TMCE 2018

Preliminary program

Technical presentations

Track A: Engineering of systems
Session: Implementation of cyber-physical systems – ICP(5)
Tuesday, 8th May, 2018, 14.00 p.m. - 16.00 p.m. - Room: B21

14.00 p.m. - 14.20 p.m. **40**
A virtual reality based cyber physical framework for micro devices assembly
Joe Cecil (US), Sadiq Albuhamood (US)

14.20 p.m. - 14.40 p.m. **57**
Towards validation of smart cyber-physical systems
Joze Tavcar (SI), Jože Duhovnik (SI), Imre Horváth (NL)

14.40 p.m. - 15.00 p.m. **36**
Trustworthiness in designing cyber-physical systems
Yan Wang (US)

15.00 p.m. - 15.20 p.m. **30**
Components and interactions: Paving the way to model socio-cyber-physical systems
Stefano Borgo (IT), Emilio Sanfilippo (IT)

15.20 p.m. - 15.40 p.m. **52**
Advancing smart factories with synced factory twins approach: Representation and scenarios for synchronized digital and real factories
Josip Stjepandic (DE), Timo Wekerle (DE), Alain Pfouga (DE)

15.40 p.m. - 16.00 p.m. **General discussion**

Track B: Support for engineering
Session: Assembly, disassembly and generations – ADG(5)
Tuesday, 8th May, 2018, 14.00 p.m. - 16.00 p.m. - Room: B22

14.00 p.m. - 14.20 p.m. **08**
Registration of shapes for mechanical sssembly
Hariharan Krishnamurthy (IN), Dibakar Sen (IN)

14.20 p.m. - 14.40 p.m. **44**
A CAD assembly management model: Relationship matrix generation and influence coefficient calculation
Ameni Eltaief (FR), Borhen Louhichi (FR), Sébastien Remy (FR), Benoit Eynard (FR)

14.40 p.m. - 15.00 p.m. **20**
Towards the integration of dissassembly technological relationships for sustainable product enhancement
Elise Gruhier (FR), Robin Kromer (FR), Nicolas Perry (FR)

15.00 p.m. - 15.20 p.m. **27**
Decision heuristics in PGE – Product generation engineering
Nikola Bursac (DE), Narucha Tanaiutchawoot (DE), Simon Rapp (DE), Albert Albers (DE), Jan Breitschuh (DE), Claudia Eckert (DE)

15.20 p.m. - 15.40 p.m. **33**
Pitch 2.0 – Concept of early evaluation of product profiles in product generation engineering
Thilo Richter (DE), Jonas Heimicke (DE), Nicolas Reiß (DE), Albert Albers (DE), Marius Gutzeit (DE), Benjamin Walter (DE), Nikola Bursac (DE)

15.40 p.m. - 16.00 p.m. **General discussion**

Track A: Engineering of systems
Session: Application of complex systems – ACS(5)
Tuesday, 8th May, 2018, 16.20 p.m. - 18.20 p.m. - Room: B21

16.20 p.m. - 16.40 p.m. **38**
The design of IOT based smart simulation environments for orthopedic surgical training
Joe Cecil (US), Avinash Gupta (US), Miguel Pirela-Cruz (US), Parmesh Ramanathan (US)

16.40 p.m. - 17.00 p.m. **80**
Constructing informative messages for informing cyber-physical systems based on dynamic context information processing
Yongzhe Li (NL), Imre Horváth (NL), Zoltán Rusák (NL)

17.00 p.m. - 17.20 p.m. **01**
Observation of intention, action and conduct by cyber-physical systems in home care context
Imre Horváth (NL)

17.20 p.m. - 17.40 p.m. **54**
Use of response surface methodology in modeling milling and geometric inspection of turbine blades - Cyber-physical manufacturing metrology model (CPM3)
Srdjan Živković (SR), Vidosav Majstorović (SR)

17.40 p.m. - 18.00 p.m. **17**
Manufacturing process selection integrated in the design process
Pedro Hernández-Castellano (ES), María Dolores Martínez-Rivero (ES), María Dolores Marrero-Alemán (ES), Luis Suárez-García (ES)

18.00 p.m. - 18.20 p.m. **General discussion**

Track B: Support for engineering
Session: Data driven design – DDD(5)
Tuesday, 8th May, 2018, 16.20 p.m. - 18.20 p.m. - Room: B22

16.20 p.m. - 16.40 p.m. **70**
BOLEPI: A machine learning framework for forecasting project outcomes
Thabo Daniel Mphuthi (SA), Duncan Coulter (SA)

16.40 p.m. - 17.00 p.m. **10**
An auditory dataset of passing vehicles recorded with a smartphone
Pavlo Bazilinskyy (NL), Arne van der Aa (NL), Michael Schoustra (NL), John Spruit (NL), Laurens Staats (NL), Klaas Jan van der Vlist (NL), Joost de Winter (NL)

17.00 p.m. - 17.20 p.m. **04**
What designers miss regarding the outputs of data analytics tools in the context of possible product improvements?
Fatima-Zahra Abou Eddahab (NL), Imre Horváth (NL)

17.20 p.m. - 17.40 p.m. **29**
Design with industry 4.0 - Priorization of sensor data for a smart data driven product development process
Tobias Stürmlinger (DE), Bartosz Gladysz (DE), Markus Strauch (DE), Albert Albers (DE)

17.40 p.m. - 18.00 p.m. **68**
Design intervention for productivity improvement in glass bangles manufacturing unit
Kiran Kumari Mahato (IN), Pratul Chandra Kalita (IN), Amarendra Kumar Das (IN)

18.00 p.m. - 18.20 p.m. **General discussion**

Track A: Engineering of systems
Session: Agent-enabled systems – AES(5)
Wednesday, 9th May, 2018, 14.00 p.m. - 16.00 p.m. - Room: B21

14.00 p.m. - 14.20 p.m. **51**
Revisiting the society of mind: Convolutional neural networks via multi-agent systems
Michelle Cullinan (SA), Duncan Coulter (SA)

14.20 p.m. - 14.40 p.m. **77**
Holonic agents for design and manufacturing integration in virtual digital cells
Alain-Jérôme Fougeres (FR), Egon Ostrosi (FR)

14.40 p.m. - 15.00 p.m. **58**
CESIMAS: A continual evaluative self-aware immune-inspired multi agent critical information infrastructure protection system model
Jan van Niekerk (SA), Elizabeth Ehlers (SA)

15.00 p.m. - 15.20 p.m. **59**
Holonic superposition intelligence of multi-agent systems
Gerard Gouws (SA), Elizabeth Ehlers SA)

15.20 p.m. - 15.40 p.m. **25**
A project management and project monitoring methodology for distributed product generation engineering
Benjamin Walter (DE), Katharina Dühr (DE), Albert Albers (DE), Nikola Bursac (DE)

15.40 p.m. - 16.00 p.m. **General discussion**

Track B: Support for engineering
Session: Methods, methodologies and tools - MMT(5)
Wednesday, 9th May, 2018, 14.00 p.m. - 16.00 p.m. - Room: B22

14.00 p.m. - 14.20 p.m. **24**
Emergent methods, methodologies, technologies and tools for design and engineering processes
Robert E. Wendrich (NL)

14.20 p.m. - 14.40 p.m. **72**
Evaluation of a method supporting the integration of packaging development into product development using an assessment framework for methodologies under development
Damien Motte (SE), Robert Bjärnemo (SE), Gunilla Jönson (SE)

14.40 p.m. - 15.00 p.m. **47**
Fresh food packaging: Should be the shape?
Lucía Rodríguez-Parada (ES), Pedro F. Mayuet Ares (ES), Rafael Bienvenido Bárcena (ES)

15.00 p.m. - 15.20 p.m. **76**
A generic function decomposition framework inspired by biology
Yuemin Hou (CN)

15.20 p.m. - 15.40 p.m. **22**
Towards human-induced failure assessment during early design
Salman Ahmed (US), H. Onan Demirel (US), Irem Tumer (US), Robert Stone (US)

15.40 p.m. - 16.00 p.m. **General discussion**

Track A: Engineering of systems
Session: Smart systems engineering – SSE(5)
Wednesday, 9th May, 2018, 16.20 p.m. - 18.20 p.m. - Room: B21

16.20 p.m. - 16.40 p.m. **05**
Adaptive supply chain systems - Conceptual framework using internet of things (IOT)
Yongsheng Ma (CA), Parthasarathi Ramakrishnan (CA)

16.40 p.m. - 17.00 p.m. **53**
Smart Systems Engineering (SMARTSE) – Uniformed approach for exchange of functional and behavior models for simulation using Functional Modelling Interface (FMI)
Josip Stjepandic (DE), Timo Wekerle (DE), Alain Pfouga (DE)

17.00 p.m. - 17.20 p.m. **49**
Next generation digital twin: How to bridge the gap between physics based design simulation and a digital delegate for all life cycle phases
Stefan Boschert (DE), Christoph Heinrich (DE), Roland Rosen (DE)

17.20 p.m. - 17.40 p.m. **71**
The evolution of computer assisted product design and manufacturing tools to smart systems for the factories of the future
Giampaolo Campana (IT), Barbara Cimatti (IT), Mattia Mele (IT)

17.40 p.m. - 18.00 p.m. **67**
Protecting distributed computer systems through an artificial immune system
Merrick Bengis (SA), Elizabeth Ehlers (SA)

18.00 p.m. - 18.20 p.m. **General discussion**

Track B: Support for engineering
Session: Additive manufacturing technologies – AMT(5)
Wednesday, 9th May, 2018, 16.20 p.m. - 18.20 p.m. - Room: B22

16.20 p.m. - 16.40 p.m. **19**
Discrete element method to study the powder-bed distribution and density in selective laser manufacturing
Robin Kromer (FR), Emilie Le Guen (FR), Corinne Arvieux (FR), Eric Lacoste (FR), Jean Marc Agullo (FR), Gaelle Vanard (FR), Simon Perusin (FR)

16.40 p.m. - 17.00 p.m. **28**
An optimization framework for additive manufacturing given topology optimization results
Anton Wiberg (SE), Johan Persson (SE), Johan Ölvander (SE)

17.00 p.m. - 17.20 p.m. **16**
Interactive training material about additive manufacturing technologies
Pedro Hernández-Castellano (ES), Alejandro Gutierrez-Barcenilla (ES), María Dolores Martínez-Rivero (ES), María Dolores Marrero-Alemán (ES), Rubén Paz-Hernández (ES), Luis Suárez-García (ES), Antonio Benítez-Vega (ES)

17.20 p.m. - 17.40 p.m. **56**
Simulation of early-ejected injection-moulded plastic parts with integrated FEA
Junyu Fu (CA), Yongsheng Ma (CA)

17.40 p.m. - 18.00 p.m. **15**
Development of thickness prediction strategy in incremental forming for improvement in part evaluation
Satwik Priyadarshi (IN), Saurabh Verma (IN), Puneet Tandon (IN)

18.00 p.m. - 18.20 p.m. **General discussion**

Track A: Engineering of systems
Session: Architecture, construction and urban-design – ACU(5)
Thursday, 10th May, 2018, 14.00 p.m. - 16.00 p.m. - Room: B21

14.00 p.m. - 14.20 p.m. **12**
NEOMORPH VR: A multi-user virtual reality conceptual design platform for architecture and urbanism using procedural game technologies
Claudiu Barsan-Pipu (NL)

14.20 p.m. - 14.40 p.m. **61**
A survey of different design rules-based techniques for facility layout problems
Mariem Besbes (FR), Roberta Costa Affonso (FR), Marc Zolghadri (FR), Faouzi Masmoudi (TU), Mohamed Haddar (TU)

14.40 p.m. - 15.00 p.m. **13**
Diagrid façade design for public pool building using differential evolution
Nezahat Puren Unlu (TR), Berk Ekici (TR), Ioannis Chatzikonstantinou (TR), Cemre Cubukcuoglu (NL), I. Sevil Sariyildiz (NL), M.Fatih Tasgetiren (TR)

15.00 p.m. - 15.20 p.m. **78**
Realisation and building of a blended enabler prototype web-based stimulator for construction engineering education
Garrett Keenaghan (IR), Imre Horváth (NL)

15.20 p.m. - 15.40 p.m. **50**
Eye movements while cycling in GTA V
Pavlo Bazilinskyy (NL), Philine Luik (NL), Stijn Klevering (NL), Assia Haddou (NL), Niels Heisterkamp (NL), Michiel Zult (NL), George Dialynas (NL), Dimitra Dodou (NL), Joost de Winter (NL)

15.40 p.m. - 16.00 p.m. **General discussion**

Track B: Support for engineering
Session: Modeling, design and analysis– MDA(5)
Thursday, 10th May, 2018, 14.00 p.m. - 16.00 p.m. - Room: B22

14.00 p.m. - 14.20 p.m. **66**
An image-based method to classify power lines in LIDAR point clouds
Sebastián Ortega (ES), Agustín Trujillo (ES), José Miguel Santana (ES), José Pablo Suárez (ES)

14.20 p.m. - 14.40 p.m. **73**
G-codes and free-form motions
Ben Cross (UK), Robert Cripps (UK), Glen Mullineux (UK)

14.40 p.m. - 15.00 p.m. **55**
Automated retrieval of arbitrary complex similar CAD-parts based on dimensionless invariants
Dennis Kaiser (DE), Stephan Rudolph (DE)

15.00 p.m. - 15.20 p.m. **75**
Tennis string-bed frequency
Rod Valentine (UK)

15.20 p.m. - 15.40 p.m. **42**
Development and implementation of behavioural modules for platform-based mechatronic design
Zuhal Erden (TR)

15.40 p.m. - 16.00 p.m. **General discussion**

Track A: Engineering of systems
Session: Socially responsible engineering – SRE(5)
Thursday, 10th May, 2018, 16.20 p.m. - 18.20 p.m. - Room: B21

16.20 p.m. - 16.40 p.m. **07**
The connected society calls for macro-engineering
Shuichi Fukuda (JP)

16.40 p.m. - 17.00 p.m. **35**
Product design for elderly: The need for a new design methodology
Lau Langeveld (NL)

17.00 p.m. - 17.20 p.m. **18**
Towards green e-commerce systems: A case-based interpretation of abstract prototyping
Els Du Bois (BE), Cedric Wery (BE), Paul Bailleul (BE)

17.20 p.m. - 17.40 p.m. **45**
Early detection of Alzheimer's disease using white matter and grey matter alterations in the wavelet domain
Shiwangi Mishra (IN), Pritee Khanna (IN)

17.40 p.m. - 18.00 p.m. **26**
Eye tracking study on successful micro-strategies by design engineers for the synthesis-driven analysis of technical systems
Sven Matthiesen (DE), Thomas Nelius (DE)

18.00 p.m. - 18.20 p.m. **General discussion**

Track B: Support for engineering
Session: Geometry and image processing – GIP(5)
Thursday, 10th May, 2018, 16.20 p.m. - 18.20 p.m. - Room: B22

16.20 p.m. - 16.40 p.m. **69**
Bijective parameterization-driven mesh segmentation
Daniel Mejia (CO), Oscar Ruiz-Salguero (CO), Carlos Cadavid (CO), Jairo R. Sánchez (CO), Jorge Posada (CO), Diego Acosta (CO)

16.40 p.m. - 17.00 p.m. **79**
Predicting haptic perception of textile texture and analysis between smooth-rough preferences through images
K.V. Rakhin (IN), Prasad S Onkar (IN)

17.00 p.m. - 17.20 p.m. **65**
Non-manifold modelling of lattice materials using kinematically constrained FEA
Diego Montoya-Zapata (CO), Oscar Ruiz-Salguero (CO), Juan Lalinde-Pulido (CO), Juan Pareja-Corcho (CO), Jorge Posada (CO)

17.20 p.m. - 17.40 p.m. **74**
Types of free-form motion
Ben Cross (UK), Robert Cripps (UK), Glen Mullineux (UK)

17.40 p.m. - 18.00 p.m. **43**
3D retrieval in huge CAD databases: New shape-based similarity calculation approach
Ahmed Fradi (FR), Borhen Louhichi (FR), Mohamed Mahjoub (FR), Benoit Eynard (FR)

18.00 p.m. - 18.20 p.m. **General discussion**

Track B: Support for engineering
Extra papers for publication – EPP(1)

60

Triply periodic helical structure of minimal surfaces produced by additive approach and its mechanical properties

Katarina Monkova (SK), Peter Monka (SK)