

33rd International DAAAM Symposium on Intelligent Manufacturing and Automation 2022

Vienna, Austria
27-28 October 2022

Editor:

B. Katalinic

ISBN: 978-1-7138-6557-5

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2022) by DAAAM Scriptorium GmbH
All rights reserved.

Printed with permission by Curran Associates, Inc. (2023)

For permission requests, please contact DAAAM International Vienna
at the address below.

DAAAM International Vienna
Bahnallee 10
A-2120 Wolkersdorf
Austria, EU

Phone: +436646424398

<http://www.daaam.info>

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

CONTENTS

CONTENTS	iii
AUTHOR INDEX	vii
COMMITTEES.....	xiv

Katalinic, B.: <i>Preface</i>	0001
Kostic, A.; Horman, I.; Timotic, V. & Kustura, M.: <i>Application of Linear Programming to Increase the Efficiency of Constructional Veneer Production</i>	0004
Kostic, A.; Horman, I.; Kustura, M. & Timotic, V.: <i>Site Selection for Industrial Wood Processing</i>	0012
Budic, H.; Horvat, D. & Ruzic, I.: <i>ICT in Education Development</i>	0017
Diek, D.; Stuja, K. & Aburaia, M.: <i>Design and Development of a Flexible, Cable-Controlled and Hyperredundant Robot with Strength-Adjustable Ball Joints</i>	0024
Pryanichnikov, V.; Ksenzenko, A. & Plotnikov, A.: <i>Development of the Intelligent Robotic Systems</i>	0029
Peterka, J.; Martinovic, J.; Wallyson, T. d. & Kolesnyk, V.: <i>Analysis of Physical Causes of Machined Surfaces in Selected Machining Methods</i>	0034
Topalova, I. & Staeva, Y.: <i>Classification of Two-dimensional Mechanical Parts Using a Convolutional Neural Network</i>	0042
Hadziahmetovic, H.; Blazevic, R.; Alispahic, M.; Sunulahpasic, R. & Midzic Kurtagic, S.: <i>Analysis of Parameters Influencing the Indoor Air Quality</i>	0050
Blazevic, R.; Hadziahmetovic, H.; Midzic Kurtagic, S. & Alispahic, M.: <i>Assessment and Analysis of Wind Energy Potential in the Mountain Area Around Sarajevo</i>	0058
Alispahic, M.; Hadziahmetovic, H.; Midzic Kurtagic, S.; Blazevic, R.; Husika, A. & Druskic, K.: <i>Perception of Indoor and Outdoor Noise at Urban Settlements</i>	0068
Angerer, B.; Stopper, M. & Katalinic, B.: <i>Workflow Automation Patterns in Next Generation Microservices Environments</i>	0073
Shilin, D.; Ganin, P.; Shestov, D.; Novikov, A.; Grebenshchikov, N.; Pavkin, D.; Ruzin, S. & Yurochka, S.: <i>Identification of the Cow's Nipples Using a 3D Camera with ToF Technology</i>	0077
Kadric, D.; Midzic Kurtagic, S.; Kurtovic, E.; Sabic, A. & Delalic, N.: <i>Replacement of Refrigerant in Vapour-Compression Cooling System: Case Study of Data Center</i>	0085

Obucina, M.; Hajdarevic, S.; Ibrisevic, A. & Smajic, S.: <i>Effect of Radial and Tangential Cut on the Strength Width-Joint Bonded Solid Wood</i>	0092
Maric, P. & Budimir, V.: <i>The Impact of the Utility Scale Photovoltaic Power Plant on the Transmission Grid in Terms of Voltage and Reactive Power</i>	0098
Malakov, I.; Zaharinov, V.; Nikolov, S.; Dimitrova, R. & Stambolov, G.: <i>Determining the Influence of Model Parameters on the Choosing of an Optimal Size Range of Pneumatically Actuated Linear Modules for Sprayer Robots</i>	0105
Zaharinov, V.; Hasansabri, H. & Malakov, I.: <i>Classification of Automatic Doors</i>	0115
Midzic Kurtagic, S.; Trozic Borovac, S.; Bijelic, B. & Hadziahmetovic, H.: <i>Sustainability Assessment of Small Hydropower Plants</i>	0123
Midzic Kurtagic, S. & Kadric, D.: <i>Improvement of Airports Energy Efficiency, Case Study of Airport Sarajevo</i>	0133
Midzic Kurtagic, S.; Kadric, D.; Alispahic, M.; Blazevic, R. & Hadziahmetovic, H.: <i>Inventory of Refrigerants in Use for Comercial Purposes in BiH</i>	0143
Dacic, V.; Jakobovic, K. & Zgrablic, L.: <i>Linux Security in Physical, Virtual, and Cloud Environments</i>	0151
Dacic, V.; Redzepagic, J. & Basic, M.: <i>CI/CD Toolset Security</i>	0161
Moric, Z.; Branstett, L. & Petrunic, R.: <i>Rust and Webassembly for Fast, Secure and Reliable Software</i>	0165
Moric, Z.; Branstett, L. & Petrunic, R.: <i>Static-Analysis Techniques of Malware Reverse Engineering</i>	0172
Vopat, T.; Straka, R.; Kuruc, M. & Peterka, J.: <i>The Effect of Cutting Edge Radius Sizes on Tool Life in Machining Nickel Alloy Inconel 718</i>	0180
Straka, R. & Vopat, T.: <i>Cutting Edge Preparation Methods Comparison in Terms of Tool Life</i>	0188
Dobрева, A. & Dobrev, V.: <i>Inclusive Design in Engineering Education</i>	0193
Pletenev, P. & Andreev, V.: <i>Problems of Application of Methods of Dynamic Reprogramming of Control Systems of Mobile Robot Modules</i>	0198
Potekhin, V. & Unal, O.: <i>Analysis of Acute Myocardial Infarction using ECG Signals and Machine Learning Algorithms</i>	0205
Ipatov, O.; Barinova, D.; Ni, O.; Saramaha, S. & Odinokaya, M.: <i>New Teaching Approaches in Conditions of Globalisation in Digitized Higher Engineering Education</i>	0215
Pandzic, A. & Hodzic, D.: <i>Tensile Mechanical Properties Comparison of PETG, ASA and PLA-Strongman FDM Printed Materials With and Without Infill Structure</i>	0221
Hodzic, D. & Pandzic, A.: <i>Influence of Printhead Nozzle Diameter on Mechanical Properties of FDM Printed PLA Material and Printing Time</i>	0231
Ilko, J.; Rusko, M. & Demko, J.: <i>Non-Invasive Steam Flow Measurement as an Energy Medium by Clamp-on Ultrasonic Method in Context of Energy Management Concept Implementation, Optimization and Safety</i>	0238
Mitin, F. & Krivushov, A.: <i>Optimal Control of the DC Motor in the Tuning of the Space-Based Reflector of the Radar-Reflecting Netting</i>	0247
Buligins, L.; Buceniaks, I.; Lacic, A.; Kravalis, K. & Mikanovskis, O.: <i>Electromagnetic Induction Pump With Rotating Permanent Magnets Cavitation Process Influence on Pressure – Flow-Rate Curves</i>	0254
Muhamedagic, K. & Cekic, A.: <i>Optimization FDM Process Parameters for Flexural Strength Improvement of Carbon Fibers Reinforced Polyamide Parts</i>	0262

Peshko, M.; Batrakov, P.; Lasitsa, A. & Khomchenko, V.: <i>Technological Wear Influence Analysis on the Decrease in the Efficiency of a Closed Loop Control of Heat Exchange Equipment</i>	0271
Aryskin, A. & Pryanichnikov, V.: <i>Creation of Technology for Building Automated Production With Remote Control (Industry 4.0 Concept)</i>	0279
Turopoljac, S.; Trzun, Z. & Vrdoljak, M.: <i>Analysis of the Pistol Bullet Penetration Through a Wooden Barrier</i>	0285
Skrivanova, N.; Melichar, M. & Kasova, K.: <i>Analysis of Clamping Effect in HMF Connector Measurement</i>	0295
Skrivanova, N.; Melichar, M. & Kasova, K.: <i>Analysis of Clamping Optimization for HFM Connector During Measurement</i>	0302
Zatloukal, T.; Marsalek, O. & Syrovatka, S.: <i>Machinability of Thermal Spray Stellite 6 with Chemical and Mechanical Analysis</i>	0307
Zatloukal, T.: <i>Application of Linear Cutting Edge Technology for Machining NiCrBSi Thermal Spray</i>	0313
Povolny, M.; Kroft, L. & Sykora, J.: <i>Vibration Measurement During Milling by Acoustic Emission</i>	0319
Babic, M.; Stanojevic, M.; Ostojic, G.; Tegeltija, S. & Stankovski, S.: <i>Industrial Cyber Security Aspects in ICS Applications</i>	0326
Sousedikova, L. & Adamek, M.: <i>Security Clearance and Polygraph Examination</i>	0332
Sykora, J. & Syrovatka, S.: <i>Influence of Tool Geometry on the Process of Turning Ti-6Al-4V</i>	0336
Dzermansky, M.; Cajkova, N. & Sanderova, T.: <i>Analysis and Comparision of Emergencies in the Zlin Region</i>	0344
Cajkova, N. & Dzermansky, M.: <i>Risk Analysis of the Post Office</i>	0352
Cajkova, N. & Dzermansky, M.: <i>Risk Analysis of a Gas Station</i>	0358
Marsalek, O.; Horak, L.; Syrovatka, S. & Zatloukal, T.: <i>Innovation in the Problematics of Turning with a Linear Cutting Edge</i>	0365
Plotnikov, A. & Pryanichnikov, V.: <i>Programming of Object Capture Synergies for Mobile Service Robots</i>	0371
Elchinsky, V.; Kuzmin, A. & Stazhkov, S.: <i>Kinematics of Relative Displacements of Contact Surfaces of the Port Plate Unit of an Axial Piston Hydraulic Machine</i>	0376
Bulgakov, V.; Olt, J.; Pascuzzi, S.; Adamchuk, V.; Gadzalo, J.; Kuvachov, V.; Kaletnik, H.; Kaminskiy, V. & Lillerand, T.: <i>Theoretical Research of Gantry Tractor Turning</i>	0380
Virro, I.; Lillerand, T. & Olt, J.: <i>Mobile Robot Cobot Manipulator Mounting Direction Adjustment Dependant on Gravity Vector</i>	0390
Malatinsky, A. & Hromada, M.: <i>Preventive and Repressive Measures for Fire Safety</i>	0397
Tomaskova, T. & Bicova, K.: <i>Effect of Cutting Liquids and Oils in Machining Process on Environmental</i>	0404
Polívka, M. & Dvorakova, L.: <i>Marketing 4.0 – A Systematic Review</i>	0411
Kasova, K. & Skrivanova, N.: <i>Risk Management During a Process of Designing a Technical Product</i>	0421
Tomsu, M.: <i>Principles of Crisis Communication and Information Vulnerabilities in Crisis Management</i>	0429
Tomsu, M.: <i>Reliable Information Sources in the Age of Propaganda</i>	0437

Valasek, P.; Milaneck, A. & Drofova, I.: <i>The Current Technical Conception of Virtual and Augmented Reality</i>	0444
Carlos Mario, F. L.; Rosales Molina, E. I.; Vazquez Martinez, J. M. & del Sol Illana, I.: <i>Energy Consumption in Milling Aluminum with Different Toolpaths</i>	0452
Fellner, R.; Felix Rauh, S.; Orsolits, H. & Garcia, J.: Identifying the Potential of Virtual Commissioning as a Practice for Undergraduate Programs	0459
Aydin, S. M.; Keklik, E.; Genes, E.; Akdogan, A. & Vanli, A. S.: <i>Development of Pneumatic Tester for Life Testing of Industrial Electronic Rotary Latches</i>	0466
Bozic, D. & Runje, B.: <i>Selection of an Appropriate Prior Distribution in Risk Assessment</i>	0471
Ivanovski, T.; Zhang, X.; Jemric, T.; Gulic, M. & Matetic, M.: <i>Peach Firmness Prediction Using Optimized Regression Trees Models</i>	0480
Bagaric, D.; Staroveski, T.; Klaic, M. & Ciglar, D.: <i>Online Multi – Sensor Process Monitoring during Robotic Sanding of Thin-Walled Structures</i>	0490
Ezenwankwo, J.; Zak, J. & Petrikova, I.: <i>Comparative Analysis of Polymeric Composite Reinforced with Glass Fibre and Viscose Rayon</i>	0496
Tokic, S.; Panjkota, A. & Matecic, M.: <i>Machine Learning on Spatiotemporal Data in Football: A Survey of Methods and Problems</i>	0503
Lukas, A. & Sykora, J.: <i>Comparison of Optimized and Conventional Cooling When Turning Stainless Steel</i>	0511
Bevrnja, M.; Imamovic, Z. & Bisic, M.: <i>Additive Manufacturing Application for the Inclusion of the Vision Impaired Population in Public Transport</i>	0519
Dostalova, P. & Kralickova, G.: <i>Ensuring Health and Safety at Universities</i>	0526
Johara, A.; Klimov, D.; Pismennaya, E. & Poduraev, Y.: <i>An Approach to Automating the Movement Mode Change of a Rehabilitation Exoskeleton, Depending on External Conditions</i>	0531
Burnac, K. & Haladin, I.: <i>Analysis of Rail Roughness on Tramway Track</i>	0536
Jerinic, B.; Sremcevic, N.; Ralevic, N.; Tasic, N.; Mandic, J. & Cosic, I.: <i>Demonstrating the A3 Technique Using a Lean Production Model</i>	0541
Siaterlis, G.; Nikolakis, N.; Alexopoulos, K. & Makris, S.: <i>Adoption of AI in EU Manufacturing. Gaps and Challenges</i>	0547