlation <i>Ning Tian and Jian Chen</i>	(IS21-07) Towards Stochastic Structural and Geotechnical Design for Solar Array Foundation Design <i>Richard Kelly</i>
11:30-11:45	(IS3-20) Stability Analysis of Shield Tunnel Face Considering Spatial Variability of Shear Strength of Argillaceous Siltstone <i>Xuhui Li, Jiayu Wang, Andian Lu, Yadong Xue, and Yanbin Fu</i>	(IS20-10) Structural Risk Evaluation Model of Water-Conveyance Tunnel Based on Fuzzy Hierarchical Synthesis Method <i>An-Dian Lu, Wei Zhang, Xu-Hui Li, Ya-Dong Xue, and Yan-Bin Fu</i>	(IS8-10) Rockburst Intensity Prediction Based on African Vultures Optimization Algorithm-Random Forest Model <i>Zhong-guang Wu, Qiang zhu, Zong-wei Chen, and Shun-chuan Wu</i>	(IS22-09) Impact of the Spatial Variability of Soil Shear Strength on the Stability of an Undrained Clay Slope <i>Hongzhan Cheng and Jian Chen</i>	(IS3-18) The Spatial Variability of the Cone Tip Resistance of Weathered Mudstone Profiles from CPT Testing <i>Yuderka Trinidad González, Kevin Briggs, William Powrie, Nick Sartain, and Simon Butler</i>
11:45-12:00	(IS3-12) Probabilistic Slope Stability Analysis with Spatial Soil Variability Using Improved Multiple Kriging Metamodels <i>Lei-Lei Liu and Shi-Ya Huang</i>	(IS20-05) Flood Risk Assessment of Offshore Artificial Islands Induced by Heavy Rainfall <i>Yan Li, Yu Yan, Ping Shen, and Wan-Huan Zhou</i>	(IS8-16) Using Convolutional Neural Networks and Monte-Carlo Dropout to Generate Synthetic Well Logs with Accurate Uncertainty Estimation <i>Yian Wong and Sau-Wai Wong</i>	(IS22-07) Dynamic Reliability Analysis of Three-Dimensional Slopes Considering the Spatial Variability of Soil Parameters <i>Bin Xu, Yichuan Li, and Rui Pang</i>	(IS3-15) Spatial Variability of London Clay Using CPT and SPT Data <i>Wengui Huang, Tom Dijkstra, Fleur Loveridge, Paul Hughes, Anthony P. Blake, Marcus Dobbs, and Yuderka Trinidad Gonzalez</i>
12:00-12:15	(IS3-14) Slope Reliability Analysis Based on Deep Learning of Digital Images of Conditional Random Fields Using CNN <i>Xin Yin, Zhen Jiang, and Jian Ji</i>	(IS20-02) An Efficient Method for the Discretization of 3-D Random Fields of Soil Properties in the Stochastic Finite Element Analysis of Geotechnical Problems <i>B. Zhu, H. F. Pei, and Q. Yang</i>	(IS10-11) Development of Regional Soil Shear Strength Database and Its Application in Probabilistic Analysis of Slope Stability <i>C.L. Chan, L.A. Wong, W.W.C. Leung, P.W.K. Chung, M.K. Lo, and Andy Y.F. Leung</i>	(IS22-02) Stability Analysis and Failure Mechanism of Three-Dimensional Heterogeneous Slope under Steady State Rainfall <i>Cheng Qian and Yajun Li</i>	(IS3-01) Analysis of Multiple Failure Modes for Pile-Reinforced Slope with Soil Spatial Variability <i>Jing-Ze Li</i>
12:15-12:30	(IS3-08) Hole Effect: What Is It and Does It Matter? <i>Jianye Ching</i>	(IS20-01) Energy-Based Reliability Analysis against Progressive Collapse of a Multi-Span Bridge under Dual Risks of Vessel Impact and Scour <i>Wen-Jun Lu, Li-Min Zhang, and Shu-Wen Cai</i>			
12:30-13:40	Lunch				

13:40-14:10	<p align="center"><b>Keynote – “Reliability Assessment of Existing Geotechnical Structures”</b>  <b>Dr. Timo Schweckendiek, Delft University of Technology, Netherlands</b>  Chair: Anna Giacomini  <i>Room: X101</i></p>				
14:10-14:40	<p align="center"><b>Keynote – “Slope Reliability Analysis and Risk Assessment: A Modern Computational Perspective”</b>  <b>Prof. Dianqing Li, Wuhan University, China</b>  Chair: Limin Zhang  <i>Room: X101</i></p>				
<b>Sessions</b>	<p align="center"><b>(IS18) Reliability aspects in geotechnical codes of practice</b>  Chairs: Timo Schweckendiek &amp; Mark van der Krogt  <i>Room: X101</i></p>	<p align="center"><b>(IS14) Risk Assessment of Soil Liquefaction Hazards</b>  Chairs: Yan-Guo Zhou &amp; Jie Zhang  <i>Room: X201</i></p>	<p align="center"><b>(IS13) Data-Centric Geotechnics</b>  Chairs: Chong Tang &amp; Yu Otake  <i>Room: X202</i></p>	<p align="center"><b>(IS13) Data-Centric Geotechnics &amp; (IS15) Earthquake uncertainty, risk, and hazard</b>  Chairs: JP Wang  <i>Room: X205</i></p>	<p align="center"><b>(IS7) Bayesian analysis of geotechnical data</b>  Chairs: <i>Iason Papaioannou, Daniel Straub &amp; Zijun Cao</i>  <i>Room: X207</i></p>
14:40-14:55	<p><b>(IS18-02)</b> Calibration of Resistance Factor Based on Pile Load Test Conducted to Failure  <i>Yuting Zhang and Jinsong Huang</i></p>	<p><b>(IS14-02)</b> Probabilistic Assessment of Spatial Distribution of Soil Liquefaction Potential Using Cone Penetration Test  <i>Zheng Guan and Yu Wang</i></p>	<p><b>(IS13-01)</b> CPT Interpolation and Driven-Pile Capacity Calculation Based on Kriging Method  <i>Fanhua Meng and Huafu Pei</i></p>	<p><b>(IS13-09)</b> Applicability of ROM to Seismic Response Analysis of Caisson-Type Seismically Strengthened Quay Walls against Level 2 Ground Motion  <i>Yusuke Fukunaga, Masafumi Miyata, Yu Otake, Naoki Sumioka, Noriki Sugahara, and Masahiro Takenobu</i></p>	<p><b>(IS7-05)</b> Assessment of HMC Parameter Updates for Piping Zone Boundary Detection  <i>Michael C. Koch, Kazunori Fujisaw, and Akira Murakami</i></p>
14:55-15:10	<p><b>(IS18-11)</b> Updating Epistemic Uncertainty in Reliability Analysis for Pier Pile Stress Using Data in Construction and Maintenance Phase  <i>Masahiro Takenobu, Yasumitsu Mikami, Masafumi Miyata, Shogo Miyajima, Noriki Sugahara, Daisuke Tatsum, Shota Homma, and Yu Otake</i></p>	<p><b>(IS14-03)</b> Probabilistic Fragility Analysis for Seismic Liquefaction of Sites  <i>Jian-Yu Meng and Da-Gang Lu</i></p>	<p><b>(IS13-05)</b> Finding Similar Sites in a Soil Property Database  <i>Atma Sharma and Jianye Ching</i></p>	<p><b>(IS13-10)</b> Development and Use of Load Test Databases in Foundation Design  <i>Chong Tang</i></p>	<p><b>(IS7-06)</b> Monitoring Data-Driven Numerical Modeling of Slope Hydraulic Analysis Using Bayesian Updating with Structural Methods  <i>Xin Liu and Yu Wang</i></p>
15:10-15:25	<p><b>(IS18-01)</b> A Review on the Current Use of RBD in Geotechnical Design Practice in View of the Next Eurocode 7  <i>Andra Ebener and Kerstin Lesny</i></p>	<p><b>(IS14-04)</b> Regional Liquefaction Evaluation Considering the Effect of Effective Friction Angle and Its Spatial Variability  <i>Zhongling Fu, Mengfen Shen, Su He, Yuming Chen, and Mulin Lan</i></p>	<p><b>(IS13-03)</b> Database-Based Analysis of Various Interpretation Criteria for Barrette Piles in Drained Soils  <i>Yit-Jin Chen, Suneelkumar Laveti, and Anjerick Topacio</i></p>	<p><b>(IS15-04)</b> Probabilistic Seismic Hazard Analysis Considering Local Ground Motion Observations: Bayesian Approach  <i>Chia-Ying Sung and JP Wan</i></p>	<p><b>(IS7-08)</b> Efficient Updating of Consolidation-Induced Responses by Auxiliary Bayesian Approach  <i>Hua-Ming Tian, Zi-Jun Cao, Dian-Qing Li, and Xiao Chen</i></p>

15:25-15:40	(IS18-10) Time-Dependent Reliability Analysis of an Existing Sheet Pile Wall Case Study <i>Mark G. van der Krogt, Timo Schweckendiek, Diego L. Allaix, and I. Ece Özer</i>	(IS14-01) Comparison of 1D and 2D Liquefaction Assessment Methods Considering Soil Spatial Variability <i>J.L. González Acosta, A.P. van den Eijnden, and M.A. Hicks</i>	(IS13-04) Railway Embankment Quality Control Based on Feature Extraction by Singular Value Decomposition and Bayesian Inference <i>Kohei Kasahara, Susumu Nakajima, Hidetoshi Nishioka, and Yu Otake</i>	(IS15-01) An Efficient Procedure for Seismic Slope Stability Analysis Considering Input Uncertainties and Soil Spatial Variability <i>Tingting Zhang, Xiangfeng Guo, Daniel Dias, and Zhibin Sun</i>	(IS7-12) A Bayesian Framework for Settlement Predictions of Immersed Tunnels <i>Cong Tang, Wan-Huan Zhou, and Shu-Yu He</i>
15:40-15:55	(IS18-05) Reliability Approaches to Overcome Load-Resistance Duality in Embedded Wall Design <i>Álvaro J. Mattos and Edwin F. García</i>		(IS13-06) Prior Knowledge on Shear Strength and Compressibility of Glaciolacustrine Sediments in Northern Germany <i>Julia Sorgatz and Martin Pohl</i>	(IS15-03) A Study of Data-Driven Seismic Response Analysis Based on the Identification of Temporal Evolutionary Law in Dynamic Systems <i>Akihiro Shioi, Yu Otake, and Shogo Muramatsu</i>	(IS7-04) Bayesian Regression Models for Predicting Undrained Shear Strength from Piezocone Penetration Tests <i>Mats Kahlström and Nezam Bozorgzadeh</i>
15:55-16:10	(IS18-08) Risk Content in Some Existing Geo-Codes <i>Mabel Chedid and Jean-Louis Briaud</i>		(IS13-07) Using Bayesian Updating to Improve Forecasts of Embankment Settlements on Soft Soils <i>Xiao Wan and James Doherty</i>		
16:10-16:30	<b>Tea Break</b>				
16:30-18:00	<b>ISSMGE Bright Spark Lectures – Room: X101</b>  “Uncertainty Quantification in Data-Driven Geotechnical Stratigraphic Modeling” <b>Prof. Hui (Jack) Wang, University of Dayton, USA</b> Chairs: Andy YF Leung  “Coupled Characterization of Stratigraphic and Geo-properties Uncertainties and Evaluation of the Influences on Geotechnical Performance” <b>Prof. Wenping Gong, China University of Geosciences (Wuhan), China</b> Chairs: Takayuki Shuku  “Risk Management of Cost Overrun and Delay in Underground Excavation in Rock” <b>Prof. Johan Spross, KTH Royal Institute of Technology, Sweden</b> Chairs: Bryant Robbins				



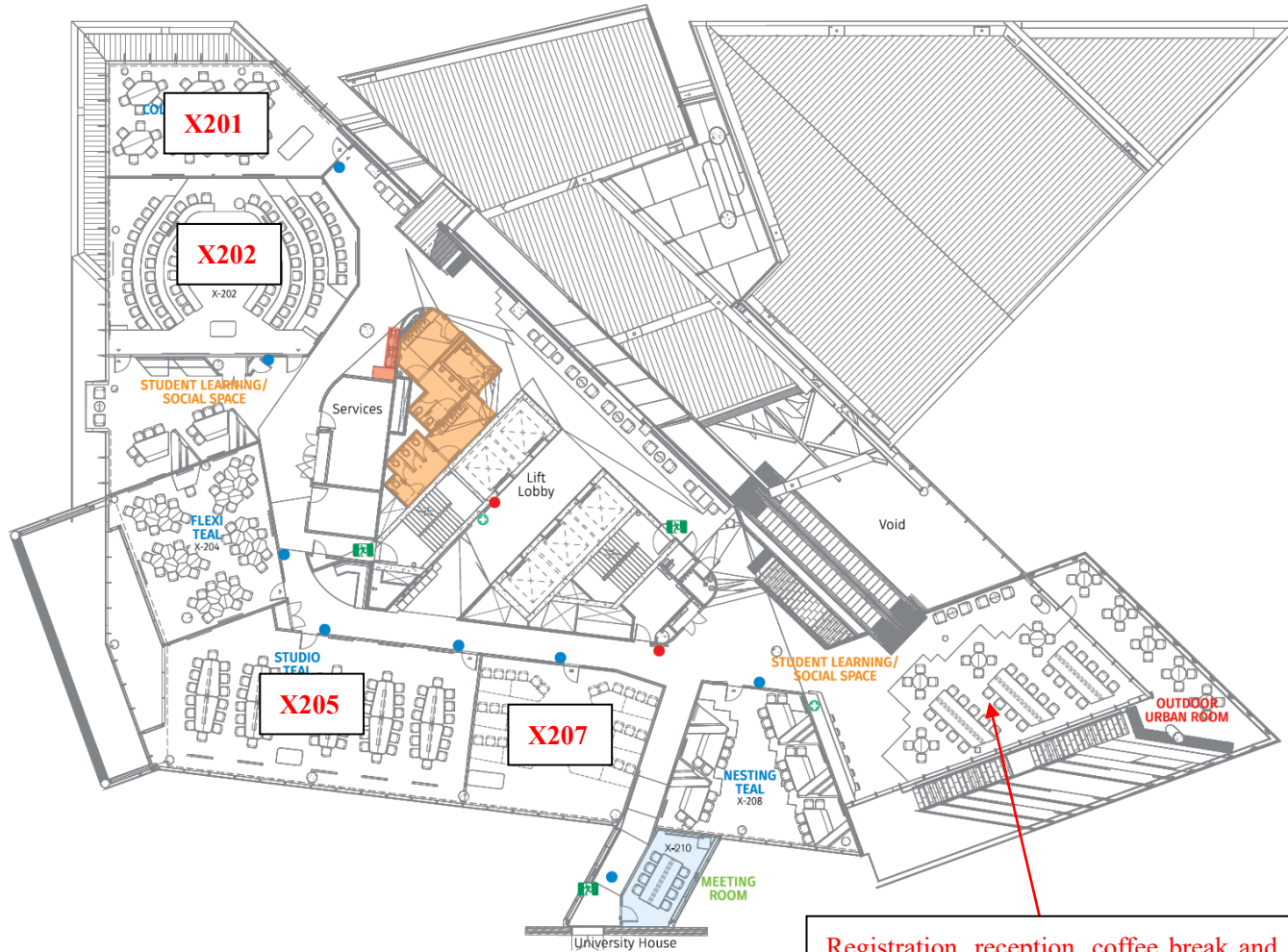






Hunter Street →

← Auckland Street



Registration, reception, coffee break and lunch are all held here.

## NUSPACE FLOOR PLAN

# SECOND FLOOR

KEY	QUANTITY
<span style="color: red;">●</span> Digital Signage	2
<span style="color: blue;">●</span> Room Booking Display	7
<span style="color: green;">+</span> First Aid Kit	-
Emergency Exit	3
<span style="background-color: #ADD8E6; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Meeting Room	1
<span style="background-color: #D8BFD8; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Kitchen	-
<span style="background-color: #FFA07A; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Print Area	1
<span style="background-color: #FFDAB9; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Toilets	>5
<span style="background-color: #FFD700; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Quiet Room	-

ROOM TYPE	ROOM #	CAPACITY	SIZE
Booth TEAL	X-207	36	85m <sup>2</sup>
Collaborative TEAL	X-201	36	85m <sup>2</sup>
Flexi TEAL	X-204	40	85m <sup>2</sup>
Immersive Theatre			
Interactive Theatre	X-202	70	150m <sup>2</sup>
Lectorial Theatre			
Mock Boardroom			
Moot Court			
Nesting TEAL	X-208	35	85m <sup>2</sup>
Studio TEAL	X-205	70	170m <sup>2</sup>

\*Fixed Furniture