

# **2020 IEEE 24th International Conference on Intelligent Engineering Systems (INES 2020)**

**Reykjavik, Iceland  
8 – 10 July 2020**



**IEEE Catalog Number: CFP20IES-POD  
ISBN: 978-1-7281-1060-8**

**Copyright © 2020 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP20IES-POD
ISBN (Print-On-Demand):	978-1-7281-1060-8
ISBN (Online):	978-1-7281-1059-2
ISSN:	1543-9259

**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  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

---

## Table of Contents

---

Topics .....	3
Committees .....	4
<b>A New Method Based on Gamification Algorithm to Engage Stakeholders in Competitive Markets</b> .....	11
<i>Sepideh Hassankhani Dolatabadi, Ivana Budinskai</i>	
<b>Computation of Continuous Sequential Reference Paths from Discrete Optimal Paths for Mobile Robots</b> .....	19
<i>Matevz Bosnak, Igor Skrjanc</i>	
<b>Experimenting with the Static Slicing of Petri Nets</b> .....	25
<i>Reggie Davidrajuh</i>	
<b>A passive fingerprinting approach for device-free surveillance and localization applications...</b> .....	31
<i>Nizam Kuxdorf-Alkirata, Gerrit Maus, Mustafa Gemci, Dieter Brückmann</i>	
<b>Autonomous pedestrian crossing in smart city environment</b> .....	37
<i>Monika Pogatsnik, David Fischer, Laszlo Nagy, Sebestyen Dora</i>	
<b>Efficient Learning of Model Weights via Changing Features During Training</b> .....	43
<i>Marcell Beregi-Kovács, Ágnes Baran, András Hajdu</i>	
<b>Extracting Training Data for Machine Learning Road Segmentation from Pedestrian Perspective</b> .....	49
<i>Judith Jakob, József Tick</i>	
<b>Image-Based Pavement Type Classification with Convolutional Neural Networks</b> .....	55
<i>Andri Riid, Davide Liberato Manna, Sergei Astapov</i>	
<b>Rivet inspection with multi-sensor robotic system</b> .....	61
<i>Carlo Canali, Alessandro Pistone, Claudio Gloriani, Paolo Guardiani, Daniele Ludovico, Darwin G. Caldwell</i>	
<b>Rayleigh model fitting to nonnegative discrete data</b> .....	67
<i>Matej Petrous, Evzenie Uglickich</i>	
<b>Model-oriented control software development of academic autonomous test vehicle</b> .....	73
<i>Csaba Hajdu, Aron Ballagi</i>	

<b>Hardware Accelerator for Edge Detection</b> .....	79
<i>Aous H. Kurdi, Janos L. Grantner, Ikhlas Abdel-Qader</i>	
<b>Fake News Detection with Generated Comments for News Articles</b> .....	85
<i>Yuta Yanagi, Ryohei Orihara, Yuichi Sei, Yasuyuki Tahara, Akihiko Ohsuga</i>	
<b>Development of Point-cloud Processing Algorithm for Self-Driving Challenges</b> .....	91
<i>Miklós Unger, Ernő Horváth, Péter Kőrös</i>	
<b>Self-Driving Vehicle Sensors from One-Seated Experimental to Road-legal Vehicle</b> .....	97
<i>Péter Kőrös, Gábor Szakállas, Péter Gulyás, Zoltán Pusztai, Zoltán Szeli, Ernő Horváth</i>	
<b>Measurement of outdoor gamma dose distribution with a multicopter</b> .....	103
<i>Andras Molnar, Istvan Lovas, Zsolt Domozi</i>	
<b>Control design of an electromechanical gearbox actuator</b> .....	109
<i>Balint Juhasz, Adam Szabo, Tamas Becsi, Szilard Aradi</i>	
<b>Linear Parameter-Varying Control of a Floating Piston Electro-Pneumatic Actuator</b> .....	115
<i>Adam Szabo, Tamas Becsi, Szilard Aradi</i>	
<b>Driving on Highway by Using Reinforcement Learning with CNN and LSTM Networks</b> .....	121
<i>Laszlo Szoke, Szilard Aradi, Tamas Becsi, Peter Gaspar</i>	
<b>Rule-based velocity selection for mobile robots under uncertainties</b> .....	127
<i>Zoltan Gyenes, Emese Gincsaïne Szadeczky-Kardoss</i>	
<b>Memory Efficient Exact and Approximate Functional Dependency Extraction with ParSIT</b> .....	133
<i>Balázs Tusor, Annamária R. Várkonyi-Kóczy</i>	
<b>Autoencoder Alignment Approach to Run-Time Interoperability for System of Systems Engineering</b> .....	139
<i>Jacob Nilsson, Jerker Delsing and Fredrik Sandin</i>	
<b>HPV and Cervical Cancer Screening Awareness: A Case-control Study in Nigeria</b> .....	145
<i>Ogbolu Melvin Omone, Miklós Kozlovszky</i>	
<b>Neural Predictive Tracking Control of Catamaran Model Sailboat for Situation Awareness Applications</b> .....	153
<i>Igor Astrov and Andres Udal</i>	

<b>Automated Task Scheduling for Automotive Industry .....</b>	<b>159</b>
<i>R. Lewandowski and J. I. Olszewska</i>	
<b>Parallel and Distributed Training of Deep Neural Networks: A brief overview .....</b>	<b>165</b>
<i>Attila Farkas, Gabor Kertesz, Robert Lovas</i>	
<b>Device Integration Concepts in Laboratory Automation .....</b>	<b>171</b>
<i>Ádám Wolf, Péter Galambos, Károly Széll</i>	
<b>Concept of Energy Efficient ESP32 Chip for Industrial Wireless Sensor Network.....</b>	<b>179</b>
<i>Emil Gatial, Zoltan Balogh, Ladislav Hluchy</i>	
<b>Linear quadratic control on a cascaded multitank system .....</b>	<b>185</b>
<i>Karoly Lengyel, Eva-H. Dulf, Levente Kovacs</i>	
<b>Semiconductor-based Random Number Generator Implemented with a Microcontroller .....</b>	<b>191</b>
<i>Gyorgy Gyorok</i>	
<b>Wind turbine power and optimum energy, at variable wind speeds.....</b>	<b>197</b>
<i>Cristian Paul Chioncel, Marian Dordescu, Meda Alexandra Lazar, Ovidiu Gelu Tirian</i>	
<b>Internet Time as Virtual Time for Real-Time Session Routing.....</b>	<b>203</b>
<i>Stefano-Niko Orzen, Levente Kovacs</i>	
<b>New Approach for Fall Detection System Using Embedded Technology .....</b>	<b>209</b>
<i>Mohammed Faeik Ruzajj Al-Okby, Saad Salah Al-Barrak</i>	
<b>Evaluation of Questionnaires by Combining Fuzzy Signatures, Factor Analysis and Least Squares Method .....</b>	<b>215</b>
<i>Dalia Susniene, Ojaras Purvinis, Laszlo T. Kóczy, Márta Konczosné Szombathelyi, Szabolcs Rámháp</i>	
<b>Organized Driving Intellectual Content to Assist Situation Recognition.....</b>	<b>219</b>
<i>László Horváth</i>	
<b>Near-lossless Image Compression with Parity Reduction .....</b>	<b>225</b>
<i>Basar Koc, Ziya Arnavut, Sergej Voronin, Huseyin Kocak</i>	
<b>Author's Index .....</b>	<b>231</b>