

2021 IEEE International Workshop of Electronics, Control, Measurement, Signals and their application to Mechatronics (ECMSM 2021)

**Liberec, Czech Republic
21 – 22 June 2021**



**IEEE Catalog Number: CFP21ECN-POD
ISBN: 978-1-5386-1796-0**

**Copyright © 2021 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:	CFP21ECN-POD
ISBN (Print-On-Demand):	978-1-5386-1796-0
ISBN (Online):	978-1-5386-1757-1

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
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

Table of Contents

About the Double Degree Master's Programmes between University Toulouse III-Paul Sabatier and Technical University of Liberec	1
<i>Ileana Ober, Philippe Joly and Jaroslav Nosek</i>	
Vector Controlled Ultrasonic Transducer Applied to Soft Material Mechanical Impedance Estimation	5
<i>Elis Marina Sales de Castro, Frédéric Giraud, Betty Lemaire-Semail and Michel Amberg</i>	
Design of an ice detector for electric tramways.....	10
<i>Petr Bilek, Marcel Horak, Pavel Jandura, Ondřej Mach and Ales Richter</i>	
Peristaltic pumping by huge amplitude piezoelectric traveling wave actuator.....	16
<i>Francois Pigache, Leonard Coutant, Julien Michel Fontaine and Laetitia Pernod</i>	
Multiport Power Converter.....	22
<i>Adrián Marcinek, Jozef Ivan, Juraj Biľanský and František Ďurovský</i>	
Cyclic Tester of Battery Cells for Electric Vehicles.....	30
<i>Juraj Biľanský, Tomáš Merva, Jozef Ivan, Adrián Marcinek and Milan Lacko</i>	
The Perspective of Electric Network Load by Electric Car Charging Stations	37
<i>Lukas Hubka, Petr Skolnik, Jiri Kubin and Pavel Vedel</i>	
Development of a CAN Bus datalogger for recording sensor data from an internal combustion ECU.....	42
<i>Joel Palomino, Eddy Cuty and Alberto Huanachin</i>	
Performance evaluation of a 3D printed rotor for a synchronous reluctance machine.....	46
<i>Thomas Huguet, Jiří Šafka, Clément Nadal, Carole Henaux, Michal Ackermann and Filip Věle</i>	
Load Emulation for Testing of Electrical Actuators in Industrial Applications.....	54
<i>Jozef Ivan, Viktor Šlapák, Juraj Biľanský, Matúš Hric, František Ďurovský and Karol Kyslan</i>	
An off-line Optimization of Torque Sharing Functions for Switched Reluctance Motor Control.....	59
<i>Zelmira Ferkova and Peter Bober</i>	
3D Finite Difference Model of the Open Circuit Field of Permanent Magnet Spoke Type Axial Flux Machines.....	63
<i>André Mrad, Yvan Lefevre, J.F. Llibre, Mohamad Arnaout and Clement Nadal</i>	
Efficiency Measuring of Electric Drive with Traction Synchronous Motor with Permanent Magnets.....	69
<i>Josef Brousek, Lukas Kremer and Pavel Rydlo</i>	
Virtual Reality and interactive and immersive planning for the assistance to manipulation or navigation.....	74
<i>Philippe Fillatreau</i>	

Path planning control using high abstraction level environment model and industrial task-oriented knowledge.....	75
<i>Florent Leoty, Philippe Fillatreau and Bernard Archimède</i>	
Generative design of 3D printed grippers for robot/human collaborative environments.....	81
<i>Idoia Altuna-Galfarsoro, Nestor Arana-Arexolaleiba, Jon Aurrekoetxea Narvarte, Iker Castro Alfaro and Antonio Serrano</i>	
Leveraging domain specific modeling to increase accessibility of robot programming.....	86
<i>Mickaël Trezzy, Ileana Ober, Iulian Ober and Raquel Araujo Oliveira</i>	
Cetratus: Live Updates in Programmable Logic Controllers.....	95
<i>Imanol Mugarza and Juan Carlos Mugarza</i>	
Audio-Visual Broadcast Transcription System Using Artificial Neural Networks.....	102
<i>Josef Chaloupka, Karel Paleček and Petr Červa</i>	
A State-Space Solution to the Estimation of Interacting Vehicle Trajectories with Deep Neural Networks and Variational Bayes Filtering.....	107
<i>Tristan Klempla and Patrick Danès</i>	
A-Posteriori Synchronization Of Power Quality Data In Smart Grids.....	114
<i>Ekaterina Nyrobotseva, Leoš Kukačka and Jan Kraus</i>	
Image Enhancement using GANs for Monocular Visual Odometry.....	118
<i>Jon Zubietta, Mikel Etxeberria-Garcia, Maider Zamalloa and Nestor Arana-Arexolaleiba</i>	
Indoor environment monitoring as a measure to reduce epidemic spreading.....	124
<i>Jana Loosová and Miloš Hernych</i>	
Design and Performance Analysis of Energy Efficient 11T SRAM (E2S11T) Cell for High Performance and Low Power Applications.....	131
<i>Sargunam Tg, Lim Way Soong, C.M.R. Prabhu and Ajay Kumar Singh</i>	