

# **Congress on Measurement, Quality and Data Science (MQDS 2023)**

Bordeaux, France  
5 - 7 June 2023

ISBN: 978-1-7138-7965-7

**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© (2023) by Comite Africain de Metrologie (CAFMET)  
All rights reserved.

Printed by Curran Associates, Inc. (2023)

For permission requests, please contact Comite Africain de Metrologie (CAFMET)  
at the address below.

Comite Africain de Metrologie (CAFMET)  
62 av. Notre Dame du Lac  
49000 Angers  
France

Phone: 33 (0) 6 73 62 32 62  
Fax: 33 (0) 2 41 88 84 21

[contact@cafmet.com](mailto:contact@cafmet.com)

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

# TABLE OF CONTENTS

## **PLENARY**

Geometrical Errors and Their Uncertainty in Goniophotometers: An Application to Road Surface Photometry .....	1
<i>Johanna Bernasconi, Peter Blattner, Mikael Lindgren, Dominique Renoux, Paola Lacomussi</i>	

## **SAFETY, RELIABILITY AND QUALITY**

How TQM Has Impacted the Industry .....	8
<i>Mohammed Alotaibi</i>	
Human Factors and Interfaces Between Operators, Processes, and Plant in the Technical Standards: The Italian Experience.....	16
<i>Romualdo Marrazzo, Domenico Barone</i>	
Method for the Control of Blockchain Exploitation .....	22
<i>Mor Diop, Saïd Tazi, Yves Ducq</i>	
Reliability Test Monitoring: Detection of Time-To-Failure with Specific Instrumentation .....	29
<i>Arnaud Maire, Marco Bonato</i>	

## **HEALTH AND ENVIRONMENT**

A Smart Solution to a Smart Solution to Plant Growth Monitoring and Control in Greenhouses: Methodology and Instrumentation.....	37
<i>Radhwen Ben Kahla, Feiza Ghezail, Imen Harbaoui</i>	
An Ontology-Based Epidemic Hospital Model Extraction .....	46
<i>Zhen Dang, Qingping Yang, Tao Zhang</i>	
Monitoring and Detection of Toothbrushing with Smart Watches and Artificial Intelligence.....	53
<i>Eduardo Casilari, Francisco J. González-Cañete</i>	
Sentiment Analysis of Public Opinion in Social Media Using SVM .....	61
<i>Jing Liu, Yanmeng Xu, Nadarajah Manivannan, Federico Colecchia</i>	

## **MANUFACTURING AND ENGINEERING**

A 3D Modelling Pipeline Based on Fringe Projection Profilometry .....	70
<i>Tao Zhang, Qingping Yang</i>	
Enhancing Collaboration Through Centralised Terminology Resources.....	76
<i>Michael Chrubasik, Chris T. S. Lorch, João Gregório, Paul M. Duncan</i>	
Impact of Supply Chain Risk Management on Supply Chain Performance and Sustainability: Case Study of Moroccan Petroleum Industry.....	83
<i>Sara Sarir, Mohamed El Oumami, Zitouni Beidouri</i>	

Measurement Uncertainty Evaluation of Coordinate Measuring Machines Using Web Application and Ontology .....	92
<i>Priyanka Bharti, Qingping Yang</i>	

The Degree of Status for Executing DDMRP in Moroccan Aerospace Firms.....	100
<i>Soumaya Idrissi Jazouli, Mohamed Ben Ali, Otmane Bouksour, Ahmed Adri, Said Rifai</i>	

## **INDUSTRY 4.0 AND FUTURE INDUSTRY**

Blockchain-Based IoT for Industry 4.0: Exploring Opportunities and Applications.....	107
<i>Dorcas Dachollom Datiri, Maozhen Li</i>	

Integration of Industry 4.0 Services and Features in the Banking Sector: Overview and Feasibility.....	116
<i>Samar Aoun, Roy Abi Zeid Daou, Yves Ducq</i>	

Machine Learning for Combined Predictive Strategies in an Industrial 4.0 Context: A Systematic Literature Review .....	121
<i>Jihen Issaoui, Nadia Bahria, Imen Harbaoui</i>	

## **ENERGY AND BUILT ENVIRONMENT**

Analysis of Research Trend and Detection Technology of Hydrogen Damage in Metallic Materials .....	128
<i>Chenxi Zhu, Qin Hu, Haiting Zhou, Qiang Wang, Dongdong Ye, Muda Jin</i>	

Assessing the Knowledge and Compliance of Quality Management Practice Among Ghanaian Construction Organisations .....	136
<i>Hilary Osei-Bonsu, Nuhu Braimah, Muhammad Shafique</i>	

Assessment Methodology of Building Energy Performance Measurements - EPC RECAST Project.....	143
<i>Yusra Laaroussi, Ugo De Filippis, Lilia Galai Dol, Olivier Greslou, Rofaida Lahrech</i>	

Data Fusion for Uncertainty Evaluation in Extreme Electrical Metrology.....	150
<i>Marija Cundeva-Blajer</i>	

Detecting Night Opening of Windows in Summer: A Case Study .....	157
<i>Valentin Hoyet, Mathieu Bouville, Maxime Robillart, Marie-Lise Pannier</i>	

Power Consumption Estimation of Love Wave Sensors Using Ltspice .....	169
<i>Marcelo V. Da Silva, Ewaldo E. C. Santana, Raimundo C. S. Freire, Marlo Andrade, Ollivier Tamarin, Corinne Dejous</i>	

Risk Analysis Assessment in Working Testing and Calibration Laboratories in Accordance with ISO/IEC 17025:2017 Standard.....	175
<i>Serap Köktas Koca, Salih Ayvaz, Zeynep Naz Ayvaz, Funda Arslan</i>	

## **Author Index**