

INDUSTRY DAY						
Open to all interested researchers!	Workshop	Day	Timeslot	Titel of Workshop		
	WS02		9:15 - 10:45 and 11:00 - 12:30	CLONAR - Cloud Native Rel Time Systems		
	WS03		9:15 - 10:45 and 11:00 - 12:00	First Workshop on Implementing Asset Administration Shells (ImplAAS)		
	WS05		9:15 - 10:45 and 11:00 - 13:00	Biointelligent Manufacturing – Looking to biology with engineering eyes		
	WS06	Thursday 06.09	11:00 - 13:00 and 15:15 - 17:15	Digital twins, components and systems for smart mechatronic applications		
	WS07		12:00 - 13:00 and 15:15 - 17:15	Future of Process Automation in BioPharma		
	WS08		11:00 - 13:00 and 15:15 - 16:45	Towards the factory of the future: advances in planning, control, and perception of industrial robots		
	WS09		9:15 - 10:45 and 11:00 - 12:30 and 15:15 - 16:45	DIVERSE: Advanced Technologies in Vehicular Systems		
	WS10		11:00 - 13:00 and 15:15 - 17:15	Enabling robust, converged networks for Industry 4.0		
Session/Track T1:	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
Information Technology in Automation	Domain Specific Modeling and Software Engineering in Automation	Wednesday 07.09.	11:00 - 12:30	Domain-specific Language for Condition Monitoring Software Development	ETFA22-000141	Faruk Pasic
				Architecture Blueprints Enabling Scalable Vertical Integration of Assets with Digital Twins	ETFA22-000186	Frank Schnicke
				Software deployment in manufacturing environments: A requirements analysis	ETFA22-000161	Matthias Schneider
	Performance Issues and Energy Management	Wednesday 07.09.	14:00 - 15:30	Industry Voices on Software Engineering Challenges in Cyber-Physical Production	ETFA22-000114	Kevin Feichtinger
				Energy-efficient Flow-shop Scheduling in the Printing Industry using Memetic Algorithm	ETFA22-000166	Ke Shen
				Probability-based, Risk-adjusted Energy Consumption Optimisation in Industrial Applications	ETFA22-000209	Aleksey Bratukhin
				Exploring Timing Covert Channel Performance over the IEEE 802.15.4	ETFA22-000032	Ricardo Severino
	Safety and Security	Wednesday 07.09.	16:00 - 17:30	How Real (Time) Are Virtual PLCs?	ETFA22-000207	Diogenes Javier Perez
				Functional Safety Use Cases in the Context of Reconfigurable Manufacturing Systems	ETFA22-000103	Dieter Etz
				Towards Resilience by Self-Adaptation of Industrial Control Systems	ETFA22-000192	Laurin Prenzel
				An OT Forensic Model Based on Established IT Forensics Using IIRA	ETFA22-000014	Alexios Karagiorgidis
				On the Security of IO-Link Wireless Communication in the Safety Domain	ETFA22-000055	Thomas Doebbert
	IT System Architectures and IT/OT Convergence	Thursday 08.09.	09:00 - 10:30	A toolchain for testing OPC UA interfaces	ETFA22-000089	Andrea Walchshofer
				Supporting a Model-driven Development Process for Distributed Control Software	ETFA22-000196	Bianca Wiesmayr
				Comparing Different Persistent Storage Approaches for Containerized Stateful Architecture Blueprints for the Application of the Industry 4.0 Asset Administration Shell	ETFA22-000236	Patrick Denzler
				ETFA22-000113	Frank Schnicke	
Session/Track T2:	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
Industrial Communication Technologies and Systems	Wireless systems in industrial applications	Friday 09.09.	10:30 - 12:30	Towards Performance Benchmarking of Cyclic OPC UA PubSub over TSN	ETFA22-000075	Sten Grüner
				Towards 5G-Aware Robot Planning for Industrial Applications	ETFA22-000116	Nils Jørgensen
				Multi-AP Coordination PHY/MAC Management for industrial Wi-Fi	ETFA22-000123	Itäki Vali
				Deep Neural Network for Indoor Positioning Based on Channel Impulse Response	ETFA22-000084	Van-Lan Dao
				Experimental Characterization of In-Pipe Acoustic Communication Channels Through Measurement of Pressure Transfer Functions	ETFA22-000117	Markeljan Fishta
	TSN in Industrial Systems	Friday 09.09.	14:00 - 15:30	Aligning Emerging Technologies onto I4.0 principles: Towards a Novel Architecture for Zero-defect Manufacturing	ETFA22-000206	Konstantinos Apostolakis
				Migrating Legacy Ethernet-Based Traffic with Spatial Redundancy to TSN networks	ETFA22-000191	Manuel Barranco
				Holistic Monitoring for heterogeneous industrial Time Sensitive Networks	ETFA22-000168	Santiago Soler Perez Olaya
				A Detailed Analysis of Timing Effects in an IEC 61499 Ethernet/TSN Communication Scenario	ETFA22-000063	Friederike Bruns
Session/Track T3:	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
Real-Time (and Networked) Embedded Systems	Scheduling and analysis of real-time systems applications	Wednesday 07.09.	11:00 - 12:30	Distributed method for Economic Dispatch Problem in power network with multiple uncertainties	ETFA22-000029	Karel Kubiček
				Task and Memory Mapping Optimization for SDRAM Interference Minimization on Heterogeneous MPSoCs	ETFA22-000098	Alfonso Mascareñas González
				Contention-free scheduling of PREM tasks on partitioned multicore platforms	ETFA22-000100	Zahaf Housam-Eddine
	Real-time networks	Friday 09.09.	16:00 - 17:00	Intrusion Detection in Multicore Embedded Systems based on Artificial Immune Systems	ETFA22-000155	Leonardo Passig Horstmann
				Schedulability Analysis of WSAN Applications: Outperformance of a Model Checking Approach	ETFA22-000173	Marjan Sirjani
				ETFA22-000293	Bernd-Ludwig Wenning	
Session/Track T4:	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
Automated Manufacturing Systems	Digital Twins and their Application	Wednesday 07.09.	11:00 - 12:30	A factory planning and design framework for integrating the Digital Twin in Industry 4.0	ETFA22-000176	Tim van Erp
				Method for selecting Digital Twins of Entities in a System-of-Systems approach based on essential Information Attributes	ETFA22-000177	Milapji Singh Gill
				Integrating an XPath-Enhanced OPC UA Data Collection Into Industrial Communication	ETFA22-000198	Johannes Theissen-Upp
	Operation and Maintenance	Wednesday 07.09.	14:00 - 15:30	A Virtual Commissioning Selection Approach for Machine Automation	ETFA22-000268	Daniel Siegrist
				Maintenance interval monitoring and cutting edge breakout detection using an instrumented tool	ETFA22-000082	Sascha Gent
				Anomaly Detection in Hot Forming Processes using Hybrid Modeling - Part II	ETFA22-000165	Cederic Lenz
				Machine learning for monitoring and predictive maintenance of cutting tool wear for clean-cut machining machines	ETFA22-000233	Andrea Bonci
	Optimisation	Wednesday 07.09.	16:00 - 17:30	On the Impact of Transport Times in Flexible Job Shop Scheduling Problems	ETFA22-000060	Damiano Carra
				An open source benchmark simulator for sustainable and flexible pharmaceutical manufacturing	ETFA22-000157	Dana Copot
				Grey Wolf Optimization using Improved mutation oppositional based learning for optimization problems	ETFA22-000037	Hayata Saitou
				Exploiting Process Dynamics in Multi-Stage Schedule Optimization for Flexible Manufacturing	ETFA22-000195	Michael Balszun
				Energy-optimal timing of stochastic robot stations in automotive production lines	ETFA22-000208	Mattias Hovgard
	Verification and Testing	Thursday 08.09.	9:00 - 10:30	Verification of a safety-related I&C system for nuclear power plant by model checking, test case generation and automatic testing	ETFA22-000028	Karel Kubiček
				Automatic Test Suite Generation for PLC Software in the Internet of Production	ETFA22-000310	Marco Grochowski

Session/Track	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author		
T5: Industrial Control	Advanced Design of Industrial Controllers	Wednesday 07.09.	11:00 - 12:30	Custom Matlab Toolbox for Systems with Parametric Uncertainties and Time Delay with Factorization for Two-Degree-of-Freedom Feedback Loop	ETFA22-000006	Marek Dłapa		
				Transfer Learning Suitability Metric for ANN-based Industrial Controllers	ETFA22-000149	Ivan Pisa		
	Industrial Control Applications	Wednesday 07.09.	14:00 - 15:30	A comparison between PID and PIDA controllers	ETFA22-000023	Antonio Visioli		
				Supervisor design for an assembly line in the presence of faults	ETFA22-000121	Fotis N. Koumboulis		
				Makespan reduction for Time-Weighted Systems using a Clonal Selection algorithm	ETFA22-000129	Gabriel Laport Vargas		
			Manoeuvring of Differential Drive Mobile Robots on Horizontal Plane through I/O Decoupling	ETFA22-000175	Fotis N. Koumboulis			
Session/Track	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author		
T6: Computer Vision and Human-Machine Interaction in Industrial and Factory Automation	Robots and Computer vision in Factory Automation	Friday 09.09.	10:30 - 12:30	Detection of Unsorted Metal Components for Robot Bin Picking Using an Inexpensive RGB-D Sensor	ETFA22-000035	Riccardo Monica		
				Visual Monitoring Intelligent System for Cardboard Packaging Lines	ETFA22-000030	Pablo Gil		
				Automation of Offline Tool Wear Measurement on the Example of Inserts for Super-Alloy Machining	ETFA22-000031	Philipp Westphal		
				WireAR: AR-based electrician-assistance system for visualization of wiring process	ETFA22-000230	Anastasiia Archangelskaya		
				HawkEye-HMI-Generation: A Method to Synthesize Zoomable Process Automation User Interfaces	ETFA22-000018	Heiko Kozioliek		
	Automatic Learning in Computer Vision Applications	Friday 09.09.	14:00 - 15:30	Am I done learning? - Determining learning states in adaptive assembly systems	ETFA22-000213	Philip Sehr		
				Synthetic Training Data Generation for Convolutional Neural Networks in Vision Applications	ETFA22-000214	Hannes Vietz		
				Interpretable image features for anomaly identification on hexagonal net knitting machines	ETFA22-000142	Tetsuo Imai		
				Enhancing Vehicle State Recognition in Logistics Industrial Parks via Dynamic Hidden Markov Model	ETFA22-000067	Yang Liu		
Session/Track	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author		
T7: Intelligent Robots and Systems	Planning and human-robot interaction	Friday 09.09.	10:30 - 12:30	Dynamic Path Planning of a mobile robot adopting a costmap layer approach in ROS2	ETFA22-000036	Pangcheng David Cen Cheng		
				Task Space Vector Field Guiding for Motion Planning	ETFA22-000234	Fernando Urrea		
				Domain Adaptation With Evolved Target Objects for AI Driven Grasping	ETFA22-000045	Anish Pratheepkumar		
				Process-driven Collision Prediction in Human-Robot Work Environments	ETFA22-000130	Luca Geretti		
				Improving safety in physical human-robot collaboration via deep metric learning	ETFA22-000242	Hans Wernher van de Venn		
	Industrial and autonomous applications	Friday 09.09.	14:00 - 15:30	GLIR: A Practical Global-local Integrated Reactive Planner towards Safe Human-Robot Collaboration	ETFA22-000054	Mohamed El-Shamouty		
				The Correction of the Nozzle-Bed-Distance in Robotic Curved Layer Fused Deposition Modeling with ULTEM 9085	ETFA22-000011	Gian Frederik Mewes		
				Leading vehicle length estimation using pressure data for use in autonomous driving	ETFA22-000043	Matis Ottan		
				Software-defined testing facility for component testing with industrial robots	ETFA22-000093	Julian Hanke		
				On the creation of a robotics software architecture for AI-based advanced applications	ETFA22-000008	Alberto Tellaeché		
	Calibration, localization and control	Friday 09.09.	16:00 - 17:00	An Unified Iterative Hand-Eye Calibration Method for Eye-on-Base and Eye-in-Hand Setups	ETFA22-000041	Daniele EVANGELISTA		
				CloudVision: DNN-based visual localization of autonomous robots using prebuilt LIDAR point cloud	ETFA22-000197	Evgeny Yudin		
				Deep Reinforcement Learning Based Networked Control with Network Delays for Signal Temporal Logic Specifications	ETFA22-000007	Junya Ikemoto		
Session/Track	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author		
T8: Intelligent Sensors, Sensor Networks, and Information Processing	Intelligent Sensors, Sensor Networks, and Information Processing	Wednesday 07.09.	16:00 - 17:40	Hierarchical Feature Fusion based Reconstruction Network for Unsupervised Anomaly Detection	ETFA22-000010	Binjie Zhao		
				Comprehensive Analysis of Supply Voltage Watermarking for Protection of Sensor Systems	ETFA22-000074	Albert Treytl		
				Universal energy information model for industrial communication	ETFA22-000083	Maxim Runge		
				Approximate Fast Fourier Transform-based Preprocessing for Edge AI	ETFA22-000235	Lukas Krupp		
				Identification, Activity, and Biometric Classification using Radar-based Sensing	ETFA22-000251	Le Nguyen		
Session/Track	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author		
T9: Complex Automation Systems and Systems Engineering	Engineering process challenges	Friday 09.09.	10:30 - 12:30	Towards Round-trip Engineering to evolve Complex Production Systems by utilizing AutomationML	ETFA22-000049	Christoph Binder		
				A Coordination Artifact for Multi-disciplinary Reuse in Production Systems Engineering	ETFA22-000152	Kristof Meixner		
				Configurable Solutions for Low-Cost Digital Manufacturing: a Building Block Approach	ETFA22-000051	Jan Kaiser		
				Impact of Coupling on Complexity of Industrial Control and Automation Systems	ETFA22-000194	Aydin Homay		
				Coupling and Decoupling in IEC 61499 and IEC 61131-3 Applications	ETFA22-000200	Aydin Homay		
	Digital twins	Friday 09.09.	14:00 - 15:30	ETFA22-000212 - Street Li				
				Street Lighting Simulation for Energy Efficiency Improvement	ETFA22-000212	Alireza Estaji		
				A method for mapping novel product groups in AutomationML as the first step for creating their virtual twin	ETFA22-000059	Johannes Prior		
				Cloud-enabled Drive-Motor-Load Simulation Platform using Asset Administration	ETFA22-000061	Prerna Juhlin		
				Shell and Functional Mockup Units				
	Safety and Security	Friday 09.09.	16:00 - 17:00	Designing a Digital Shadow for Efficient, Low-Delay Analysis of Production Quality Risk	ETFA22-000154	Sebastian Kropatschek		
				An interactive learning approach on digital twin for deriving the controller logic in IEC 61499 standard	ETFA22-000199	Midhun Xavier		
				Security and Safety Integration for the Nuclear Instrumentation and Control Systems	ETFA22-000013	Joonas Linnosmaa		
				CrossTest: a cross-domain physical testbed environment for cybersecurity performance evaluations	ETFA22-000040	Markus Karch		
				Decision Tree Models of Continuous Systems	ETFA22-000102	Swantje Plambeck		

Session/Track	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
Session/Track T10: Artificial Intelligence for Cyber Physical Systems in Automation	Artificial Intelligence and Energy Systems	Wednesday 07.09.	11:00 - 12:30	Learning Physically Meaningful Representations of Energy Systems with Variational Autoencoders	ETFA22-000243	Samim Multaheb
				Active Power Optimization of a Turning Process by Cutting Conditions Selection: A Q-Learning Approach	ETFA22-000105	Aitor Duo
				Embedding Anomaly Detection Autoencoders for Wind Turbines	ETFA22-000156	José Luis Conradi Hoffmann
				Reducing configuration efforts in energy management systems based on natural language processing methods and asset administration shells	ETFA22-000094	Maximilian Both
	Artificial Intelligence Approaches for Automation	Wednesday 07.09.	14:00 - 15:30	Graph Neural Networks Based Meta-scheduling in Adaptive Time-Triggered Systems	ETFA22-000170	Samer Alshaer
				Towards Deep Industrial Transfer Learning: Clustering for Transfer Case Selection	ETFA22-000039	Benjamin Maschler
				Synthetic time series dataset generation for unsupervised autoencoders	ETFA22-000058	Hendrik Klopries
	Artificial Intelligence Applications	Wednesday 07.09.	16:00 - 17:30	Identifying repeating patterns in IEC 61499 systems using feature-based embeddings	ETFA22-000146	Antonio Manuel Gutierrez
				Development of a Framework for Continual Learning in Industrial Robotics	ETFA22-000204	Minh Trinh
				An AI benchmark for Diagnosis, Reconfiguration & Planning	ETFA22-000110	Jonas Ehrhardt
Artificial Intelligence and Manufacturing	Thursday 08.09.	9:00 - 10:30	A Digital Twin-based Approach Performing Integrated Process Planning and Scheduling for Service-based Production	ETFA22-000219	Zai Mueller-Zhang	
			Tractable Minacious Drones Aerial Recognition and Safe-Channel Neutralization Scheme for Mission Critical Operations	ETFA22-000220	SIMEON AJAKWE	
			Benchmarking and Prediction of Entities Performance on Manufacturing Processes through MEA, Robust XGBoost and SHAP Analysis	ETFA22-000223	Eugénio Rocha	
			Impact Analysis of KPI Scenarios, Automated Best Practices Identification, and Deviations on Manufacturing Processes	ETFA22-000225	Maria Joao Lopes	
Session/Track T11:	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
Vehicular Embedded Systems	Communication in Vehicular Systems	Thursday 08.09.	11:00 - 12:30	Efficient Timing Isolation for Mixed-Criticality Communication Stacks in Performance Architectures	ETFA22-000021	Kai-Björn Gemlau
				SynAVB: Route and Slope Synthesis Ensuring Guaranteed Service in Ethernet AVB	ETFA22-000092	Weijiang Kong
				Characterization of Multi-Gigabit Automotive Ethernet Channel Radiated Emissions in Relation to ECU PCB Shield-Ground Implementations	ETFA22-000047	Jamila Josip Borda
Secure Data Processing and Prototypes in Vehicular Systems	Thursday 08.09.	15:30 - 16:30	Modeling Misbehavior Detection Timeliness in VANETS	ETFA22-000160	Mateus Martinez de Luena	
			Mimer Trust: Efficient and Secure Data Processing for Trusted Execution Environment in Automotive Systems	ETFA22-000019	Simin Cai	
			Design and Development of a Cyber-Physical System E-Bike Retrofit Prototype	ETFA22-000217	Michael Oberle	
Session/Track SS01:	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
Model-based/Data-driven Safety, Security and Privacy in Society 5.0	Wednesday 07.09.	16:00 - 17:30	Towards Multilevel Modelling and Monitoring of Real-time Personalised Health Conditions	ETFA22-000244	Najma Taimoor	
			A Civil Protection Early Warning System to Improve the Resilience of Adriatic-Ionian Territories to Natural and Man-made Risk	ETFA22-000245	Christos Alexakos	
			On the Performance and Scalability of Simulators for Improving Security and Safety of Smart Cities	ETFA22-000248	Muhammad Taimoor Khan	
Session/Track SS02:	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
Dynamic Reliability Calculation of Industrial Automation Systems Using Digital Twins	Modelling and Digital Twin	Thursday 08.09.	11:00 - 12:30	A methodology for creating semantic digital twin models using Node-RED and Knowledge Graphs	ETFA22-000107	Charles Steinmetz
				Deep Reinforcement Learning for Online Error Detection in Cyber-Physical Systems	ETFA22-000109	Seyyedamirhossein Saeidi
				ISO23247 Digital Twin Approach for Industrial Grade Radio Frequency Testing Station	ETFA22-000182	Valdemar Leiras
Safety and Risk Assessment	Thursday 08.09.	15:30 - 16:30	A structure of modelling depths in behavior models for Digital Twins	ETFA22-000066	Valentin Stegmaier	
			Fault Detection for Photovoltaic Systems Using Fuzzy C-Means Clustering	ETFA22-000250	Iury Besa	
			Towards Situative Risk Assessment for Industrial Mobile Robots	ETFA22-000131	Manuel Müller	
Situation-based Identification of Probable Loss Scenarios of Industrial Mobile Robots	ETFA22-000144	Manuel Müller				
Session/Track SS04:	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
Automation of modular systems and the Module Type Package	Automation of modular systems and the Module Type Package 1	Thursday 08.09.	11:00 - 12:30	Coordination of Modular Packaging Lines Using Automation Service Choreographies	ETFA22-000158	Michelle Blumenstein
				MTPPy: Open-Source AI-friendly Modular Automation	ETFA22-000172	Valentin Khaydarov
				Intention-based engineering for the early design phases and the automation of modular process plants	ETFA22-000080	Artan Markaj
	Automation of modular systems and the Module Type Package 2	Thursday 08.09.	15:30 - 16:30	Modelling service properties to manage their diversity within modular manufacturing plants (WIP)	ETFA22-000316	Pascal Habiger
				Upcoming domains for the mtp and an evaluation of its usability for electrolysis (WIP)	ETFA22-000365	Lukas Bittorf
				Automated Integration of Remote Terminal Units via IEC Protocol with the Module Type Package	ETFA22-000229	Andreas Stutz
Concept for extending the Module Type Package with energy management functionalities	ETFA22-000076	Leif-Thore Reiche				
Hybrid Commissioning of Industrial Plants: A Merge-Tool for PROFINET	ETFA22-000202	Shan Fur				
Session/Track SS05:	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
Machine Learning and Data Analytics for Failure Analysis in Automation and the Manufacturing Industry	Machine Learning and Data Analytics for Failure Analysis in Automation and the Manufacturing Industry 1	Thursday 08.09.	11:00 - 12:30	Simulation-to-Reality based Transfer Learning for the Failure Analysis of SiC Power Transistors	ETFA22-000026	Simon Kamm
				Natural Language Processing with Deep Learning based on GCVAE applied in Intelligent Fault Analysis for Semiconductor Industry	ETFA22-000106	Zhiqiang WANG
				FIDGET: Deep Learning-Based Fault Injection Framework for Safety Analysis and Intelligent Generation of Labeled Training Data	ETFA22-000215	Tagir Fabarisov
	Machine Learning and Data Analytics for Failure Analysis in Automation and the Manufacturing Industry 2	Thursday 08.09.	15:30 - 16:30	Computer Vision based welding defect detection using YOLOv3	ETFA22-000078	Melakhsou Abdallah Amine
				TinyML-based approach for Remaining Useful Life Prediction of Turbofan Engines	ETFA22-000068	Stefanos Heikki Panagiotou
Fault Detection in Multi-stage Manufacturing To Improve Process Quality	ETFA22-000056	Christoph Kellermann				
Session/Track SS06:	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
Applications of Time Sensitive Networking (TSN)	Innovative applications of Time Sensitive Networking (TSN) technologies and standards.	Wednesday 07.09.	11:00 - 12:30	Updating the Linux TAPRIO Scheduler in Deterministic Time	ETFA22-000042	Christian von Arnim
				Safety-related Applications over Wireless Time Sensitive Networks	ETFA22-000115	Jetmir Haxhibeqiri
				On the relevance of TSN for Substation Communication Networks	ETFA22-000185	Théo Docquier
				Time-Sensitive Networking Over 5G for Industrial Control Systems	ETFA22-000189	Nikhleswar Kota

Session/Track	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
SS07: Skill Based Systems Engineering (SEnSEI)	Skill Based Systems Engineering 1	Thursday 08.09.	11:00 - 12:30	Capabilities and Skills in Manufacturing: A Survey Over the Last Decade of ETFA	ETFA22-000087	Kristof Meixner
				Using Behavior Trees for Coordination of Skills in Modular Reconfigurable CPPMs.	ETFA22-000101	Aleksandr Sidorenko
				Modeling and Executing Production Processes with Capabilities and Skills using Ontologies and BPMN	ETFA22-000073	Aljosa Köcher
				Dynamic Replanning using Multi-Agent Systems and Asset Administration Shells	ETFA22-000159	Simon Jungbluth
				A Mapping Approach to Convert MTPs into a Capability and Skill Ontology	ETFA22-000227	Aljosa Köcher
Skill Based Systems Engineering 2	Thursday 08.09.	15:30 - 16:30	Architectural Concepts for IEC 61499-based Machine Controls: Beyond Normal Operation Handling	ETFA22-000224	Lisa Sonnleitner	
Session/Track	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
SS08: Industry 5.0 – Augmenting the Human Worker in Balanced Automation Systems	Industry 5.0 – Augmenting the Human Worker in Balanced Automation Systems	Friday 09.09.	10:30 - 12:30	Intelligent Collaborative Manufacturing Space for Augmenting Human Workers in Semi-Automated Manufacturing Systems	ETFA22-000193	Tamás Ruppert
				Trajectory Prediction of Moving Workers for Autonomous Mobile Robots on the Shop Floor	ETFA22-000193	Andreas Löcklin
				A Review on Communicative Mechanisms of External HMTs in Human-Technology Interaction	ETFA22-000108	Peter Thorvald
Session/Track	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
SS10: Advanced Methods for the Management of Factory Networks	Advanced Methods for the Management of Factory Networks	Thursday 08.09.	15:30 - 16:30	A methodology to select wearable devices for Industry 5.0 applications	ETFA22-000270	Elias Montini
				Machine Learning to Support Self-Configuration of Industrial Systems Interconnected over Wi-Fi	ETFA22-000222	Stefano Scanzio
				Industrial 5G Service Quality Assurance via Markov Decision Process Mapping	ETFA22-000079	Ajay Kattepur
Session/Track	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
SS12: Automation of Automation	Automation of Automation	Wednesday 07.09.	16:00 - 17:30	QRscript: Embedding a Programming Language in QR codes to support Decision and Management	ETFA22-000247	Stefano Scanzio
				Towards Automatic Inventory Checking Using an Autonomous Unmanned Aerial Vehicle	ETFA22-000125	Jaromir Stanko
Session/Track	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
SS14: Knowledge Graphs for Smart Manufacturing: Modeling and Applications	Knowledge Graphs for Smart Manufacturing	Friday 09.09.	10:30 - 12:30	Efficient Creation of Behavior Models for Digital Twins Exemplified for Vacuum Semantic Modeling of a cyber-physical biological production platform	ETFA22-000127	Valentin Stegmaier
				Integration method of custom information models into existing OPC UA Servers	ETFA22-000181	Aleksandra Mueller
				Knowledge Graph-based Support for Automated Manufacturability Analysis	ETFA22-000069	Irlan Grangel-Gonzalez
				Variant generation of software-defined mechatronic systems in model-based systems engineering	ETFA22-000201	Dustin White
				Context-enriched modeling using Knowledge Graphs for intelligent Digital Twins of Production Systems	ETFA22-000085	Timo Müller
Ontological Architecture for Knowledge Graphs in Manufacturing and Simulation	ETFA22-000162	Franz Georg Listl				
Accessing and Interpreting of OPC UA Event Traces based on Semantic Process Descriptions	ETFA22-000138	Tom Westermann				
Human-centered knowledge graph-based design concept for collaborative manufacturing	ETFA22-000218	László Nagy				
Session/Track	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
WIP01: Information Technology in Automation	Development, adoption and application of IT for automation systems	Friday 09.09.	14:00 - 15:30	How to make energy flexibility business models work - the case for integration into existing ERP systems	ETFA22-000355	Maximilian Stange
				An Analysis of Use Cases for the Asset Administration Shell in the Context of Edge Computing	ETFA22-000253	Marie Platenius-Mohr
				Integrating Third-Party Asset Monitoring Applications in an Edge Architecture using the Asset Administration Shell	ETFA22-000266	Marie Platenius-Mohr
				Supporting Variability Management in Cyber-Physical Production Systems: Towards Semi-Automatic Delta Model Mining for IEC 61499	ETFA22-000287	Hafiyyan Sayyid Fadhillah
				Model-aware Simulation of IEC 61499 Designs	ETFA22-000401	Sven Mehlhop
				Evaluation of Middleware Technologies for the PLC-Service Bus in IEC 61499	ETFA22-000298	Virendra Ashiwai
				Controlling concurrent events in IEC 61499 based systems on FPGAs	ETFA22-000290	Martin Melik Merkmians
				Toward a Generic Mapping Language for Transformations between RDF and Data Interchange Formats	ETFA22-000303	Artan Markaj
				Modelling service properties to manage their diversity within modular manufacturing plants	ETFA22-000316	Pascal Habiger
				RPC-Based OPC-UA Agent for Legacy PLCs	ETFA22-000323	Minyoung Sung
				Concurrent OPC UA information model access, enabling real-time OPC UA PubSub	ETFA22-000338	Patrick Denzler
				Connecting Industrie 4.0 Digital Twins during Execution to Other Components' Interfaces	ETFA22-000345	Magnus Redeker
				Towards an Asset Administration Shell Integrity Verification Scheme	ETFA22-000334	Andre Bröring
				Modeling Error Propagation in a Modular Plant	ETFA22-000304	Santonu Sarkar
				A Model Based Framework for Testing Safety and Security in Operational Technology Environments	ETFA22-000312	Mukund Bhole
Automating Safety and Security Risk Assessment in Industrial Control Systems: Challenges and Constraints	ETFA22-000314	Pushparaj Bhosale				
Work In Progress: Towards Adaptive RF Fingerprint-based Authentication of IIoT devices.	ETFA22-000404	Ricardo Severino				

Session/Track	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
WIPD2: Industrial Communication Technologies and Systems	Industrial Communication Technologies and Systems & Real-Time (and Networked) Embedded Systems	Wednesday 07.09.	14:00 - 15:30	5G RAN Slicing to Support Reliability in Industrial Applications	ETFA22-000393	M.Carmen Lucas-Estañ
				Data Autonomy in Message Brokers in Edge and Cloud for Mobile Machinery: Requirements and Technology Survey	ETFA22-000291	Petri Kannisto
				NexGenGW: a software-based architecture targeting IoT interoperability	ETFA22-000267	Carlos Resende
				Exploiting Software-Defined Networking to improve runtime reconfigurability of TSN-based networks	ETFA22-000418	Luca Leonardi
				Towards an Industrial Converged Network with OPC UA PubSub and TSN	ETFA22-000352	Oliver Konradi
				Secure Onboarding of IIoT Devices using OPC UA	ETFA22-000368	Florian Kohnhüser
				The Effects of Clock Synchronization in TSN Networks with Legacy End-stations	ETFA22-000390	Mohammad Ashjaei
				Implementing a First CNC for Scheduling and Configuring TSN Networks	ETFA22-000319	Inés Álvarez
				MALOC: Building an adaptive scheduling and routing framework for rate-constrained traffic in TSN	ETFA22-000364	Nitin Desai
				Towards multi-hop real-time communications over LoRa networks for industrial applications	ETFA22-000335	Lucia Lo Bello
Towards a Testbed for Critical Industrial Systems	ETFA22-000273	Esteban Damian Gutierrez Mlot				
WIPD3: Real-Time (and Networked) Embedded Systems	Real-Time (and Networked) Embedded Systems	Wednesday 07.09.	14:00 - 15:30	Heuristic-based Task-to-Thread Mapping in Multi-Core Processors	ETFA22-000264	Mohammad Samadi Gharajeh
				A Two-phase Metamorphic Approach for Testing Industrial Control Systems	ETFA22-000356	Dragos Truscan
				Memory allocation for low-power real-time embedded microcontroller: a case study	ETFA22-000381	Tomasz Kloda
Towards Practical and Formal Security Risk Analysis of IIoT Applications	ETFA22-000398	Muhammad Taimoor Khan				
WIPD4: Automated Manufacturing Systems	Automated Manufacturing Systems	Thursday 08.09.	9:00 - 10:30	Work cell for assembling small components in PCB	ETFA22-000280	Mauro Queirós
				Extracting Functional Machine Knowledge from STEP Files for Digital Twins	ETFA22-000297	Birte Caesar
				AI-Based Surface Roughness Prediction Model for Automated CAM-Planning Optimization	ETFA22-000307	Lea Tonejca
				Quality inspection of critical aircraft engine components: towards full automation	ETFA22-000309	Davide Cannizzaro
				Behavior Trees based Flexible Task Planner Built on ROS2 Framework	ETFA22-000411	Thomas Ribeaud
				A graph-based knowledge representation and pattern mining supporting the Digital Twin creation of existing manufacturing systems	ETFA22-000413	Dominik Braun
WIPD5: Industrial Control	Industrial Control	Thursday 08.09.	9:00 - 10:30	Improving Gold Mining Process Operations using Advanced Control Systems	ETFA22-000313	Ramon Vilanova
				Nonlinear model based control for the BioPower 5 CHP plant	ETFA22-000339	Jukka Kortela
WIPD6: Computer Vision and Human-Machine Interaction in Industrial and Factory Automation	Computer Vision and Human-Machine Interaction in Industrial and Factory Automation	Wednesday 07.09.	14:00 - 15:30	AI-Based Assistance System for Manufacturing	ETFA22-000265	Sahar Deppe
				Identification of Barriers to and Opportunities for Adoption of Machine Vision for Small and Medium-sized Enterprises	ETFA22-000292	Mehmet Sertug Basar
				Visual Detection of Tiny and Transparent Objects for Autonomous Robotic Pick-and-Place Operations	ETFA22-000305	Timo Markert
				COVERED, CollabOratIVE Robot Environment Dataset for 3D Semantic segmentation	ETFA22-000306	Fatemeh Mohammadi Amin
				Comparison of Deep Learning Models in Position Based Visual Servoing	ETFA22-000322	Cosmin Copot
				Towards Tabular Data Extraction From Richly-Structured Documents Using Supervised and Weakly Supervised Learning	ETFA22-000351	Arnab Ghosh Chowdhury
				Multi-Model Machine Learning based Industrial Vision Framework for Assembly Part Quality Control	ETFA22-000388	Maximilian Schwab
				Segmentation and Error Detection of PV Modules	ETFA22-000396	Amr Abdo
				Graphical visualization of contact forces and hand movements during in-hand manipulation	ETFA22-000263	Raul Suarez
				Efficient and robust trajectory generation for robotic manipulators	ETFA22-000317	Leopold Palomo-Avellaneda
WIPD7: Intelligent Robots and Systems	Intelligent Robots and Systems	Thursday 08.09.	9:00 - 10:30	Learning-based Success Validation for Robotic Assembly Tasks	ETFA22-000341	Arik Laermle
				Edge Computing in Autonomous and Collaborative Assembly Lines	ETFA22-000358	Dominik Urbaniak
				Vehicle Fault-Tolerant Robust Power Transmission Line Inspection Planning	ETFA22-000369	František Nekovář
				Learning-based Detection of Leg-Surface Contact using Position Feedback Only	ETFA22-000373	Jiří Kubík
				Towards Industry-Inspired Use-Cases for Path Finding in Robotic Mobile Fulfillment Systems	ETFA22-000375	Benedikt Hein
				A framework for safe and intuitive human-robot interaction for assistive robotics	ETFA22-000384	Fiorella Sibona
				Randomized multi-goal path planning for Dubins vehicles	ETFA22-000397	Vojtech Vonasek
Reasoning and state monitoring for the robust execution of robotic manipulation tasks	ETFA22-000403	Jan Rosell				
WIPD8: Intelligent Sensors, Sensor Networks, and Information Processing	Intelligent Sensors, Sensor Networks, and Information Processing	Wednesday 07.09.	14:00 - 15:30	A Methodology for classifying Data relevance to utilize external Data Sources in the Digital Twin	ETFA22-000271	Gary Hildebrandt
				Using Machine Learning for Diaphragm Prediction in Solenoid Valves	ETFA22-000299	Sebastian Heinze
				Sensor fusion for functional safety of autonomous mobile robots in urban and industrial environments	ETFA22-000325	Yannick Wunderle
				Time-efficient Sensor Data Prediction using IDC-MLP Algorithm for Industrial IoT	ETFA22-000327	Made Adi Paramartha Putra
				Real-Time Velocity Estimation Algorithm for a Multivariable Motion Sensor	ETFA22-000371	Federico Mazzoli
Additive-subtractive manufacturing of multi-material sensor-integrated electric machines using the example of the transversal flux machine	ETFA22-000259	Michael Baranowski				

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WIP09: Complex Automation Systems and Systems Engineering	Recent research in Complex Automation Systems and Systems Engineering	Thursday 08.09.	9:00 - 10:30	A bi-directional interface enabling cross-disciplinary Systems Engineering with RAMI 4.0 and AutomationML	ETFA22-000262	Christoph Binder
				Digital resource models in engineering and operation – Data transformation and process changes	ETFA22-000283	Carmen Listl
				Functional Smart Grid Application Development	ETFA22-000340	Felix Knorr
				Automated Model-Based Reliability Assessment of Software-Defined Manufacturing	ETFA22-000342	Philipp Grimmeisen
				Static Data Race Detection in Multi-Task Programs for Industrial Robots	ETFA22-000344	AMEENA ASHRAF
				A New Approach to Secure Industrial Communication Systems Based on Revolution PI Module	ETFA22-000348	Song Son Ha
				Studio4Education: An Educational Model-Driven Workbench for IoT Automation	ETFA22-000350	Fadwa REKIK
				Balanced Selection in Industrial Bin Picking	ETFA22-000353	Sofia Fernanda Espericueta Martinez
				Upcoming domains for the MTP and an evaluation of its usability for electrolysis	ETFA22-000365	Lukas Bittorf
				A software engineering point of view on digital twin architecture	ETFA22-000367	Gaëlic BECHU
				Formed Workpieces in Industrial Bin Picking	ETFA22-000387	Matthias Sarna
				Towards Coordinating Production Reconfiguration	ETFA22-000391	Kristof Meixner
				Data requirements for factory layout planning and simulation – Setting up a module-based concept for information delivery manuals	ETFA22-000399	Marian Süße
				Towards Design Patterns for Production Security	ETFA22-000406	David Hoffmann
Towards Multi-View Test Specification in CPPS Engineering	ETFA22-000407	Dietmar Winkler				
Session/Track	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
WIP10: Artificial Intelligence for Cyber Physical Systems in Automation	Artificial Intelligence in Automation	Thursday 08.09.	9:00 - 10:30	Active Learning Application for Recognizing Steps in Chemical Batch Production	ETFA22-000324	Benjamin Klöpper
				Explaining solutions to multi-stage stochastic optimization problems to decision makers	ETFA22-000328	Kaja Balzereit
				FPGA Realization of a Neural Network based Motor Controller	ETFA22-000362	Mark Jervis
				Automated generation of asset administration shell: A transfer learning approach with neural language model and semantic fingerprints	ETFA22-000363	Yuchen Xia
				Deep learning-based 5G indoor positioning in a manufacturing environment	ETFA22-000414	Hannes Vietz
				ML4ProFlow: A Framework for Low-Code Data Processing from Edge to Cloud in Industrial Production	ETFA22-000378	Christian Klarhorst
				A reinforcement learning approach for optimal heating curve adaption	ETFA22-000394	Stephan Seidel
				Evolution of the Automotive Reference Architecture Model towards a Domain-Specific Systems Engineering Approach	ETFA22-000277	Katharina Polanec
Session/Track	Title of Session/Track	Day	Timeslot	Paper	Paper Id	Corresponding Author
WIP11: Vehicular Embedded Systems	WIP: Vehicular Embedded Systems	Friday 09.09.	14:00 - 15:30	Fault-Tolerant Low-Cost Analog Sensor Implementation for By-Wire Vehicle	ETFA22-000315	Ramez Daoud
				Fault-Tolerant Optical Controller Area Network (FTO-CAN) Based on Heartbeat Signal Termination	ETFA22-000330	Duc Hoang
				Evil SteVe: An Approach to Simplify Penetration Testing of OCPP Charge Points	ETFA22-000376	Lisa Gebauer
				On in-vehicle network security testing methodologies in construction machinery	ETFA22-000343	Alessandro Papadopoulos
				Work in Progress: A Centralized Configuration Model for TSN-5G Networks	ETFA22-000382	Zenepe Satka
				AUTOSAR University Package Classic Demonstrator	ETFA22-000383	Moisés Urbina Fuentes