July 2nd

08h00	**Registration**		
08h50	Welcome Remarks@Auditorium		
	Auditorium	**Room A**	**Room B**
	Session Chair: **Peter Grindrod**	Session Chair: **Suguru Shiratori**	Session Chair: **Shenao Zhang**
09h00	Session 1.1.1_Paper 249_ On the hidden layer-to-layer topology of the representations of reality realised within neural networks_**Peter Grindrod**_ University of Oxford	Session 1.1.6_Paper 372_Modelling energy consumption of vehicles serving people with special needs in the mountains_**Paweł Prusicki**_Silesian University of Technology	Session 1.1.11_Paper 370_Noise reduction study of structural monitoring data of in-service slab-on-girder bridge by means of topological data analysis method_**Shenao Zhang**_North China University of Water Resources and Electric Power
09h20	Session 1.1.2 _Paper 270_Adaptive Feedback in Generative ML for Time-Varying Systems_**Alexander Scheinker**_Los Alamos National Laboratory	Session 1.1.7_Paper 251_Key Frame Selection for Personality Traits Recognition_**Nurrul Akma Mahamad Amin**_Universiti Teknologi Malaysia	*Session 1.1.12_Paper 267_Modelling of Dynamic Pressure and Temperature Control at Successive Vacuum Infusion and Post-Infusion Molding Composite Parts_* ***Sergey N. Shevtsov*** *_South Center of Russian Academy*
09h40	Session 1.1.4_Paper 77_A probabilistic conditional generative learning methodology to predict liquid fuel physicochemical properties_ **Rodolfo Freitas**_Queen Mary University of London	Session 1.1.8_Paper 316_Development of Data based Digital Twinning Framework for Integrated Vehicle Health Management of Aircrafts_**Fahad Farid**_Indian Institute of Technology Kanpur	Session 1.1.13_Paper 252_Reconstruction of Core Power Distribution Using GMDH-Based Virtual Detectors_**Ga-Hee Sim**_Sejong University
10h00	Session 1.1.5 Paper 314_Stastics-Informed Neural Network: Performance Analysis_**Changho Kim**_University of California, Merced	Session 1.1.9_Paper 358_A Principled Robust Extreme Machine Learning (PRELM) with Minimax Optimization Scheme_**Geng Deng**_Wells Fargo)	Session 1.1.14_Paper 395_ Integrating modeling and machine learning for lithium-ion batteries design and state of health prediction_**Mahshid Nejati Amiri**_(Norwegian University of Science and Technology
10h20	Session 1.1.16_Paper 274_Model-based Reinforcement Learning for Optimal Inspection and Maintenance Planning_**Prateek Bhustali**_TU Delft	Session 1.1.10_Paper 423_Rigorous Model Comparison for Semi-Crystalline Polymers: A Bayesian Approach_**José L. P. Vila-Chã**_Faculty of Engineering University of Porto	Session 1.1.15_Paper 154_Supervised Regression Models as Alternatives to Numerical Prediction Equations for Mechanical Material Properties of Bitumen_**Elaine Simone Goosen**_Stellenbosch University
10h40	**Coffee Break**		
11h00	Session 1.1.19_Paper 354_Temporal Dynamics and Structural Relationships of Topics in Energy Security: An Integrated Approach Using Topic Modeling and Time-Series Analysis_ **Chankook Park**_Korea Energy Economics Institute	Session 1.1.20 Paper 279_Last-piece exploring model operator networks_**Suguru Shiratori**_Tokyo City University	Session 1.1.18_Paper 321_Airborne Snow Radar Data Simulation via Deep Generative and Physics-Driven Methods_**Masoud Yari**_Lehigh University
11h20	Session 1.1.21_Paper 304_Enhancing Precision and Efficiency in Hot Forging Processes through Advanced Machine Learning Models: CrystalMind and DeepForg_**Jan Petrik**_ETH Zürich	Session 1.1.17_Paper 300_Last-piece exploring model operator networks –validations through various terms and equations_**So Yamashita**_Tokyo City University_	Session 1.1.22_Paper 227_Improving Corrosion Data Modelling through an Evolutionary Algorithm Approach_**Juan J. Santana**_Universidad de Las Palmas de Gran Canaria
11h50	**Plenary Session 1 by Philip H. S. Torr: Current work at TVG on Vision and Language models @ Auditorium**		
12h50 14h00	**Lunch Break**		
14h15	**Departure from de the Conference Venue**		
14h45	**Visit to Port Wine Cellars & Port Wine Tasting**		
17h40	**Douro River Cruise**		

	July 3rd		
	Auditorium	**Room A**	**Room B**
	Session Chair - Maia Angelova	**Session Chair - George Bollas**	**Session Chair - Cristiano S T do Carmo**
09h00	Session 2.1.1_Paper 306_Substitution of a microstructure-simulation with a data-driven approach for modelling mechanical degradation of electrodes_**Nikolai Erhardt**_Karlsruher Institute of Technology	Session 2.1.7_Paper 305_Surrogate Solutions to Partial Differential Equations and the Inverse Problem with Symbolic Regression_**George Bollas**_University of Connecticut	Session 2.1.12_Paper 434_Precision in Complexity: An Evaluation Framework for Compound LLM Systems_**Daniel Bretsko**_Masaryk University
09h20	Session 2.1.2_Paper 229_Investigating the Impact of Weight Initialisation Strategies on Performance of Liquid State Machines_**Pedro Machado**_Nottingham Trent University	Session 2.1.8_Paper 240_Two-tailed confidence-interval-based fuzzy testing method for Six Sigma Quality Index_**Chun-Min Yu**_National Chin-Yi University of Technology	Session 2.1.13_Paper 323_Computed tomography based finite element modelling of femur to predict fracture risk: Age-related Variations_**Rahul A Gujar**_PCCoE
09h40	Session 2.1.3_Paper 286_Development of a Hybrid Model to improve the Scale-Up of Decanter Centrifuges_**Ouwen Zhai**_Karlsruhe Institute of Technology	Session 2.1.9_Paper 400_Deep Adaptive Experiment Design for Quantum Engineering_**Anurag Saha Roy**_Qruise	Session 2.1.14_Paper 396_Ensuring Compliance with the EUDNV/NTNU's Monitoring, Reporting, and Verification and Emissions Trading System through Data-Driven Verification_**Qin Liang**_DNV/NTNU
10h00	Session 2.1.4_Paper 393_MVJSN-HiTS: Enhancing Real Estate Forecasting Accuracy with Entropy-based Behavioural Pattern Analysis and Economic Sentiment Integration_**Maia Angelova**_ Aston University	Session 2.1.10_Paper 404_Big Data analysis and dimensionality reduction to predict price trends in the Brazilian electricity market considering interdisciplinary phenomena_**Sergio L Avila**_Federal Institute of Santa Catarina	Session 2.1.15_Paper 431_Parameter Estimation in Photonic Crystal Design Using Machine Learning Methods_**Ezel Yağmur Zeydan Çelen**_Bursa Uludağ University
10h20	Session 2.1.5_Paper 237_GeoBiked: A Dataset with Geometric Features and Automated Labeling Techniques to Enable Deep Generative Models in Engineering Design_**Phillip Mueller**_BMW Group	Session 2.1.11_Paper 376_Modelling transient flow in porous media under pumping conditions with physics-informed neural networks_**Adhish G Virupaksha**_University of Strasbourg	Session 2.1.16_Paper 398_A hybrid solution to consider the stochastic nature of safety incidents on project delays in construction planning methods_**Cristiano S T do Carmo**_Pontifical Catholic University of Rio de Janeiro and Federal Fluminense University
10h40	**Coffee Break**		
11h00	Session 2.1.6_Paper 239_Fast analysis of transport phenomena in melt during Cz-Si single crystal growth by using Hybrid-PINNs_**Tsuyoshi Miyamoto**_Department of Material Engineering Science, Osaka University	Session 2.1.12_Paper 388_The effectiveness of deep learning algorithms in solving sign road recognition problems_**Marat Nurtas**_Institute of Ionosphere	Session 2.1.17_Paper 228_Defending Against Deepfakes: Perturbation-based Adversarial Detection with AI_**Pedro Machado**_Nottingham Trent University
11h20	Session 2.1.18_Paper 293_Merging metabolic networks with deep neural networks under the SBML standard_**José Pinto**_FCT-UNL	Session 2.1.19_Paper 408_Physics Informed Neural Networks for Two-Phase Flows with Phase Change: Forward and Inverse Problems_**Chirag R Kharangate** _Case Western Reserve University	Session 2.1.20_Paper 291_Numerical homogenization using a PINN-based LOD for the solution of multiscale problems_**Mehdi Elasmi**_Karlsruhe Institute of Technology
11h50	**Plenary Session 2 by Royston Jones: RAPID CHARGING THE SPEED OF DESIGN : The Inevitable Rise of Computational Intelligence @Auditorium**		
12h50 -14h00	**Lunch Break**		
	Auditorium	**Room A**	**Room B**
	Session Chair_**Sam Nallaperuma-Herzberg**	Session Chair _**Ela Marković**	Session Chair **Michał Duda**
14h10	Session 2.2.1_Paper 403_Concurrent Geospatial Data for Supervising Invasive Species in Small and Dispersed Areas_**Alba Closa Tarres**_West Virginia State University Research and Development Corporation	Session 2.2.7_Paper 290_Artifical neural networks based surrogate modelling of finite element simulations of steel components' mechanical behavior_**Ela Marković**_University of Rijeka, Faculty of Engineering)	Session 2.2.13_Paper 334_Total Energy Consumption for the UAV Swarm Based on Temporal Energy Demand Models in Different Flight States_**Michał Duda**_Military University of Technology in Warsaw
14h30	Session 2.2.2_Paper 255_Transient Simulations with Surrogate Elements_**Markus Franke**_OTH Regensburg	Session 2.2.8_Paper 250_Multivariable Automated Insulin Delivery Systems for People with Diabetes – A challenge in data interpretation, modeling and control_**Ali Cinar**_Illinois Institute of Technology	Session 2.2.14_Paper 412_GADEM: a geometry-aware energy-based method for structural mechanics problems_**Thi Nguyen Khoa Nguyen**_ENS Paris-Saclay
14h50	Session 2.2.3_Paper 356_Threshold Combinatorial Multicriteria Acceptability Analysis for Group Decisions with Subjective Interpretations of Objective Measurements_**Jana Görs**_Otto-von-Guericke-Universität Magdeburg	Session 2.2.9_Paper 288_Data assimilation based on pretrained physics-informed neural networks_**Kakeru Ishizawa**_Tokyo City University	Session 2.2.15_Paper 155_Visual Material Characteristics Learning for Circular Healthcare_**Federico Zocco**_Loughborough University
15h10	Session 2.2.4_Paper 231_Neural network potential-based molecular dynamics study on the pollutant formation mechanism of ammonia-hydrogen co-firing_**Zhihao Xing**_Queen Mary University of London	Session 2.2.10_Paper 363_Estimation of the Effect of Changing Resistance Parameters On Engine Efficiency in Electrical Vehicles With Convolutional Neural Network_**Övünç Polat**__Akdeniz Üniversitesi	*Session 2.2.16_Paper 218_An enhanced BP neural network for analyzing SHM data and predicting structural performance of in-service fabricated bridges_* ***Shenao Zhang*** *_Henan University of Technology*
15h30	Session 2.2.5_Paper 257_Data Augmentation for Recorded Properties of Processed Materials in Industrial Production Processes for the Application of Machine Learning Models: A Case Study in an Automotive Press Shop_**Tom Krause**_BMW Group	Session 2.2.11_Paper 217_Neural Network-based methodology to predict the deformation of 3D printed stiffeners on pre-stretched soft membranes_**Paolo Marcandelli**_Politecnico di Milano	Session 2.2.17_Paper 343_Dataset Modelling Effect on Internal Thread Defect Detection_**Quang-Cherng Hsu**_National Kaohsiung University of Science and Technology
15h50	Session 2.2.6_Paper 422_Digital Twins for Treatment Recommendation_**Sam Nallaperuma-Herzberg**_University of Cambridge	Session 2.2.12_Paper 117_ An AI-mediated Axisymmetric Drop Shape Analysis for Surface Tension Measurement_**Ehsan Atefi**_Manhattan College	Session 2.2.19_Paper 269_Data-driven models for classification of insomnia and healthy sleep including the effects of sedentary behaviour on sleep quality derived from multi-night actigraphy data_**Maia Angelova**_Aston University
16h10	Session 2.2.37 _Paper 264_Deep Learning techniques for modelling malware propagation on IoT environments_**Angel Martin del Rey**_Universidad de Salamanca	*Session 2.2.38_Paper 276_Predicting Premature Failure in Quantum Cascade Lasers Using a Support Vector Machine Classifier_* ***Anthony Hoffman*** *_ University of Notre Dame*	Session 2.2.39_Paper 320_Physics-Informed Graph Convolutional Networks for Ice Thickness Prediction_**Maryam Rahnemoonfar**_Lehigh University
16h30	**Coffee Break**		
	Auditorium	**Room A**	**Room B**
	Session Chair **Francisco Pires**	Session Chair **Zhao Jing**	Session Chair **Tom Mitchell**

16h50	Session 2.2.20_Paper 233_A Fuzzy Controller for Energy Management in a Hydrogen-powered Solid Oxide Fuel Cell Vehicle_**Ibrahim Kasar**_Cranfield University	Session 2.2.25_Paper 278_Natural Language Querying for Spatio-Temporal Data Analytics_**Yuri Bogomolov**_Masaryk University	Session 2.2.30_Paper 151_Investigating the Impact of Rebar Spacing and Concrete Workability on the Generation of Defects within Bored Piles Using CFD_**Tom Mitchell**_Swansea University
17h10	Session 2.2.21_Paper 289_Enhancing Electric Vehicle Battery Thermal Management through Real-Time Temperature Prediction Using Machine Learning_**Hanwen Zhang**_Cranfield University	Session 2.2.26_Paper 309_Generative Adversarial Networks for SHM: a short experimental study_**Evangelos Papatheou**_University of Exeter	Session 2.2.31_Paper 216_Computation of the Magnetic Polarizability Tensor (MPT) Characterisation of Realistic Metallic Targets _**James D Elgy**_Keele University
17h30	Session 2.2.22_Paper 159_On the Blackjack-Type Problems with Random Limit and its Applications in Overlading Protection_**Andrzej Grzybowski**_Czestochowa University of Technology	Session 2.2.27 Paper 442_Physics-informed Mesh-free Deep Compositional Operator Network_**Hadi Meidani**_University of Illinois Urbana Champaign	Session 2.2.32_Paper 158_Strength of Arrays with Randomly Displaced Micropillars_**Zbigniew Domanski**_Czestochowa University of Technology
17h50	Session 2.2.23_Paper 366_Physics-Aware Recurrent CNNs for Extreme Physics Problems_**Stephen S Baek**_University of Virginia	Session 2.2.28_Paper 242_Active Learning in Non-Iterative Approach_**Shi-Jinn Horng**_NTUST	Session 2.2.33_Paper 361_Inference of dynamic systems from noisy and sparse data via physics-informed Gaussian processes_**Shihao Yang**_Georgia Institute of Technology)
18h10	Session 2.2.24_Paper 312_Data-driven Modelling of Cyclic Plasticity_**Burcu Tasdemir**_University of Bristol_	Session 2.2.29_Paper 115_Fresh Concrete Flow Simulation: CFD and CFD-DEM modelling_**Shuai Shu**_Swansea University	Session 2.2.34_Paper 387_Harnessing Color: Predicting Copper Recovery in Bioleaching Processes with RGB Measurement_**Marta I. Tarrés Puertas**_Universitat Politècnica de Catalunya
18h30	Session 2.2.35_Paper 371_Development of a Fast Wind Prediction Tool to Assess and Optimize Drone Flight Paths around Offshore Wind Turbines_**Gonzalo Veiga Piñeiro**_Universidade de Vigo	Session 2.2.36_Paper 156_Discrete Ritz method_**Zhao Jing**_Northwestern Polytechnical University	Session 2.2.37_ Paper 160_Global Search Methos as Tools for Classifier-Learning Problems with Unequal Error Costs_**Andrzej Grzybowski**_Czestochowa University of Technology
19h00	**Departure for Conference Banquet**		

July 4th

	Auditorium	Room A	Room B
	Session Chair: **Giovanni Vito Spinelli**	Session Chair: **Byung-Cheol Kim**	Session Chair: **Tea Marohnić**
09h00	Session 3.1.1_Paper 417_Enhancing NMR Analysis: Deep Neural Network Inversion of NMRD Profiles with Quadrupolar Dips_ **Giovanni Vito Spinelli**_University of Bologna	Session 3.1.7_Paper 341_Smart Project Analytics: Leveraging AI in VUCA Environments for Project Risk Management_**Byung-Cheol Kim**_Penn State Behrend	Session 3.1.13_Paper 292_Application of artificial neural networks in estimation of mechanical behavior of steels_**Tea Marohnić**_University of Rijeka, Faculty of Engineering
09h20	Session 3.1.2_Paper 265_Digital Twins for Spatio-temporal Long-term Temperature Dynamics Forecasting in Buildings_**Leandro Von Krannichfeldt**_EPF	Session 3.1.8_Paper 280_L1-Approximation of supply curves_**Andrés M Alonso**_Universidad Carlos III de Madrid	Session 3.1.14_Paper 359_A principled distance-aware uncertainty quantification approach for enhancing the reliability of physics-informed neural network (PINN)_**Jinwu Li**_The Hong Kong Polytechnic University
09h40	Session 3.1.3_Paper 271_Hybrid adaptive finite elements-neural networks framework for the simulation of laser melting processes_**Alexandre Caboussat**_University of Applied Sciences Western Switzerland	Session 3.1.9_Paper 78_Reconstruction Porous Media Microstructure using Descriptor Subjected VAE_**Xiangyun Ge**_Swansea University	Session 3.1.15_Paper 365_Advancing Earthquake Prediction: An Evaluation of Deep Learning Approaches_**Marat Nurtas**_LLP "Institute of Ionosphere
10h00	Session 3.1.4_Paper 81_A High-Efficiency Statistical Descriptor Regression Neural Networks for Microstructural Heterogeneous Material_**Liyuan Wang**_Swansea University	Session 3.1.10_Paper 367_Modelling of Unmanned Aerial Vehicle Behaviour Using Ground Effects_**Jakub Djabin**_Military University of Technology in Warsaw	Session 3.1.16_Paper 116_ Physics informed neural networks for modeling dynamic linear elasticity_**Vijay Kag**_Bosch Research and Technology Center
10h20	Session 3.1.5_Paper 426_Geometry-aware Physics-informed Machine Learning_**Zack Xuereb Conti**_The Alan Turing Institute	Session 3.1.11_Paper 392_Ensemble of Deep Learning Networks More Suitable for Electric Current Analysis of Rotating Machinery_**Sergio L Avila**_Federal Institute of Santa Catarina	Session 3.1.17_Paper 389_Improving Vegetation Dynamics Analysis in Kazakhstan with Deep Learning: Insights from Satellite Imagery_**Aizhan Altaibek**_LLP "Institute of Ionosphere
10h40	**Coffee Break**		
11h00	Session 3.1.6_Paper 284_A surrogate model for the design of offshore monopile foundations_**Yunxiang Yang**_Imperial College London	Session 3.1.12_Paper 254_Optimizing Wind Turbine Energy Forecasts: A Hybrid Methodology of Clustering Analysis and Wind Speed-Sensitive Modeling_**Mindaugas Jankauskas**_Vilnius Gediminas Technical Universtity	Session 3.1.18 _Paper 324_Cognitive Modelling of Human Translation Production: Eliciting Mental Translation Processes through Translation Data Analytics and an Active Inference Agent _**Michael Carl**_University of Kent
11h20	Session 3.1.20_Paper 415_A Physics-Informed Machine Learning Framework for Time-domain Modeling of Vortex-Induced Vibrations_**Martin Lieberkind Andersen**_NTNU)	Session 3.1.21_Paper 235_Machine Learning-Accelerated Predictions of Design Allowables of Composite Laminates_**Luís F. Rodrigues**_Faculdade de Engenharia da Universidade do Porto	Session 3.1.19_Paper 445_Ensemble Deep Learning Approach for Apple Fruitlet Detection from Digital Images_**Fatimah Sidi**_Universiti Putra Malaysia
11h50	**Plenary Session 3 by George Karniadakis: "Blending neural operators with FEM for multiscale problems" @ Auditorium**		
12h50 - 14h00	**Lunch Break**		
	Auditorium	**Room A**	**Room B**
	Session Chair **Jari Vepsäläinen**	Session Chair **Yi Sun**	Session Chair **Georgios N Rossopoulos**
14h10	Session 3.2.1_Paper 246_Generative design of a vehicle powertrain _**Jari Vepsäläinen**_Aalto University	Session 3.2.7_Paper 384_Bayesian Optimisation for Data-Driven Design of Polycrystalline Materials_ **Rui Coelho**_Faculdade de Engenharia da Universidade do Porto	Session 3.2.13_Paper 236_Generative adversarial framework for calibrating stochastic geometry models to ASSB cathode microstructures_**Orkun Furat**_Ulm University
14h30	Session 3.2.2_Paper 281_Step-by-step Learning_**Andrés M Alonso**_Universidad Carlos III de Madrid	Session 3.2.8_Paper 348_Multi-scale design and optimization of PC/ABS polymer blends_**Francisca Alves**_Faculdade de Engenharia da Universidade do Porto	Session 3.2.14_Paper 273_Enabling Real-Time Multiscale Microstructure Characterization Using Machine Learning_**Reeju Pokharel**_Los Alamos National Laboratory
14h50	Session 3.2.3_Paper 429_In-flight anomaly detection with an hybrid deep learning model using flight dynamics equations_**Charles Dampeyrou** _Isae-Supméca)	Session 3.2.9_Paper 369_Data-driven Design and Optimisation of Mechanical Metamaterials_**Tiago Pires**_Faculdade de Engenharia da Universidade do Porto	Session 3.2.15_Paper 406_Machine Learning Models to Predict the Static Failure of Double-Lap Shear Bolted Connections_**Hasan Almuhanna**_The University of Sheffield
15h10	Session 3.2.4_Paper 368_Enhancing navigation systems on UAVs with image recognition_**Jakub Kochan**_Military University of Technology in Warsaw	Session 3.2.10_Paper 357_Rethinking materials simulations: blending numerical simulations with various machine-learning strategies_**Remi Dingreville**_Sandia National Laboratories	Session 3.2.16_Paper 390_Evolutionary Optimization of Laser Beam Path in Additive Manufacturing_**Primož Potočnik**_University of Ljubljana, Faculty of Mechanical Engineering
15h30	Session 3.2.5_Paper 385_Informed Machine Learning-Driven Optimization of BVP Solvers for Enhanced Melt Spinning Process_**Viny Saajan Victor**_Fraunhofer ITWM	Session 3.2.11_Paper 435_Modeling of Data Movie in Single Molecule Localization Microscopy_**Yi Sun**_The City College of City University of New York	Session 3.2.17_Paper 414_Fusion of Transformer Based Deep Learning and Monte-Carlo Fish Growth Simulation for Aquaculture Smart Transformation_**Naomi A. Ubina**_National Taiwan Ocean University

15h50	Session 3.2.6_Paper 230_Quantifying Power Consumption and Trade-offs of Heterogeneous Devices for AI Inference_**Pedro Machado**_Nottingham Trent University	Session 3.2.12_Paper 380_Leveraging Enhanced Dimensionality Reduction Techniques for Biometric Profiling and Verification: Subspace-Adaptive Autoencoder Vector (SAAV) Systems_**Álvaro Paricio**_Universidad de Alcala	Session 3.2.18_Paper 268_Surrogate Model-Based AI for Bearing State Estimation and Early Failure Detection in Marine Propulsion Shafts_**Georgios N Rossopoulos**_National Technical University of Athens
16h10	**Coffee Break**		
	Auditorium	Room A	Room B
	Session Chair: **Chenfeng Li**	Session Chair: **Federica Madashi**	Session Chair: **Nihong Yang**
16h30	Session 3.2.19_Paper 262_Harnessing ChatGPT Intelligence for Enhanced Aerodynamics Data Analysis in Aeronautics_**Esther Andrés**_INTA	Session 3.2.25_Paper 420_Spatiotemporal Analysis of In-Game Team Performance Consistency in Association Football_**Ishara S Bandara**_Deakin University	Session 3.2.31_Paper 263_Prediction of Wing Aerodynamic Coefficients of an Unmanned Light Electric Aeroplane with ANN_**Nihong Yang**_University of the West of England
16h50	Session 3.2.20_Paper 374_Parameterisation of tourist trails for mountain travel safety with focus on people with disabilities_**Kamil Góźdź**_Silesian University of Technology	Session 3.2.26_Paper 430_Monitoring construction site situations with AI technologies_**Federica Madaschi**_Politecnico di Milano	Session 3.2.32_Paper 307_Deep Neural Network Modelling in Supercritical CO2 Extraction Process_**Roshanak Agharafeie**_Universidade Nova de Lisboa
17h10	Session 3.2.21_Paper 425_Physiology-Informed Neural Network for prediction of post-harvest firmness of avocados_**Ruud van der Sman**_Wageningen Food & Biobased Research	Session 3.2.27_Paper 416_From Data to Insights: Leveraging Informed Machine Learning for Fiber Laydown Quality Optimization in Spunbond Processes_**Paulami Banerjee**_Fraunhofer ItWM	Session 3.2.33_Paper 296_Bioprocess Hybrid Modeling: A Comparative Study of Physics-Informed Neural Networks and Traditional Semiparametric Hybrid Modeling_**Monesh Kumar Thirugnanasambandam**_NOVA FCT, University Nova de Lisbon
17h30	Session 3.2.22_Paper 432_Activity recognition based on temporomandibular joint movement in a fertility monitoring device_ **Janusz Przewocki**_University of Gdańsk	Session 3.2.28_Paper 311_Physics Informed Neural Networks as a Surrogate for Empiricism in the Separated Flow Boiling Model_**Logan Pirnstill**_Case Western Reserve University TPFTML	Session 3.2.34_Paper 319_Unravelling the Atomistic Mechanisms Underpinning the Morphological Evolution of Al-Alloyed Hematite and Its Catalytic Activity for Hydrogen Production_**Lian Zhang**_Monash University
17h50	Session 3.2.23_Paper 381_Dynamic SpatioTemporal Graph Attention Network for Enhanced Urban Traffic Demand Prediction_**Pablo Manglano**_Universidad de Alcala	Session 3.2.29_Paper 419_Optimising the operation of district heating networks by combining forecasting and decision-making tools_**José L. Hernández**_CARTIF	Session 3.2.35_Paper 285_Towards producing innovative engineering design concepts using AI_**Imelda Friel**_Queen's University Belfast

	July 5th	
	Auditorium	**Room A**
	Session Chair: Zhihao Chen	**Session Chair: Nihong Yang**
09h00	Session 4.1.1_Paper 282_Robustness and Variability Analysis for Hardware Neural Networks_**Zhihao Chen**_University of Nottingham Ningbo China	Session 4.1.9 _Paper 439_ An Application of Machine Learning Techniques in Prediction of Manufacturing Quality of a Composite Wind Turbine Blade_**Nihong Yang**_University of the West of England
09h20	Session 4.1.2_Paper 383_Prediction of the Combustion Process for a Hydrogen-Air Mixture Based on Neural Network Modeling_**Iakov M Karandashev**_RUDN University	Session 4.1.10_Paper 310_Gaussian process priors for parameters of a physically based model for the CCT-diagram_**Juho Luukkonen**_University of Oulu
09h40	Session 4.1.3_Paper 424_Enhancing Oxygen Safety in Engineering Applications: Data-Driven Insights into Oxygen Pressure Surge Testing_**Karthick Selvam**_University of Luxembourg	Session 4.1.11_Paper 221_Modelling and Simulation of Patients Access to Healthcare System_**Ibidun C Obagbuwa**_Sol Plaatje University
10h00	Session 4.1.4_Paper 355_Decoding Artificial Intelligence's Impact on the Energy Sector through Structural Topic Modeling and Hierarchical Clustering_**Chankook Park**_Korea Energy Economics Institute	Session 4.1.12_Paper 222_Modelling human behaviour using discrete event simulation for South Africa restaurants_**Ibidun C Obagbuwa**_Sol Plaatje University
10h20	**Coffee Break**	
10h40	Session 4.1.5 Paper 349_Deep Learning-Based Longitudinal Analysis of Long-Term Gait Function Recovery in Post-Stroke Hemiplegic Patients_**Mun-Taek Choi**_Sungkyunkwan University	Session 4.1.13_Paper 444_An Open Source tool for Topic Modeling with Word Network Clustering_**Alymzhan Toleu**_INSTITUTE OF INFORMATION AND COMPUTATIONAL TECHNOLOGIES
11h00	Session 4.1.6_Paper 342_Bayesian estimation of the Pareto model based on type-II censoring data by employing non-linear programming_**Laila Abdulaziz Al-Essa**_Princess Nourh bint Abdulrahman University	Session 4.1.14_Paper 401_Morphology Ambiguity Resolution with Pre-trained Language Models_**Gulmira Tolegen**_INSTITUTE OF INFORMATION AND COMPUTATIONAL TECHNOLOGIES
11h20	Session 4.1.7_Paper 317_Non-intrusive model order reduction for structural dynamics using deep operator inference_**Konstantinos Agathos**_University of Exeter	Session 4.1.15 _Paper 427_The dynamics of nonlinear Alfvén waves in a magnetoplasma exhibit chaos and complexity_**Subhrajit Roy**_Heramba Chandra College
11h40	Session 4.1.8_Paper 437_ Influence of Fluid Velocity onto the Metal Foam Screen_ **Mohd Azuwan Maoinser**_Universiti Teknologi PETRONAS	Session 4.1.16_Paper 241_Research on AI Vision for Emotion Recognition in Archery Athletes_Research on AI Vision for Emotion Recognition in Archery Athletes_**Yi Chian Chen**_Fooyin University

Session Schedule by Abstract

Paper ID	Paper Title	Author	Presentation Slot
77	A probabilistic conditional generative learning methodology to predict liquid fuel physicochemical properties	Rodolfo Freitas	Session 1.1.4
78	Reconstruction Porous Media Microstructure using Descriptor Subjected VAE	Xiangyun Ge	Session 3.1.9
81	Advancing Quantitative Analysis in statistic descriptors of Heterogeneous Materials	Liyuan Wang	Session 3.1.4
115	Fresh Concrete Flow Simulation: CFD and CFD-DEM modelling	Shuai Shu	Session 2.2.29
116	Physics informed neural networks for modeling dynamic linear elasticity	Vijay Kag	Session 3.1.16
117	An AI-mediated Axisymmetric Drop Shape Analysis for Surface Tension Measurement	Ehsan Atefi	Session 2.2.12
151	Investigating the Impact of Rebar Spacing and Concrete Workability on the Generation of Defects within Bored Piles Using CFD	Tom Mitchell	Session 2.2.30
154	Supervised Regression Models as Alternatives to Numerical Prediction Equations for Mechanical Material Properties of Bitumen	Elaine Simone Goosen	Session 1.1.15
155	Visual Material Characteristics Learning for Circular Healthcare	Federico Zocco	Session 2.2.15
156	Discrete Ritz method	Zhao Jing	Session 2.2. 36
158	Strength of Arrays with Randomly Displaced Micropillars	Zbigniew Domanski	Session 2.2.32
159	On the Blackjack-Type Problems with Random Limit and its Applications in Overlading Protection	Andrzej Grzybowski	Session 2.2.22
160	Global Search Methos as Tools for Classifier-Learning Problems with Unequal Error Costs	Andrzej Grzybowski	Session 2.2.37
216	Computation of the Magnetic Polarizability Tensor (MPT) Characterisation of Realistic Metallic Targets	James D Elgy	Session 2.2.31
217	Neural Network-based methodology to predict the deformation of 3D printed stiffeners on pre-stretched soft membranes	Paolo Marcandelli	Session 2.2.11
218	An enhanced BP neural network for analyzing SHM data and predicting structural performance of in-service fabricated bridges	Shenao Zhang	Session 2.2.16
221	Modelling and Simulation of Patients Access to Healthcare System	Ibidun C Obagbuwa	Session 4.1.12
222	MODELLING HUMAN BEHAVIOUR USING DISCRETE EVENT SIMULATION FOR SOUTH AFRICA RESTAURANTS	Ibidun C Obagbuwa	Session 4.1.11
227	Improving Corrosion Data Modelling through an Evolutionary Algorithm Approach	Juan J. Santana	Session 1.1.22
228	Defending Against Deepfakes: Perturbation-based Adversarial Detection with AI	Pedro Machado	Session 2.1.17
229	Investigating the Impact of Weight Initialisation Strategies on Performance of Liquid State Machines	Pedro Machado	Session 2.1.2
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363	Estimation of the Effect of Changing Resistance Parameters On Engine Efficiency in Electrical Vehicles With Convolutional Neural Network	Övünç Polat	Session 2.2.10
381	Dynamic SpatioTemporal Graph Attention Network for Enhanced Urban Traffic Demand Prediction	**P**ablo Mangano	Session 3.2.23
217	Neural Network-based methodology to predict the deformation of 3D printed stiffeners on pre-stretched soft membranes	Paolo Marcandelli	Session 2.2.11
416	From Data to Insights: Leveraging Informed Machine Learning for Fiber Laydown Quality Optimization in Spunbond Processes	Paulami Banerjee	Session 3.2.27
228	Defending Against Deepfakes: Perturbation-based Adversarial Detection with AI	Pedro Machado	Session 2.1.17
229	Investigating the Impact of Weight Initialisation Strategies on Performance of Liquid State Machines	Pedro Machado	Session 2.1.2
230	Quantifying Power Consumption and Trade-offs of Heterogeneous Devices for AI Inference	Pedro Machado	Session 3.2.6
249	On the hidden layer-to-layer topology of the representations of reality realised within neural networks	**P**eter Grindrod	Session 1.1.1
237	GeoBiked: A Dataset with Geometric Features and Automated Labeling Techniques to Enable Deep Generative Models in Engineering Design	Phillip Mueller	Session 2.1.5
274	Model-based Reinforcement Learning for Optimal Inspection and Maintenance Planning	Prateek Bhustali	Session 1.1.16
390	Evolutionary Optimization of Laser Beam Path in Additive Manufacturing	Primož Potočnik	Session 3.2.16
396	Ensuring Compliance with the EU's Monitoring, Reporting, and Verification and Emissions Trading System through Data-Driven Verification	**Q**in Liang	Session 2.1.14
343	Dataset Modelling Effect on Internal Thread Defect Detection	Quang-Cherng Hsu	Session 2.2.17
323	Computed tomography based finite element modelling of femur to predict fracture risk: Age-related Variations	**R**ahul A Gujar	Session 2.1.13
273	Enabling Real-Time Multiscale Microstructure Characterization Using Machine Learning	Reeju Pokharel	Session 3.2.14
357	Rethinking materials simulations: blending numerical simulations with various machine-learning strategies	Remi Dingreville	Session 3.2.10
77	A probabilistic conditional generative learning methodology to predict liquid fuel physicochemical properties	Rodolfo Freitas	Session 1.1.4
307	Deep Neural Network Modelling in Supercritical CO2 Extraction Process	Roshanak Agharafeie	Session 3.2.32
384	Bayesian Optimisation for Data-Driven Design of Polycrystalline Materials	Rui Coelho	Session 3.2.7
425	Physiology-Informed Neural Network for prediction of post-harvest firmness of avocados	Ruud van der Sman	Session 3.2.21
422	Digital Twins for Treatment Recommendation	**S**am Nallaperuma-Herzberg	Session 2.2.6
267	Modelling of Dynamic Pressure and Temperature Control at Successive Vacuum Infusion and Post-Infusion Molding Composite Parts	Sergey N. Shevtsov	Session 1.1.12
392	Ensemble of Deep Learning Networks More Suitable for Electric Current Analysis of Rotating Machinery	Sergio L Avila	Session 3.1.11
404	Big Data analysis and dimensionality reduction to predict price trends in the Brazilian electricity market considering interdisciplinary phenomena	Sergio L Avila	Session 2.1.10
218	An enhanced BP neural network for analyzing SHM data and predicting structural performance of in-service fabricated bridges	Shenao Zhang	Session 2.2.16
370	Noise reduction study of structural monitoring data of in-service slab-on-girder bridge by means of topological data analysis method	Shenao Zhang	Session 1.1.11
361	Inference of dynamic systems from noisy and sparse data via physics-informed Gaussian processes	Shihao Yang	Session 2.2.33
242	Active Learning in Non-Iterative Approach	Shi-Jinn Horng	Session 2.2.28
115	Fresh Concrete Flow Simulation: CFD and CFD-DEM modelling	Shuai Shu	Session 2.2.29
300	Last-piece exploring model operator networks –validations through various terms and equations–	So Yamashita	Session 1.1.17
366	Physics-Aware Recurrent CNNs for Extreme Physics Problems	Stephen S Baek	Session 2.2.23
427	The dynamics of nonlinear Alfvén waves in a magnetoplasma exhibit chaos and complexity	Subhrajit Roy	Session 4.1.15
279	Last-piece exploring model operator networks	Suguru Shiratori	Session 1.1.20
292	Application of artificial neural networks in estimation of mechanical behavior of steels	**T**ea Marohnić	Session 3.1.13
412	GADEM: a geometry-aware energy-based method for structural mechanics problems	Thi Nguyen Khoa Nguyen	Session 2.2.14
369	Data-driven Design and Optimisation of Mechanical Metamaterials	Tiago Pires	Session 3.2.9
257	Data Augmentation for Recorded Properties of Processed Materials in Industrial Production Processes for the Application of Machine Learning Models: A Case Study in an Automotive Press Shop	Tom Krause	Session 2.2.5
151	Investigating the Impact of Rebar Spacing and Concrete Workability on the Generation of Defects within Bored Piles Using CFD	Tom Mitchell	Session 2.2.30
239	Fast analysis of transport phenomena in melt during Cz-Si single crystal growth by using Hybrid-PINNs	Tsuyoshi Miyamoto	Session 2.1.6
116	Physics informed neural networks for modeling dynamic linear elasticity	**V**ijay Kag	Session 3.1.16
385	Informed Machine Learning-Driven Optimization of BVP Solvers for Enhanced Melt Spinning Process.	Viny Saajan Victor	Session 3.2.5
78	Reconstruction Porous Media Microstructure using Descriptor Subjected VAE	**X**iangyun Ge	Session 3.1.9
241	Research on AI Vision for Emotion Recognition in Archery Athletes	Yi Chian Chen	Session 4.1.13
435	Modeling of Data Movie in Single Molecule Localization Microscopy	Yi Sun	Session 3.2.11
284	A surrogate model for the design of offshore monopile foundations	Yunxiang Yang	Session 3.1.6
278	Natural Language Querying for Spatio-Temporal Data Analytics	Yuri Bogomolov	Session 2.2.25

426	Geometry-aware Physics-informed Machine Learning	**Z**ack Xuereb Conti	Session 3.1.5
158	Strength of Arrays with Randomly Displaced Micropillars	Zbigniew Domanski	Session 2.2.32
156	Discrete Ritz method	Zhao Jing	Session 2.2. 36
282	Robustness and Variability Analysis for Hardware Neural Networks	Zhihao Chen	Session 4.1.1
231	Neural network potential-based molecular dynamics study on the pollutant formation mechanism of ammonia-hydrogen co-firing	Zhihao Xing	Session 2.2.4

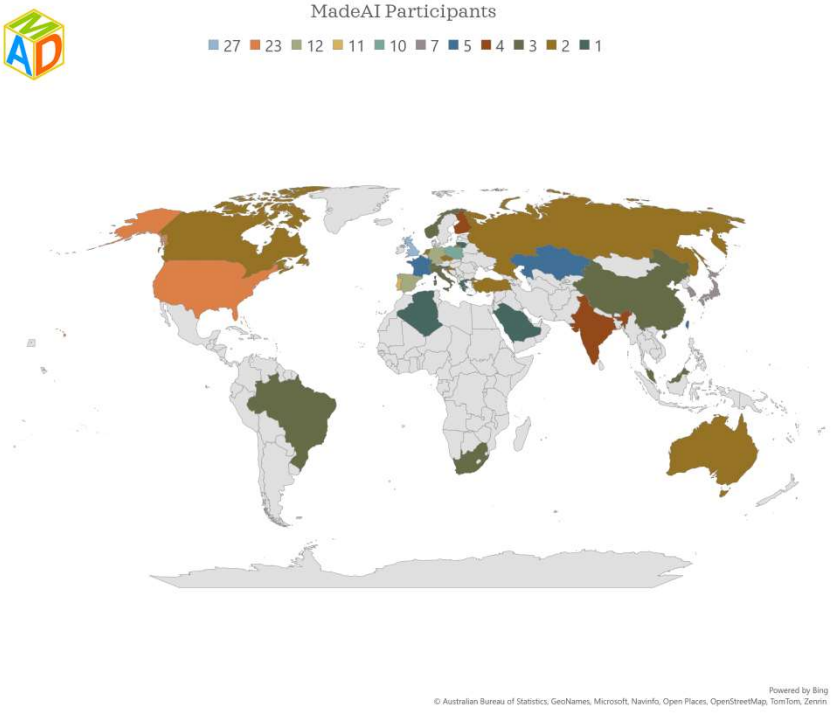
MODELLING, DATA ANALYTICS AND AI IN ENGINEERING

https://madeai-eng.org/

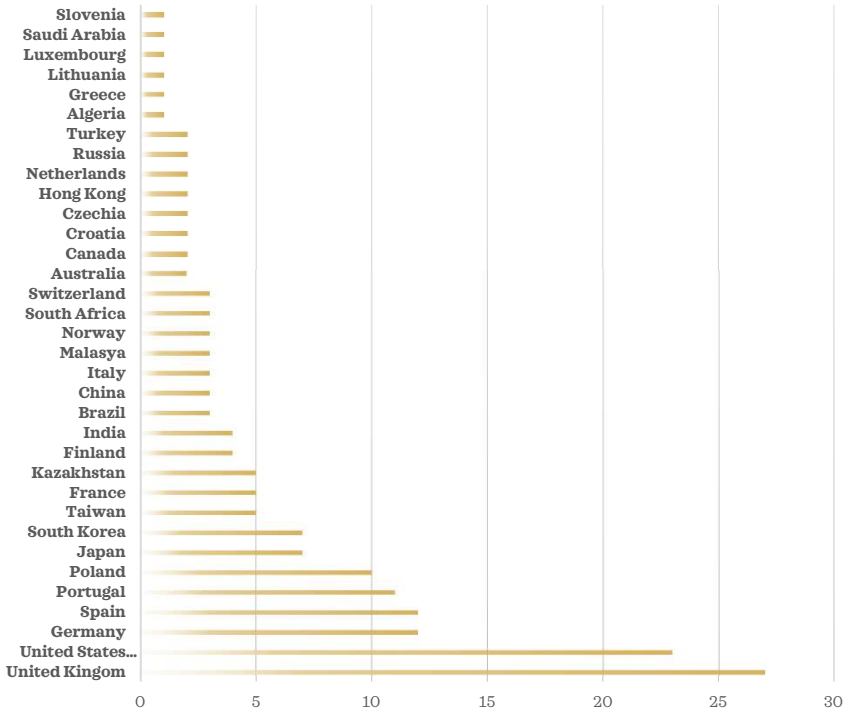
MADEAI GOAL

https://madeai-eng.org/

- In today's rapidly evolving science and technology landscape, **modelling, data analytics, and artificial intelligence (AI) play pivotal roles in reshaping problem-solving strategies across diverse industrial sectors**. From aerospace and automotive to chemical, construction, energy, healthcare, materials, and transportation, these transformative technologies address complex challenges and drive innovation.
- The **intersections** of modelling, data analytics, and AI are deeply rooted in their mathematical and computational frameworks.
- These disciplines are often studied in **isolated silos** within engineering and science programs, lacking extensive interdisciplinary collaboration.
- To unlock their full potential as breakthrough solutions at the engineering forefront, integration using a **holistic systems approach** becomes imperative.
- MadeAI : brings **academic** researchers and **industrial** experts from the global communities of **computer science**, **engineering**, and **mathematics** converge to exchange ideas and explore **the fusion of modelling, data analytics, and AI in engineering**.



Countries



Countries

Plenary Sessions

Prof. Philip Torr FRS, FREng

Five AI/Royal Academy of Engineering Research Chair in Computer Vision and Machine Learning, University of Oxford – United Kingdom

2nd July

Current work at TVG on vision and language models

Dr. Royston Jones

Executive VP European Operations & Global CTO & Global Head of Automotive, Altair Ltd. – USA

3rd July

Rapid changing the speed of design: the inevitable rise of computational intelligence

Prof. George Karniadakis NAE

Charles Pitts Robinson and John Palmer Barstow Professor of Applied Mathematics and Engineering, Brown University – USA

4th July

Blending neural operators with FEM for multiscale problems

Conference Programme

Day 1 { July 2nd }

- Sessions starts at **09h00** followed by a coffee-break @ 10h40
- **11h50:** Plenary Session by **Philip H. S. Torr:** Current work at TVG on Vision and Language models @ Auditorium
- **Lunch break** from 12h50
- **14h15:** Departure from the conference venue by bus: Port Wine Cellars Tour and Port Wine Tasting followed by a Douro river boat cruise
- **18h40:** arrival from the boat tour and end of day 1 social program

Day 2 { July 3rd }

- Sessions starts at **09h00** followed by a coffee-break @ 10h40
- **11h50:** Plenary Session by **Royston Jones**: RAPID CHARGING THE SPEED OF DESIGN : The Inevitable Rise of Computational Intelligence @Auditorium
- **Lunch break** from 12h50
- Afternoon sessions start at **14h10** followed by a coffee-break @ 16h30
- **19h00:** departure from the conference venue to the Conference Dinner

Conference Program

Day 3 { July 4th }

- Sessions start at **09h00** followed by coffee-break @ 10h40;
- **11h50:** Plenary Session by **George Karniadakis**: "Blending neural operators with FEM for multiscale problems" @ Auditorium
- **Lunch break** from 12h50
- Afternoon sessions start at **14h10** to 18h10, with a coffee-break @ 16h10;

Day 4 { July 5th }

- Sessions start at **09h00** followed by coffee-break @ **10h20**
- Morning sessions to finish @ 12h00 with no afternoon sessions scheduled.

WELCOME TO PORTO

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Fun fact: Porto's Livraria Lello is considered one of the most beautiful bookstores in the world and is rumored to have inspired J.K. Rowling's vision of Hogwarts.

Nestled along the Douro River in northern Portugal, **Porto is the second-largest city in Portugal**. With a population of around 230,000, it's a city large enough to offer exciting things to see and do, yet small enough to be easily explored on foot.

Porto boasts a historic city center, a **UNESCO World Heritage Site** famed for its stunning medieval architecture, and picturesque riverfront, boarded by the "rabelo" boats.

Visitors can explore the historic **Ribeira** district, marvel at the iconic **Dom Luís I Bridge**, and enjoy a leisurely stroll through the vibrant **Bolhão Market** or marvel the world-famous **ceramic tiles** around the city in S. Bento train station or Carmo church.

Porto is also famous for its namesake win, **Port wine**, produced in the nearby Douro Valley.

What to eat around Porto?

One of the region's iconic specialties is the **Francesinha**, a decadent sandwich filled with layers of meats, covered in melted cheese and a rich beer-based sauce. **Seafood** is also a highlight, with **grilled fish** such as sardines and **bacalhau** (salted cod) being local favorites. For dessert, the famous **Pastéis de Nata**, custard tarts with a crispy, caramelized exterior, offer a sweet end to any meal.

- Participants who selected and paid for the **lunch option during the registration period**, may have lunch in the Venue´s Restaurant.
- In check-in you were given a **voucher for lunch**, that you must show when entering the Restaurant.
- **Keep your voucher for lunch on July 2nd, 3rd and 4th.**
- On **July 5th** – since sessions will take place only in the morning – **no lunch reservations have been made.**

- The **Venue restaurant cannot acomodate more reservations for lunch** than the ones that have alreday been placed.
- We offer some **alternative suggestions** we might want to consider for lunch during MADEAI conference.

Where to have lunch during MadeAI?

My Palace (1 min walking) (restaurant)

Canela Moscada (2 min walking); (light snacks)

Kanpai Fushion Sushi Aviz (10 min walking)

Restaurant Mestre Aviz (10 min walking)

Tourigalo (15 min walking)

Where to lunch?

How to connect to wifi.

C. Congressos

(no password required)

THANK YOU

https://madeai-eng.org/

Conference Chairs

Prof. Chenfeng Li FLSW

Swansea University, United Kingdom

Prof. F.M. Andrade Pires

University of Porto (FEUP), Portugal