

Programme

**The Eighteenth International Conference on  
Civil, Structural and Environmental Engineering Computing**

**The Seventh International Conference on  
Artificial Intelligence, Soft Computing, Machine Learning and  
Optimization in Civil, Structural and Environmental Engineering**

**The Eighth International Conference on  
Parallel, Distributed, GPU and Cloud Computing for Engineering**



27-29 August 2025  
Cagliari, Sardinia, Italy

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The contributed papers are published in a summary volume with the full papers available as follows:

- **Volume CC**

<https://www.ctresources.info/ccc/pub.html?f=v10cc25>

Proceedings of The Eighteenth International Conference on Civil, Structural and Environmental Engineering Computing

P. Iványi, J. Kruis and B.H.V. Topping (Editors)

Civil-Comp Press, 2025

- **Volume AI**

<https://www.ctresources.info/ccc/pub.html?f=v11ai25>

Proceedings of The Seventh International Conference on Artificial Intelligence, Soft Computing, Machine Learning and Optimization in Civil, Structural and Environmental Engineering

P. Iványi, J. Lógó and B.H.V. Topping (Editors)

Civil-Comp Press, 2025

- **Volume PAR**

<https://www.ctresources.info/ccc/pub.html?f=v12par25>

Proceedings of The Eighth International Conference on Parallel, Distributed, GPU and Cloud Computing for Engineering

P. Iványi, J. Kruis and B.H.V. Topping (Editors)

Civil-Comp Press, 2025

In this programme the letters immediately preceding a paper title refer to the volume identifier given above. For example CC.2.2 refers to the second paper in the second section of Volume CC, *Proceedings of The Eighteenth International Conference on Civil, Structural and Environmental Engineering Computing*.

## **A note for authors presenting papers and chairmen**

All authors should meet at the front of the meeting room for their session at least 10 minutes before the session starts. Each contributed paper has been allocated 15 minutes for presentation and questions. Chairmen should indicate when 10 minutes have passed and again after 12 minutes that the presenter should immediately finish. Three minutes are available for questions and comments.

Authors are kindly asked to keep to the time allocated to them by the Chairmen. Authors are discouraged from using their own laptops for presentation unless absolutely necessary, in which case they should ensure that they can quickly and efficiently start their presentation when requested by the Chairmen.

Chairmen are requested to keep to the timetable. Changes to the programme will be indicated on the copies of the programme displayed on the conference timetable board and at the entrance to each of the rooms.

As a courtesy and in politeness to all speakers and other participants, please turn off your mobile phone whenever you enter any of the meeting and lecture rooms.

## **Computational Technology Resources**

An online resource providing access to individual conference papers and book chapters from Civil-Comp Press and Saxe-Coburg Publications. More than 10000 papers and book chapters published since 1983. This is an online resource for academics and researchers using and developing Computational Technology in all fields of Science and Engineering.

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## **Journal special issue submission**

For details of the format specification and procedures for submitting conference papers for possible publication in the journal special issues, instructions will be sent to the authors one month after the conference, but please start to prepare your paper without delay.

## Conference timetable summary

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### **Day 1: Wednesday, 27th August 2025**

**14:00-16:00** Registration desk open

**16:00-18:00** Conference opening, Opening plenary lectures

**18:00-20:00** Welcome buffet

### **Day 2: Thursday, 28th August 2025**

**08:15-15:30** Registration desk open

**08:30-10:45** Conference session

**10:45-11:15** Coffee / Tea Break

**11:15-13:15** Conference session

**13:15-14:00** Lunch - admission by ticket

**14:00-15:00** “Meet the Editors and Publishers” session

**15:00-15:30** Coffee / Tea Break

**15:30-18:00** Conference session

**19:00-21:30** Conference dinner - admission by ticket

### **Day 3: Friday, 29th August 2025**

**08:15-11:00** Registration desk open

**08:30-10:45** Conference session

**10:45-11:15** Coffee / Tea Break

**11:15-13:15** Conference session

**13:15-14:00** Lunch - admission by ticket

## Conference timetable summary

Day 1, Wednesday, 27th August	
Time	Room 1
16:00-18:00	Conference opening, Opening plenary lectures page 7
18:00-20:00	Welcome buffet page 7

Day 2, Thursday, 28th August		
Time	Room 1	Room 2
08:30-10:45	Multiscale, Multiphysics and Risk Analyses  Development in Structural Engineering page 8	Neural Networks-Based Deep Learning for Next-Generation Engineering Optimization  Innovative Methods for Structural Design and Optimization of Structures and Infrastructures  New Trends in Applications of Machine Learning for Structural Optimization page 9
10:45-11:15	Coffee Break	
11:15-13:15	Parallel Engineering page 10	Computational Modelling and Numerical Techniques  Fracture Mechanics  Computational Modelling of Masonry Structures page 11
13:15-14:00	Lunch	
14:00-15:00	“Meet the Editors and Publishers” Session page 12	
15:00-15:30	Coffee Break	
15:30-18:00	Advances in the Numerical Approximation of Multiphysics Problems  Advances in Optimization and Automated Design of Engineering Structures  Beam Buckling Analysis page 13	Coupled Problems Involving Cementitious Materials at all Scales  Fluid and Fluid Transport Problems  Construction Engineering  Urban Design page 14

## Conference timetable summary

Day 3, Friday, 29th August		
Time	Room 1	Room 2
08:30-10:45	Computational and Stochastic Approaches for Structural Performance and Reliability  Structural Response to Dynamic Loadings: Modelling, Analysis and Mitigation  page 15	Railway Research and Technology Development  page 16
10:45-11:15	Coffee Break	
11:15-13:15	Advances in Computational Design for Metamaterials, Composites, and Multifunctional Lattice  page 17	Neural Networks in Engineering Applications  AI-Based Topology Optimization and Metamaterials in Structural Design  page 18
13:15-14:00	Lunch	

## Day 1: Wednesday, 27th August 2025: Room 1

**16:00-18:00**

### Conference Opening

Professor P. Iványi  
University of Pécs

Professor J. Kruis  
Czech Technical University in Prague

Professor B.H.V. Topping  
University of Pécs  
Heriot-Watt University, Edinburgh, Scotland

### Opening Lectures

**CC.1.1** Development of a Digital Twin Platform for the Lithium-Based Breeder and Reactor Integrated Test Installation (LIBRTI) Project

L. Margetts, W. Smith, R. Soemantoro, A. Barker, O. Woolland, Z. Miao, J. Li and P. Edmondson

**PAR.1.1** Scalable Adaptive Lattice Boltzmann–LES Solver for High Reynolds Number Flows in Porous Media

D. Kashyap, M. Grondeau and R. Deiterding

**CC.1.2** A Fictitious Domain Formulation for Fluid-Structure Interaction Problems

L. Gastaldi

**18:00-20:00**

Welcome buffet

## **Day 2: Thursday, 28th August 2025: AM, Room 1**

### **08:30-10:45**

Chaired by: Prof. Jung-Wuk Hong and Prof. Jinho Lee

#### **Multiscale, Multiphysics and Risk Analyses**

organized by: Prof. Jung-Wuk Hong, Prof. Jinho Lee

**CC.9.1** A Study on Parametric Latent Dynamics Identification for Aerodynamic Flow Modelling  
S. Cheon, H. Kim, N. Nguyen and H. Cho

**CC.9.2** Random Forest-Based Surrogate Modeling of Blast Parameters from Cuboid Charges  
T.H. Lee, Y. Lee and J.-W. Hong

**CC.9.3** Wake Structures in Yawed Turbines: An LES Perspective  
H. Kim, M. Shokati and S. Lee

**CC.9.4** Enhancing Building Robustness Through a Novel Risk-Based Segmentation Strategy: A Case Study  
G. Caredda, N. Makoond, J. Sagaseta, M. Chryssanthopoulos and J.M. Adam

**CC.9.5** Nonlinear Earthquake Response Analysis of Unanchored Cylindrical Liquid Storage Tanks Considering Fluid-Structure-Soil Interaction  
J.H. Lee

**CC.9.6** CFD Simulation of Multi Rotor-Induced DWOW and Its Effects on Human  
Y. Chang, Y. Jo and D. Kim

#### **Development in Structural Engineering**

**CC.13.1** Influence of Material and Shape Imperfections on Buckling of Externally Pressurized Auxetic Domes  
J. Blachut and M.D. White

**CC.13.2** Development of 1D Finite Elements With Node-Wise Higher-Order Structural Theories  
D. Scano, E. Carrera and M. Petrolo

**CC.13.3** Propagation and Mitigation of Vibrational Effects in Structures  
O. Corbi

### **10:45-11:15: Coffee Break**



## **Day 2: Thursday, 28th August 2025: AM, Room 2**

**08:30-10:45**

Chaired by: Prof. Majid Movahedi Rad and Prof. Raffaele Cucuzza

### **Neural Networks-Based Deep Learning for Next-Generation Engineering Optimization**

organized by: Prof. Majid Movahedi Rad, Prof. Raffaele Cucuzza, Prof. Marco Domaneschi, Dr. Muayad Habashneh, Dr. Hamed Fathnejat

**AI.2.1** Construction Planning Based on Lagrange Optimization With Artificial Neural Network  
W.-K. Hong and T.D. Pham

**AI.2.2** MLP Neural Networks To Identify Damage in Bridges From SHM Data  
A. Montisci, F. Pibi and M.C. Porcu

**AI.2.3** Improved TLBO Algorithm for Truss Size Optimization Considering Geometric Nonlinearity  
M. Habashneh and M. Movahedi Rad

**AI.2.4** Geometrically Nonlinear Shape Optimization of Elasto-Plastic Trusses Using a Neural Network-Assisted Genetic Algorithm  
P. Grubits and M. Movahedi Rad

### **Innovative Methods for Structural Design and Optimization of Structures and Infrastructures**

organized by: Prof. Raffaele Cucuzza, Prof. Majid Movahedi Rad, Prof. Marco Domaneschi, Prof. Giuseppe Carlo Marano

**AI.3.1** Develop a Street Speed Bump Extraction and Mapping Framework From Street Level Imagery Using Deep Learning  
M. Abdel Karim, A. Alazmi and T. Alhadidi

**AI.3.2** Reinforcement Learning-Based Control Strategy for Semi-Active Energy Transfer in Beam Structures  
D. Bogucki, M. Ostrowski and B. Blachowski

**AI.3.3** Performance-Based Optimization of Steel Exoskeletons: An Alternative Approach to Standard Regulations  
J. Olivo, R. Cucuzza and G.C. Marano

### **New Trends in Applications of Machine Learning for Structural Optimization**

organized by: Prof. Weisheng Zhang, Prof. Dong Li, Prof. Jian Zhang

**AI.4.1** Crack-Safe Design Through PeriDynamic-Based SIMP Approach  
W. Zhang and Y. Liu

**AI.4.2** Machine Learning-Powered Geometry-Aware Filter: A Novel Human-Informed Approach for Advanced Topology Optimization  
X. Zhuang, W. Zhang, X. Guo and S.-K. Youn

**10:45-11:15: Coffee Break**

## Day 2: Thursday, 28th August 2025: AM, Room 1

**11:15-13:00**

Chaired by: Prof. Ralf Deiterding

### **Parallel Engineering**

**PAR.2.1** Hyfeast: A Parallel Finite Element Framework for Advanced Civil Engineering Applications  
J.-R. Cho, K. Cho, J.H. Lee and D.S. Rhee

**PAR.2.2** Parallel Application of Multi-Freedom Constraints Using Master-Slave Method in Sparse Linear Systems  
C. Topal, N. Muhtaroglu and G. Kiziltas

**PAR.2.3** An Enhanced Spectral Method for Mesh Partitioning Based on Matching Edges  
T. Fouque, C.-H. Lai, E. George and F. Magoulès

**PAR.2.4** GPU Parallelization for Analytical Hierarchical Tucker Representation Using Binary Trees  
Z. Qiu, F. Magoulès and D. Peláez

**PAR.2.5** Parallelization of Global Sensitivity Study of Nonlinear Systems Using Komondor HPC  
F. Hajdu, C. Hajdu and L. Környei

**PAR.2.6** A Parallel Hybrid Method to Reduce Gaussian Noise in Computed Tomography Medical Images  
J. Arnal and D. Ibarra

**PAR.2.7** Performance Constraints in IME-HEVC Software Integration  
O.M. López-Granado, M. Martínez-Rach, H. Migallón, R. Gutierrez Mazon and M. Perez Malumbres

**13:15-14:00: Lunch**

## **Day 2: Thursday, 28th August 2025: AM, Room 2**

**11:15-13:15**

Chaired by: Prof. Jaroslav Kruis and Prof. Michal Šejnoha

### **Computational Modelling and Numerical Techniques**

**CC.10.1** Reduced Numerical Approximation of Fractional Derivative in Application to Creep

B. Háľková, J. Schmidt and M. Šejnoha

**CC.10.2** An Ordinary State-Based Peridynamic Model for the Simulation of Anisotropic Materials Under Finite Deformation

F. Scabbia, M. Zaccariotto and U. Galvanetto

**CC.10.3** Large Strain Void-Growth Multiplicative Plasticity Preserving the Infinitesimal Framework

M. Zhang, G. Vadillo and F.J. Montans

**CC.10.4** Towards a Consistent Co-Rotational Formulation for 3D Solid Finite Elements: Mathematical Comparison of Crisfield's and Felippa's Formulation

R. Páleník and Z. Poruba

### **Fracture Mechanics**

**CC.12.1** Failure Analysis of Quasi-Brittle Materials Using Coupled Refined Finite Elements and Peridynamics Incorporating Cohesive Effects

A. Pagani, J. Shen and M. Rui Arruda

### **Computational Modelling of Masonry Structures**

**CC.11.1** LACT3: A Fast Tool for Tilting Table Tests Based on Rigid Block Limit Analysis

Y. Hua, M. Buzzetti, N. Pingaro, M. Pourfouladi and G. Milani

**CC.11.2** Sheep Wool Composite Mortar for Thermo-Mechanical Retrofitting

A. Majumder, F. Stochino, M. Valdes, A. Frattolillo, G. Concu, M. Pepe and E. Martinelli

**CC.11.3** Structural Optimization Through Parametric Design of Visco-Elastic Devices

I. Corbi

**13:15-14:00: Lunch**

## **Day 2: Thursday, 28th August 2025: PM, Room 1**

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### **14:00-15:00**

Chaired by: Prof. Barry H. V. Topping

### **“Meet the Editors and Publishers”**

An opportunity for conference participants to question the editors and publishers of “Computers and Structures” and “Advances in Engineering Software”

### **15:00-15:30: Coffee Break**

## **Day 2: Thursday, 28th August 2025: PM, Room 1**

**15:30-18:00**

Chaired by: Prof. Lucia Gastaldi and Prof. Alberto Martins

### **Advances in the Numerical Approximation of Multiphysics Problems**

organized by: Prof. Lucia Gastaldi and Dr. Fabio Credali

**CC.8.1** On the Discrete Inf-Sup Condition for a Regularized Fictitious Domain Method Using Finite Element Methods

W. Lei

**CC.8.2** Fictitious Domain Approach for a Fluid in an Elastic Channel

L. Gastaldi and P. Tesini

**CC.8.3** Mass Conservation for FSI Problems in Fictitious Domain Approach

F. Credali, N. Alshehri, D. Boffi and L. Gastaldi

### **Advances in Optimization and Automated Design of Engineering Structures**

organized by: Prof. Alberto Martins, Prof. Luís Simões, Prof. János Lógó, Prof. Marco Montemurro and Prof. Matteo Bruggi

**CC.4.1** A Novel Kriging-Based Multi-Fidelity Surrogate Model and Optimization Strategy

S. Cho, J. Kim and G. Noh

**CC.4.2** Shape Optimization of Reticulated Shells with Loading Uncertainty via a Monte Carlo Approach

B. Toth, M. Bruggi and J. Logo

**CC.4.3** Size Optimization of Beam Structures With Respect to Self-Weight

T. Světlík and M. Čermák

**CC.4.4** Quasi-Static Approximation in Topology Optimization of Beam Structure Subjected to Modal Inertial Forces

P. Tazowski, M. Zawidzki and B. Blachowski

**CC.4.5** Optimization of Combined Cable-Stayed Concrete Bridges

A. Martins, S. Monteiro and L. Simões

**CC.4.6** Design of Spatial Truss Structures Using the Circulatory System-Based Optimization

I.B. Ugur and S.O. Degertekin

### **Beam Buckling Analysis**

**CC.14.1** A Finite Element Formulation for Buckling Analysis of Unbalanced Laminated Beam-Type Structures

G. Turkalj, D. Banić and D. Lanc

**CC.14.2** Thermal Buckling Analysis of FG Porous Thin-Walled Beam

S. Kvaternik Simonetti, D. Lanc and G. Turkalj

## **Day 2: Thursday, 28th August 2025: PM, Room 2**

**16:30-18:15**

Chaired by: Dr. Sławomir Czarnecki and Prof. Fabio De Angelis

### **Coupled Problems Involving Cementitious Materials at all Scales**

organized by: B. Pomaro, Dr. G. Mazzucco and Prof. C. Majorana

**CC.5.1** Nonlinear Dynamic Analysis of Reinforced Concrete Structures Using Proper Orthogonal Decomposition and Multi-Fiber Modeling  
W. Larbi, J.-F. Deu and N. Ayob

**CC.5.2** Application of Artificial Intelligence in the Nondestructive Evaluation of Concrete Floors  
M. Moj, S. Czarnecki and Ł. Sadowski

**CC.5.3** Concrete Mixture Compressive Strength Estimation Using Interpretable Tree-Based Machine Learning Models  
A.D.R. Troncoso García, S. Czarnecki, E.K. Nyarko, M. Hadzima-Nyarko and F. Martinez Alvarez

**CC.5.4** A Machine Learning Approach for Predicting the Compressive Strength of Masonry Walls: An Artificial Neural Network Model  
S. Czarnecki, A.D.R. Troncoso García, K. Nyarko, M. Hadzima-Nyarko and F. Martinez Alvarez

**CC.5.5** Base Isolation Devices To Reduce the Vulnerability of Structures Subject to Strong Dynamic Events  
D. Cancellara and F. De Angelis

### **Fluid and Fluid Transport Problems**

**CC.15.1** A Less Complex Wing Theory in Ideal Fluids  
R.W. Meyer

**CC.15.2** Flow and Species Transport in Soft Deforming Porous Medium; Homogenization Based Numerical Modelling  
E. Rohan and F. Moravcová

### **Construction Engineering**

**CC.16.1** Developing A Smart Construction Schedule Development System  
J.-B. Yang and T.-H. Lai

**CC.16.2** Integrating RAG with Visual Hazard Recognition for Automated Generation of Prevention Measures: A Preliminary Study  
W.-D. Yu, W.-T. Hsiao and H.-H. Li

**CC.16.3** Reformulating Peak Counting into a Circle Counting Approach to Enhance the Robustness of Automated Rebar Counting  
S.T. Chun, J.S. Park and H.S. Park

### **Urban Design**

**CC.17.1** The Impact of Land Use Changes on UHI Intensity in Kuwait City  
A. Alrokhayes

## **Day 3: Friday, 29th August 2025: AM, Room 1**

**8:45-10:45**

Chaired by: Dr. Ioannis P. Mitseas, Prof. Pierfrancesco Cacciola and Dr. Gian Felice Giaccu

### **Computational and Stochastic Approaches for Structural Performance and Reliability**

organized by: Dr. Ioannis P. Mitseas, Prof. Michael Beer, Prof. Antonina Pirrotta and Prof. Jianbing Chen

**CC.7.1** Modeling Aeroelastic Phenomena via Stochastic Resonance in Nonlinear Bistable Oscillators  
J. Náprstek and C. Fischer

**CC.7.2** A Versatile Filter Model and Its Application in the Simulation of Track Irregularity and Fluctuating Wind Speed with Non-Rational PSD Functions  
J. Lyu and J. Chen

**CC.7.3** Time-Separated Stochastic Mechanics for Elasto-Viscoplastic Structures  
H. Geisler and P. Junker

**CC.7.4** Stochastic Nonlinear SDOF Model and Probabilistic Fragility Assessment of Steel Plates Under Blast Loading  
F. Pinna and F. Stochino

**CC.7.5** Capsizing Risk Assessment of Nonlinear Ship Roll Motion Under Evolutionary Sea-Wave Excitation  
I.P. Mitseas and O. Danisworo

### **Structural Response to Dynamic Loadings: Modelling, Analysis and Mitigation**

organized by: by: Prof. Pierfrancesco Cacciola, Dr. Alessandro Contento, Dr. Gian Felice Giaccu and Dr. Bruno Briseghella

**CC.6.1** Crowd-Induced Vertical Vibrations in Footbridges Evaluated Based on the Simplified Improved Multiplication Factor Method: A Parametric Study  
G. Eslami Varzaneh, F. Ponsi, E. Bassoli and L. Vincenzi

**CC.6.2** Influence of Soil Particle Distribution on the Steady-State Harmonic Response of Nonlinear Soil-Structure Interaction Systems  
F. Maksimov, A. Contento, B. Briseghella and P. Cacciola

**CC.6.3** Numerical Investigation of Damage Identification in Historic Ceilings via Vibrations Measurements  
M. Chaabi, S. Mayfield and P. Cacciola

**10:45-11:15: Coffee Break**

## **Day 3: Friday, 29th August 2025: AM, Room 2**

**8:30-10:45**

Chaired by: Dr. Pedro Aires Montenegro and Dr. Pedro Antunes

### **Railway Research and Technology Development**

organized by: Prof. João Pombo, Dr. Pedro Aires Montenegro, Dr. Pedro Antunes and Dr. Diogo Ribeiro

**CC.2.1** Adjusting the Parameters of the Three-Layer Track Model to Suppress the Negative Influence of the Critical Velocity

Z. Dimitrovova

**CC.2.2** Study of the Soil-Structure Interaction on a Portal Frame Railway Bridge Through Experimental Validation

J. Chordà-Monsonís, J.C. Sánchez-Quesada, E. Moliner, A. Romero, P. Galvín and M.D. Martínez-Rodrigo

**CC.2.3** Assessment of Ballast Stability in Multi-Span Simply-Supported Girder Bridges for Increasing Operational Speeds

J.C. Sánchez-Quesada, E. Moliner, J. Chordà-Monsonís, A. Romero, P. Galvín and M.D. Martínez-Rodrigo

**CC.2.4** Simplistic to Modern Applications of Statistics on Rail

S. Lloyd

**CC.2.5** An Offline Hardware-in-the-Loop Approach to Analyse Pantograph-Catenary Interaction

P. Antunes, J.P. Santos, J.M. Rebelo, J. Pombo, A. Schirrer, S. Jakubek, M. Tur Valiente and S.G. Verdú

**CC.2.6** A New Algorithm To Determine Critical Speeds on Ballasted High-Speed Railway Bridges

G. Ferreira, P.A. Montenegro, A.A. Henriques and R. Calçada

**CC.2.7** A Data-Driven Methodology for Damage Detection in a Short-Span Filler-Beam Railway Bridge

A. Silva, A. Meixedo, P.A. Montenegro and D. Ribeiro

**CC.2.8** Updated Damping Guidelines for Railway Bridges: Insights From the InBridge4EU Project

P.A. Montenegro, E.-A. Laligant, F. Pimenta, A. Silva, O. Ahmed and C. Laurent

**CC.2.9** Modelling and Simulation Historical Tram Running in Modern Tracks

N. Bosso, M. Magelli, R. Pagano, F. Tripoli and N. Zampieri

**10:45-11:15: Coffee Break**



## Day 3: Friday, 29th August 2025: AM, Room 1

**11:15-13:15**

Chaired by: Prof. Liang Meng and Prof. Jaroslav Kruis

### **Advances in Computational Design for Metamaterials, Composites, and Multifunctional Lattice**

organized by: Dr. Liang Xia, Prof. Liang Meng, Dr. Jie Liu and Dr. Yuliang Hou

#### **CC.3.1 Lattice Discrete Particle Model for Beta-Titanium Alloys**

J. Kruis, J. Vorel and A. Jira

#### **CC.3.2 Structural Topology Optimization Subjected to the Variance Constraint of Normal Deformation**

D. Wu, T. Gao and W. Zhang

#### **CC.3.3 Topology Optimization of Gyroid-Based Mechanical Metamaterials Using Artificial Intelligence**

P. Lacki, A. Derlatka, W. Lacki and K. Lachs

#### **CC.3.4 A Multiscale Optimization Framework for Enhanced Warpage Control in Ceramic Substrates**

Y. Hwang, H. Jeong, D. Kim, J. Bae and G. Noh

#### **CC.3.5 Experimental and Numerical Investigation on the Mechanical Behavior of 3D Star-Shaped Auxetic Structure**

L. Meng, Y. Hou and W. Han

#### **CC.3.6 A Novel Design and Optimization Scheme for Components with Heterogeneous Lattice Infill**

F. De Canio, P. Trovalusci and M. Pingaro

#### **CC.3.7 Topology Optimization of Thermo-Elastic Cyclic-Symmetric Structures Considering Mean Stress Constraints**

Z. Li, C. Zhang, C. Ma, T. Gao, L. Meng and W. Zhang

#### **CC.3.8 Experimental Investigation on Lateral Vibration Control of a Small-Scale Three-Story Frame Using Locally Resonant Metamaterials**

Y. Choi, J. Choi and H.S. Park

## **Day 3: Friday, 29th August 2025: AM, Room 2**

**11:15-13:00**

Chaired by: Prof. Francisco J. Montans and Johannes Gebert

### **AI-Based Topology Optimization and Metamaterials in Structural Design**

organized by: Dr. Ismael Ben-Yelun, Lucía López-De-Abajo, Dr. Alberto Badías, Miguel Ángel Sanz-Gómez, José María Benítez, Prof. Francisco J. Montans

**AI.5.1** HiCon-FEM: A Hierarchical Condensation Framework for Accelerated Topology Optimization  
V. Yanes, N.-H. Kim and F.J. Montans

**AI.5.2** Forward and Inverse Topology Optimization via Deep Rank-Reduction Autoencoders  
I. Ben-Yelun, M. El-Fallaki Idrissi, J. Mounayer, S. Rodríguez, F.J. Montans and F. Chinesta

### **Neural Networks in Engineering Applications**

**AI.1.1** Digital Twin of the Reinforced Concrete Slab Based on the Artificial Neural Network  
P. Lacki, A. Derlatka, J. Niemiro-Maźniak and M. Lacki

**AI.1.2** Conceptualizing an AI-based Effective Stiffness Analysis of Human Trabecular Bone  
J. Gebert, F. Pelzer and M.M. Resch

**AI.1.3** Deep Learning Methods for the Analysis of Townscapes  
S. Balestra, O. Hänni, M.-A. Iten, M. Blöchliger, S. Bühler-Krebs and R.-P. Mundani

**AI.1.4** Enhancing Information Flow in Graph Neural Networks for Scientific Machine Learning  
M. Chenaud, J. Alves and F. Magoulès

**AI.1.5** A Physics-Informed Neural Network Approach to Estimating the Coefficient of Consolidation in Geotechnical Engineering  
S. Pramanik and J. Inoue

## List of participants

Dr.	Asmaa	ALAZMI
	Asmaa	ALROKHAYES
Dr.	Pedro	ANTUNES
Dr.	Josep	ARNAL
Mr.	Stefano	BALESTRA
Dr.	Ismael	BEN-YELUN
Dr.	Bartłomiej	BLACHOWSKI
Prof.	Jan	BLACHUT
Prof.	Nicola	BOSSO
Prof.	Pierfrancesco	CACCIOLA
Mr.	Giacomo	CAREDDA
	Mahnoosh	CHAABI
Ms.	Yoojin	CHANG
Mr.	Marien	CHENAUD
Mr.	Seongwoo	CHEON
	Carrie A.	CHRISTENSEN
Mr.	Sanghyun	CHO
Dr.	Jeong-Rae	CHO
Ms.	Yejin	CHOI
Mr.	Josep	CHORDÀ-MONSONÍS
Mr.	Seung Tae	CHUN
Prof.	Ileana	CORBI
Prof.	Ottavia	CORBI
Dr.	Fabio	CREDALI
Prof.	Raffaele	CUCUZZA
Dr.	Sławomir	CZARNECKI
Prof.	Fabio	DE ANGELIS
Mr.	Francesco	DE CANIO
Prof.	Ralf	DEITERDING
Dr.	Zuzana	DIMITROVOVA
	Ghita	ESLAMI VARZANEH
Mr.	Gonçalo	FERREIRA
Dr.	Cyril	FISCHER
Mr.	Thibault	FOUQUE
Prof.	Lucia	GASTALDI
Mr.	Johannes	GEBERT
Mr.	Hendrik	GEISLER
Mr.	Peter	GRUBITS
Dr.	Muayad	HABASHNEH
Dr.	Flóra	HAJDU
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