Wednesday, July 6, 2022

08.30	**EG-ICE 2022 Opening Ceremony** **EG-ICE 2021 Awardee presentation** **(Mathias Artus, Bauhaus-University Weimar: IFC based Framework for Generating, Modeling and Visualizing Spalling Defect Geometries)**

Session 1
Session Chair: Ian Smith

09.30	33	**End-to-end GRU Model for Construction Crew Management** Song, Z., Florez-Perez, L.
	57	**Automating the Estimation of Productivity Metrics for Construction Workers Using Deep Learning and Kinematics** Jacobsen E. L., Teizer J.
	49	**Self-supervised Learning Approach for Excavator Activity Recognition Using Contrastive Video Representation** Ghelmani A., Hammad A.

10.30	**Networking Break**

Session 2
Session Chair: Iva Kovacic

11.00	56	**BIM-based Fall Hazard Ontology and Benchmark Model for Comparison of Automated Prevention through Design Approaches in Construction Safety** Johansen K.W., Schultz C., Teizer J.
	55	**BIM Standards and Classification Systems in Data Validation** Jensen F., Gade P.
	46	**SFS-A68: a Dataset for the Segmentation of Space Functions in Apartment Buildings** Ziaee A., Suter G.

12.00	**Keynote 1 - Engineering education challenges: Learning to solve real-world problems by working interdisciplinary, remotely, and with the latest technology** Mario Wolf and Bianca Wolf

12.45	**Lunch break**

Session 3

Session Chair: Laura Florez-Perez

13.30	44	**Integration of Wave-Based Non-Destructive Survey Results into BIM Models** Artus M., Schickert M., Lai J., Koch C.
	31	**Optimizing IFC-structured Data Graph for Code Compliance Checking** Schatz Y., Domer B.
	20	**Enabling Federated Interoperable Issue Management in a Building and Construction Sector** Oraskari J., Schulz O., Werbrouck J., Beetz J.

Session 4

Session Chair: Rafael Sacks

14.30	22	**Integrated Data-driven and Knowledge-based Performance Evaluation for Machine Assistance in Building Design Decision Support** Chen X., Saluz U., Staudt J., Margesin M., Lang W., Geyer P.
	8	**Requirements for Event-driven Architectures for Open BIM Collaboration** Esser, S., Abualdenien, J., Vilgertshofer, S., Borrmann, A.
	3	**Development of an Ontology for the Representation of Firefighters' Data Requirements during Building Fire Emergencies** Guyo E., Hartmann T.

15.30	**Networking Break**

Session 5

Session Chair: Pieter de Wilde

16.00	35	**Linking Early Design Stages with Physical Simulations using Machine Learning; Structural Analysis Feedback of Architectural Design Sketches** Rasoulzadeh S., Senk V., Kovacic I., Reisinger J., Füssl J., Hensel M.
	40	**Reconstruction of Wind Turbine Blade Geometry and Shape Matching of Airfoil Profiles to Point Clouds** Bermek M., Gentry R.
	32	**Cross Domain Matching for Semantic Point Cloud Segmentation based on Convolutional Neural Networks** Martens J., Blut T., Blankenbach J.

Session 6

Session Chair: Farzad Rahimian

17.00	43	**A Framework for Virtual Prototyping-Based Design of Operator Support System for Construction Equipment** Vahdatikhaki F., Makarov D., Miller S., Doree A.
	41*	**Nonintrusive Behavioral Sensing and Analytics for Supporting Human-Centered Building Energy Efficiency** Huang K., Liu K.
	52*	**Evaluating the Performance of Deep Learning in Segmenting Google Street View Imagery for Transportation Infrastructure Condition Assessment** Wei Y., Liu K.

Thursday, July 7, 2022

Session 7

Session Chair: Peter G. Larsen

08.30	5*	**Modeling and Validating Temporal Rules with Semantic Petri-Net for Digital Twins**
		Liu H., Song X., Gao G., Zhang H., Liu Y., Gu M.
	27*	**A Digital Twin-driven Deformation Monitoring System for Deep Foundation Pit Excavation**
		Chen K., Liu Y., Hu R., Fang W.
	30*	**An Efficient and Resilient Digital-twin Communication Framework for Smart Bridge Structural Survey and Maintenance**
		Gao Y., Li H., Xiong G.

Session 8

Session Chair: André Bormann

09.30	4*	**MVDLite: a Fast Validation Algorithm for Model View Definition Rules**
		Liu H., Gao G., Zhang H., Liu Y., Song Y., Gu M.
	13*	**Semantic Segmentation of Building Point Clouds based on Point Transformer and IFC**
		Wei S., Gao G., Ke Z., Fan G., Liu Y., Gu M.
	15*	**A Redundancy-free IFC Storage Platform For Multi-model Scenarios based on Block Hash**
		Li S., Gao G., Wang W., Liu H., Zhu S., Gu M.

10.30	**Networking Break**

Session 9

Session Chair: Georg Suter

11.00	6	**A Comprehensive Data Schema for Digital Twin Construction**
		Schlenger J., Yeung T., Vilgertshofer S., Martinez J., Sacks R., Borrmann A.
	38	**The Role of Simulation in Digital Twin Construction**
		Yeung T., Martinez J., Sharoni L., Sacks R.
	42	**Platology: A Digital Twin Ontology Suite for the Complete Lifecycle of Infrastructure**
		Khan R., Tomar R., Hartmann T., Ungureanu L., Chacón R., Ibrahim A.

12.00	**Keynote 2 - How Dependable is the Digital Twin?** John S. Fitzgerald and Peter Gorm Larsen

12.45	**Lunch break**

Session 10

		Session Chair: Amir Behzadan
13.30	61	**Automated Construction Payment Using Blockchain-Enabled Smart Contracts and Building Information Modelling** Matarneh S., Elghaish F., Rahimian, F. P., Dawood N.
	34	**Computation of Ranges in Interval-based Constraint-Geometry of Building Models** Kirchner, J.
	37	**Factors Contributing to Measurement Uncertainty of HVAC-enabled Demand Flexibility in Grid-interactive Commercial Buildings** Vindel E., Akinci B., Bergés M., Kavvada O., Gavan V.

Session 11

		Session Chair: Christian Koch
14.30	23	**Analyzing Operation Logs of Nuclear Power Plants for Safety and Efficiency Diagnosis of Real-Time Operations** Xing J., Liu P., Tang P., Yilmaz A., Boring R., Gibson Jr G.
	26	**Reinforcement Learning for Active Monitoring of Moving Equipment in 360-Degree Videos** Nath N.D., Cheng C., Behzadan A.H.
	28	**Design and validation of a mobile structural health monitoring system based on legged robots** Smarsly K., Worm M., and Dragos K.

15.30	**Networking Break**

16.00	**EG-ICE General Assembly (1 hour)**

18.30	**Gala Dinner (starts as scheduled)**

Friday, July 8, 2022

Session 12

Session Chair: Jochen Teizer

08.30	[17*](#)	**Real-Time Noise Sensing at Construction Sites based on Spatial Interpolation for Effective Reduction Measures** Lee G., Moon S., Hwang J., Chi S., Rim D.
	[36*](#)	**Automated Qualitative Rule Extraction based on Bidirectional Long Short-Term Memory Model** Zhu X., Li H., Xiong G., Song H.
	[47*](#)	**A Multi-Scenario Crowd Data Synthesis Based On Building Information Modeling** Huang H., Gao G., Ke Z., Peng C., Gu M.

Session 13

Session Chair: Carl P.L. Schultz

09.30	[48*](#)	**New Ways of Data Governance for Construction? Decentralized Data Marketplaces as Web3 Concept just around the Corner** Bucher D. F., Hall D. M.
	[50*](#)	**Design and Development of Heritage Building Information Model (HBIM) Database to Support Maintenance** Chen W., Yuan J., Luo H.
	[54](#)	**Fake it till you make it: Training Deep Neural Networks for Worker Detection using Synthetic Data** Tohidifar A., Saffari S. F., Kim D.

10.30	**Networking Break**

Session 14

Session Chair: Emil L. Jacobsen

11.00	[21](#)	**IM2DR: Incentive Based Multi-tier and Multi-agent Approach for Demand Response in Electricity Market with Reinforcement Learning** Abbasloo A., Valenzuela G., Gebhardt G.H.W., Tomar R., Piesk J.
	[51](#)	**Point Cloud-Based Concrete Surface Defect Semantic Segmentation Using Modified PointNet++** Bolourian N., Hammad A., Ghelmani A.
	[11](#)	**Uncertainty and Sensitivity Analysis of Building Integrated Photovoltaics** Chen, L., Tian, W., de Wilde, P., Zhang, H.

11:50	**Awards and Closing Ceremony**

12.00	**Lunch break**

12.30	**Friday Afternoon Beer**