

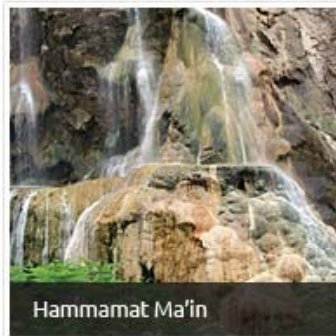
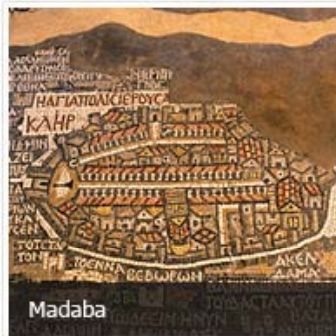
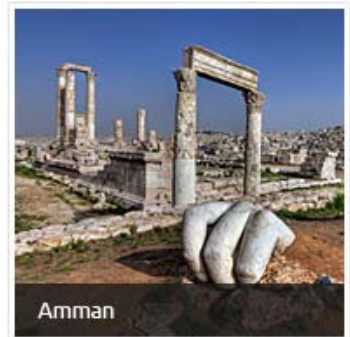
OPTARC-2019

1st International Conference on Optimization - Driven Architectural Design

November 5th – 7th, 2019, Amman, Jordan



PROGRAMME



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1st International Conference on Optimization - Driven Architectural Design

November 5th – 7th, 2019, Amman, Jordan

MONDAY 4.11.2019

18:00 20:00	Registration	Diamond Ballroom (B2 Floor)
21:00	Welcome reception/registration stage with cocktail and sweet	Diamond Ballroom (B2 Floor)

MONDAY 4.11

TUESDAY 5.11.2019

08:00 09:30	Registration	Rubi (B1 Floor)
09:30 10:00	Opening Ceremony	Diamond Ballroom (B2 Floor)

TUESDAY 5.11

10:00 10:30	Plenary Lectures	
Section Chairs: <i>K. Abdalla, M.C. Phocas</i>		Diamond Ballroom (B2 Floor)
10:00 10:30	Linear Programming in the Analysis and Design of Structures <i>V. K. Koumousis</i>	



Coffee break/ Networking (10:30 – 11:00)

TUESDAY 5.11.2019
TUESDAY 5.11
11:00 12:30
Oral Presentations and Panel Discussions
Mini-Symposium (MS): Bioclimatic Building Design Improvement Through Performance Optimization
Section Chairs: A. Kouvela, S. Inetzi
**Fayrouz
(B1 Floor)**
11:00 Bioclimatic building design theory and application
11:30 A. Couvelas (Keynote)
11:30 Motion sequence optimization of a planar structure
11:45 M. Matheou, I. Chamseddine, M Kokkolaras, M. C. Phocas
11:45 Design optimization to enhance passive energy strategies. The KNOW HOWse project for Solar Decathlon Middle East 2018
12:00 V. Belpoliti, M. Calzolari, P. Davoli, H. Altan, R. Nassif
12:00 Comportment of wind flow of funnels incorporated in the “House of the Winds” designed by Agnes Couvelas
12:15 S. Inetzi
12:15 Optimization of a sail-shaped façade structure of a multi-storey office building
12:30 F. Maden, E. Yıldırım, D. Ölmez, A. Couvelas
Structural Optimization I
Section Chairs: K.D. Tsavdaridis, R. Al-Rousan
**Yakut
(B1 Floor)**
11:00 Control of vibrations of common pedestrian bridges in Jordan with tuned mass dampers
11:30 M. Alhassan, R. Al-Rousan, S. Al-Khasawneh (Keynote)
11:30 Method for designing optimal usable structures of computer system for its emergency reconfiguration
11:45 S. Rozmus, A. W. Kozina
11:45 Multi-axis 3D printing of material reduced shell structures on reconfigurable supporting system using topology optimization principles
12:00 O. Kontovourkis, M. C. Phocas, G. Tryfonos, C. Georgiou
12:00 Carbon nanotubes dosage optimization for strength enhancement of cementitious composites
12:15 M. R. Irshidat, Nasser Al-Nuaimi, Soheb Salim, Mohamed Rabie
12:15 Optimum configuration of CFRP composites for strengthening of reinforced concrete beams considering the contact constraint
12:30 L. K. Amaireh, A. Al-Tamimi

TUESDAY 5.11.2019

Sustainability Design I

Section Chairs: *M. Sandberg, F. Maden*

Diamond
Ballroom
(B2 Floor)

TUESDAY 5.11

11:00 11:30	Sustainability life-cycle evaluation of timber dwellings in north of Sweden based on environmental impact and optimization of energy and cost <i>J. Mukkavaara, M. Sandberg, K. Sandberg, A. Pousette, J. Norén (Keynote)</i>
11:30 11:45	Towards sustainable building design: the impact of architectural design features on cooling energy consumption and cost in saudi arabia <i>A. Al-Saggaf, M. Taha, T. Hegazy, H. Ahmed</i>
11:45 12:00	Design and creation of an energy efficient prefabricated housing unit based on specific taxonomy and optimization techniques <i>A. G. Michael, A. L. Savvides, A. F. Triantafyllidou, C. G. Vassiliades</i>
12:00 12:15	Assessment of daylight performance and impact of shading devices for typical in-patient rooms in healthcare facilities in Cyprus <i>M. Englezou, A. G. Michael</i>
12:15 12:30	Optimization based feasibility study for filler slabs as a response towards the ECBC roof compliance with respect to thermal transmittance <i>R. R. Acharya, P. Kishore, M. Raghuprem, P. G. Kini, S. Shetty, A. Raj</i>



Lunch break / Networking (12:30 – 14:00)

14:00 15:30

Oral Presentations and Panel Discussions

Structural Optimization II

Section Chairs: *Ch. J. Gantes, Y. Al-Smadi*

Yakut
(B1 Floor)

14:00 14:30	Resonance investigation and its effects on weight optimization of tubular steel wind turbine towers <i>K. G. Koulatsou, G. Kazakis, Ch. J. Gantes, N. D. Lagaros (Keynote)</i>
14:30 14:45	Weight and material optimization of scissor-hinge structures according to the various span lengths <i>Y. Akgün, F. Maden, E. Yildirim</i>
14:45 15:00	Some structural design issues on a timber bridge for pedestrians <i>M. A. Liuzzi, A. Fiore, R. Greco</i>
15:00 15:15	Thinking outside the box: small diameter sheaves replacing big sheave for vertical lift bridge <i>Y. M. Al-Smadi</i>
15:15 15:30	Parametric investigation for the improvement of the overall sustainable performance of an innovative masonry wall system <i>A. Kyriakidis, R. Illampas, A. Michael</i>

TUESDAY 5.11.2019
TUESDAY 5.11
Sustainability Design II
Section Chairs: F. Maden, A. Couvelas
**Diamond
Ballroom
(B2 Floor)**

14:00 14:30	Multi criteria evaluation for sustainable urban growth in an-nuayyimah, jordan; post war study <i>A. A. Gharaibeh, A. H. Shaamal, M. H. Ali (Keynote)</i>
14:30 11:45	The impact of installing a concave curved profile blind to a glass window on visual comfort in office buildings <i>E. F. Triantafyllidou, A. G. Michael</i>
14:45 15:00	The framework for assessing similarity measures impact on classification confidence based on probabilistic record linkage model <i>M. Mazurek, K. Mierzejewski</i>
15:00 15:15	Biomedical sensors and IoT platform utilisation for neurological applications and health event recognitions <i>M. Chmielewski, S. Sławińska, F. Głowacki, P. Witowski</i>
15:15 15:30	Optimization based feasibility analysis for energy conservation building code (ECBC) compliance of opaque wall assemblies in different climatic zones of India <i>P. Kishore, P. G. Kini, A. Raj</i>


Coffee break/ Networking (15:30 – 16:00)
16:00 17:30
Oral Presentations and Panel Discussions
Sustainability Design III
Section Chairs: A. Gharaibeh, A. Couvelas
**Diamond
Ballroom
(B2 Floor)**

16:00 16:15	A modified semi-probabilistic approach for the assessment of the residual service life of concrete structures subjected to carbonation <i>Z. A. Ebrahim, Y. A. Abdel-jawad</i>
16:15 16:30	Dynamic façade design based on visual comfort and daylight performance optimization <i>M. Uncu, F. Maden, D. Ölmez</i>
16:30 16:45	Optimization of public spaces through network potentials of communities <i>M. Androulaki, E. Frangedaki, P. Antoniadis</i>
16:45 17:00	Optimization practice of water resources for the needs of the local communities in mainland Greece (case study of Karies Peloponnese) <i>G.-F. Sargentis, P. Dimitriadis, R. Ioannidis, T. Iliopoulou, E. Frangedaki, D. Koutsoyiannis</i>

TUESDAY 5.11.2019

Structural Optimization III Section Chairs: <i>M. Issa, N. Kallioras</i>		Yakut (B1 Floor)
16:00 16:30	A review on optimal design of large-scale suspended-dome using meta heuristic method <i>M. Rezaei, M. Issa (Keynote)</i>	TUESDAY 5.11
16:30 16:45	Structural optimization of elastic circular arches and design criteria <i>F. Trentadue, A. Fiore, R. Greco, G. C. Marano, G. De Marco, B. Briseghella, N. D. Lagaros</i>	
16:45 17:00	Structural Optimization Computing Platform (SOCP) and SCIA Software <i>Ch.Ch. Mitropoulou, G. Kazakis, S. Sotiropoulos, N.D. Lagaros, N. Ath. Kallioras</i>	
17:00 17:15	DzAI N: Deep learning based generative design <i>N. Ath. Kallioras, N. D. Lagaros</i>	
17:15 17:30	The optimum reinforced concrete deck stiffness of cable-stayed bridge decks <i>A. A. Alkhaldeh, R. Z. Al-Rousan</i>	
17:30 17:45	On the performance of differential evolution variants in constrained structural optimization <i>M. Georgioudakis, V. Plevris</i>	

WEDNESDAY 6.11.2019

09:30 10:30		Plenary Lectures
Section Chairs: <i>G.C. Marano, N.D. Lagaros</i>		Diamond Ballroom (B2 Floor)
09:30 10:00	Dome Space Frames Optimization Using three Meta-Heuristic Algorithms <i>M. Issa, M. Rezaei</i>	WEDNESDAY 6.11
10:00 10:30	Dynamic response of RC bridge span subjected to blast wave shock <i>Y. M. Al-Smadi</i>	



Coffee break/ Networking (10:30 – 11:00)

WEDNESDAY 6.11.2019
WEDNESDAY 6.11
11:00 12:30
Oral Presentations and Panel Discussions
BIM Workshop: Towards Effective BIM Adoption and Digital Transformation; Potential, Challenges and the way forward
Section Chairs: *Issam El-Absi*
Diamond Ballroom (B2 Floor)
**11:00
12:30**
BIM Workshop by CCC:
Towards effective BIM adoption and digital transformation; potential, challenges and the way forward II
Antisesmic Design II
Section Chairs: *M. Alhassan, R. Al-Rousan*
Yakut (B1 Floor)
**11:00
11:30**
Shape optimization of assembled single-layer grid structure with semi-rigid joints
F. LIU, K. D. Tsavdaridis (Keynote)
**11:30
12:00**
Integrating Model Simulations and Smart Sensing for the Coupled Transport-Degradation Behavior of Reinforced Concrete Structures
A. N. Ababneh, H. Hamidane, Y. Wang, M. Abdelrahman, Y. Xi (Keynote)
**12:00
12:15**
Optimal design criteria for seismic retrofitting of RC columns with steel jacketing technique
M. Malavisi, F. Di Trapani, G. C. Marano, A. Fiore, R. Greco
**12:15
12:30**
Optimizing the impact of detergents contamination on the geotechnical properties of soils
A. A. Sharo, B. H. Daradkabh

WEDNESDAY 6.11.2019

Applications I Section Chairs: <i>T. Nowicki, A. Rhiat</i>		Fayrouz (B1 Floor)
11:00 11:30	Modeling and characteristics investigation of warehouse business processes in a clothes clean & rental company <i>T. Nowicki, R. Waszkowski (Keynote)</i>	
11:30 11:45	Combining mobile robotics and packing for optimal deliveries <i>A. Aggoun, A. Rhiat, R. Lachere</i>	
11:45 12:00	Optimization of deployment architecture in SOA systems <i>A. P. Woźniak</i>	
12:00 12:15	Efficiency investigation and optimization of contract management business processes in a workwear rental and laundry service company <i>R. Waszkowski, T. Nowicki</i>	
12:15 12:30	Fixed charge minimum cost network flow approach to optimize product assembly <i>S. Burggraeve, P. Lietaert, J. Goos, A. Rosich</i>	

WEDNESDAY 6.11



Lunch break / Networking (12:30 – 14:00)

14:00	15:30	Oral Presentations and Panel Discussions
Arches Design Section Chairs: <i>G. Marano, R. Greco</i>		Diamond Ballroom (B2 Floor)
14:00 14:30	Optimal pre-stressed arches shapes with variable section subject to vertical live loads and self-weight <i>V. Debiagi, B. Chiaia, G. C. Marano, A. Fiore, R. Greco, L. Sardone, R. Cucuzza, G.L. Cascella, M. Spinelli, N.D. Lagaros (Keynote)</i>	
14:30 14:45	A case study on the selection of optimum loop units for the deployable arc structures exposed to lateral and non-uniform gravity loads <i>K. Yüçetürk, E. Aktaş, F. Maden, Ş. Gur, Ch. Ch Mitropoulou</i>	
14:45 15:00	Volume optimization of perfectly-constrained arches <i>F. Trentadue, G. C. Marano, A. Fiore, R. Greco, G.L. Cascella, M. Spinelli, N. D. Lagaros</i>	
15:00 15:15	Optimal circular arch shapes under multiple load conditions <i>L. Sardone, F. Trentadue, A. Fiore, R. Greco, R. Cucuzza, G.L. Cascella, M. Spinelli, N. D. Lagaros</i>	
15:15 15:30	Semi-analytical solution of in-plane vibrations of circular arches <i>A. Babahammou, R. Benamar</i>	

WEDNESDAY 6.11.2019

WEDNESDAY 6.11

Antisesmic Design I

Section Chairs: *A. Athanatopoulou, M. Alhassan*

**Yakut
(B1 Floor)**

14:00 14:30	Parametric analyses for the evaluation of soil-structure interaction effects on eigenfrequencies and damping ratios <i>V. G. Terzi, A. Athanatopoulou (Keynote)</i>
14:30 15:00	Optimizing the use of formalin aqueous by using disposed formalin aqueous to improve properties of expansive soil <i>A. A. Sharo, M. O. Taamneh (Keynote)</i>
15:00 15:30	Analysis and design and optimization using ScadaPro <i>A. Bagourdi-Degkleri, K. Abdalla, K. Abdalla (Keynote)</i>

Applications II

Section Chairs: *M. Chmielewski, N. Kallioras*

**Fayrouz
(B1 Floor)**

14:00 14:15	Methods and analytical tools for assessing tactical situation in military operations using potential approach and sensor data fusion <i>M. Chmielewski, M. Kukielka, P. Pieczonka, T. Gutowski (Keynote)</i>
14:15 14:30	Risk based approach in scope of cyber security threats and requirements <i>J. Napiórkowski, J. Stanik, T. Protasowicki, R. Hoffman</i>
14:30 14:45	Analytical tools for evaluation pharmaceutical treatment of neurological diseases – a case study <i>M. Chmielewski, M. Kukielka, P. Pieczonka, T. Gutowski</i>
14:45 15:00	The importance of the integrated security system for critical infrastructure operation and safety <i>T. Protasowicki, J. Stanik, J. Napiórkowski, R. Hoffmann</i>
15:00 15:15	Diagrid systems coupled with closed- and open-section shear walls: Optimization of geometrical characteristics in tall buildings <i>G. Lacidogna, G. Nitti, D. Scaramozzino, A. Carpinteri</i>
15:15 15:30	Architectural and Structural Optimization Research of Structural Forms Topologically Transformed <i>A. Nowak</i>



Coffee break/ Networking (15:30 – 16:00)



Conference Banquet (20:00 – 24:00)

Thursday 7.11.2019

Coffee break/ Networking (10:30 – 11:00)
Thursday 7.11
11:00 12:30 | Oral Presentations and Panel Discussions
Topology Optimization I
Section Chairs: *R. Estevez, D.C. Charmpis*
**Diamond
Ballroom
(B2 Floor)**

11:00 11:30	Topology optimization in acoustics and elasto-acoustics via a level-set method <i>R. Estevez, J. Desai, A. Faure, G. Michailidis (Keynote)</i>
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11:30 12:00	Coupling shear walls with connecting beams: an investigation based on topology optimization <i>D. C. Charmpis (Keynote)</i>
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12:00 12:15	Evaluation of optimal lateral resisting systems for tall buildings subject to horizontal loads <i>G. Angelucci, O. AlShawa, F. Mollaioli</i>
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12:15 12:30	DL-Scale: Deep learning for model upgrading in topology optimization <i>N. Ath. Kallioras, N. D. Lagaros</i>
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Architectural Design I
Section Chairs: *V. Belpoliti, E. Frangedaki*
**Yakut
(B1 Floor)**

11:00 11:30	Software architecture optimization of mobile biomedical sensor-based tools providing analytical services for disease diagnostics and assistance <i>M. Chmielewski, M. Kukielka, P. Pieczonka, T. Gutowski (Keynote)</i>
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11:30 11:45	Adaptable emergency shelter: a case study in generative design and additive manufacturing in mass customization era <i>S. Salta, N. Papavasileiou, K. Pylotis, M. Katsaros</i>
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11:45 12:00	Forms follows brain functions: a computational mapping approach <i>M. Christofi, M. Katsaros</i>
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12:00 12:30	Transformable building envelope design in architectural education <i>M. Matheou, A. Couvelas, M. C. Phocas (Keynote)</i>
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Thursday 7.11.2019

Machine Learning Section Chairs: <i>Z. Tarapata, M. Alhassan</i>		Fayrouz (B1 Floor)
11:00 11:30	Data-driven machine learning system for optimization of processes supporting the distribution of goods and services – a case study <i>Z. Tarapata, T. Nowicki, R. Antkiewicz, J. Dudziński, K. Janik (Keynote)</i>	Thursday 7.11
11:30 11:45	Optimization of bus stops locations using GIS techniques and artificial intelligence <i>N. Shatnawi, A. A. Al-Omari, H. Al-Qudah</i>	
11:45 12:00	A new model for predicting the transfer length of prestressing strands optimized using artificial neural networks <i>M. Alhassan, A. Ababneh, N. Betoush</i>	
12:00 12:15	Best of both worlds – using computational design and deep learning for real-time urban performance evaluation <i>T. Galanos, A. Chronis, O. Vesely, A. Aichinger, R. Koenig</i>	
12:15 12:30	Virtual reality-neural networks for reconstruction of devastated cities by earthquakes: lacustrine deposits in Mexico City <i>S. R. Garcia, P. A. Trejo, A. Garcia</i>	



Lunch break / Networking (12:30 – 14:00)

14:00 15:30		Oral Presentations and Panel Discussions
Topology Optimization II and Risk Management Section Chairs: <i>N. Kallioras, R. Al-Rousan</i>		Diamond Ballroom (B2 Floor)
14:00 14:15	Topology optimization of framed structures using SAP2000 <i>S. Sotiropoulos, N. D. Lagaros (Keynote)</i>	
14:15 14:30	High performance topology optimization computing platform <i>S. Sotiropoulos, N. D. Lagaros</i>	
14:30 14:45	Two-scale topology optimization using homogenization theory <i>K. Ipsiladis, G. Kazakis, N.D. Lagaros</i>	
14:45 15:00	Measurement models of information security based on the principles and practices for risk-based approach <i>J. Stanik, J. Napiórkowski, T. Protasowicki, R. Hoffmann</i>	
15:00 15:15	Models and methods for measurement of risk management system usability <i>R. Hoffmann, J. Stanik, T. Protasowicki, J. Napiórkowski</i>	
15:15 15:30	Mathematical models of information operations <i>R. Kasprzyk</i>	

Thursday 7.11.2019

Thursday 7.11

Architectural Design II

Section Chairs: *A. Fiore, E. Frangedaki*

Yakut
(B1 Floor)

14:00 14:15	Optimizing stages of restoration of Fujian Tulou through participatory design and collective practices <i>E. Frangedaki, X. Gao, N.D. Lagaros (Keynote)</i>
14:15 14:30	Optimal design criteria for form finding of double curved surfaces <i>C. Sulpizio, A. Fiore, I. Vanzi, B. Briseghella (Keynote)</i>
14:30 14:45	Computer-aided approach to public buildings floor plan generation. Generator. <i>E. Gavrilov, M. Dennemark, S. Schneider, R. Koenig</i>
14:45 15:00	Typology-based generation of multi-family-residential buildings <i>I. Osintseva, A. Berst, M. Bielik, R. Koenig, S. Schneider</i>
15:00 15:15	Optimization of daylighting and energy performance in hot - arid climate <i>J. Awad, L. Abd-Rabo</i>
15:15 15:30	Shaping the microclimate. CFD-assisted design optimization to enhance the outdoor comfort of a recreational complex in the UAE <i>V. Belpoliti, H. Altan, H. Asebai, O. Melahfci (Keynote)</i>

Sustainability Design IV

Section Chairs: *F.A. Abdulla, R. Hatamleh*

Fayrouz
(B1 Floor)

14:00 14:15	Energy Conservation Building Code (ECBC) based optimum wall with respect to Thermal transmittance and thickness composition for different commercial pockets of tier 1 city in temperate climatic zone of India <i>S. Shetty, P. Kishore, P. Kini, R. R. Acharya, A. Raj</i>
14:15 14:30	Genetic algorithm for embodied energy optimization of steel-concrete composite beams <i>A.H. Whitworth, K.D. Tsavdaridis</i>
14:30 14:45	Enhancement of the mechanical properties of kaolin geopolymer using sodium hydroxide and calcium oxide <i>F. Matalkah, R. Aqel, A. Ababneh</i>
14:45 15:00	Water Resources Management in Amman/Zarqa Basin (Al-Corridor Well Field) <i>R. Hatamleh, M. Shawaqfah, I. Alqadah, A. Adaileh</i>
15:00 15:15	Rainfall-Runoff modeling for Semi-arid and trans-boundary Yarmouk River Basin <i>F. A. Abdull, A. W. Al-Shurafat</i>
15:15 15:30	Assessment of the impact of potential climate change on the surface water of a trans-boundary basin: case study Yarmouk River <i>F. A. Abdulla, A. W. Al-Shurafat</i>

Thursday 7.11.2019



Coffee break/ Networking (15:30 – 16:00)

Closing Discussion

Section Chairs: *K. Abdalla, M.C. Phocas, G.C. Marano*

**Diamond
Ballroom
(B2 Floor)**

**16:00
17:30**

Closing Discussion

Thursday 7.11