

1. Record Nr.	UNINA9910847068503321
Titolo	Advances in Manufacturing IV : Volume 4 - Measurement and Control Systems: Digitalization, Sustainability and Industry Applications // edited by Magdalena Diering, Micha Wieczorowski, Mukund Harugade
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2024
ISBN	3-031-56467-7
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (259 pages)
Collana	Lecture Notes in Mechanical Engineering, , 2195-4364
Disciplina	670
Soggetti	Manufactures Automatic control Robotics Automation Measurement Measuring instruments Materials Machines, Tools, Processes Control, Robotics, Automation Measurement Science and Instrumentation Materials Engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro -- Preface -- Organization -- Contents -- Transition of Controlled Atmosphere Brazing Jig for Aluminum Heat Exchangers from Spring-Loaded to Fixed-Dimension -- 1 Introduction -- 2 Research Problem -- 3 Methodology -- 4 Results and Discussion -- 5 Conclusion -- References -- Six Sigma for the Improvement of Productivity for Fiber to the Home (FTTH) Installations of an Outsourcing Service Company -- 1 Introduction -- 1.1 Six Sigma, Telecommunications and Productivity -- 2 Methodology -- 3 Research Problem -- 3.1 Contextualization of Problematic Reality -- 4 Results -- 4.1 Independent and Dependent Variable Results -- 5 Discussions -- 6 Conclusions -- References -- Implementation of Human Gestures

in the Control of Collaborative Robots -- 1 Introduction -- 1.1 Tele-Robotics -- 1.2 Gesture Control Systems -- 1.3 Communication Systems -- 2 Gesture Recognition -- 3 Communication Protocol Architecture -- 4 Prototype Implementation and Validation -- 5 Conclusions -- References -- Assessment of Threads Used in the Aviation Industry Based on the Microstructure Analysis -- 1 Introduction -- 2 Materials and Methods -- 3 Results and Discussion -- 4 Conclusions -- References -- The Implementation of Machine Learning Methods in Six Sigma Projects - A Literature Review -- 1 Introduction -- 2 Machine Learning -- 3 Research Methodology -- 4 Study Results -- 4.1 The Total Number of Publications Reviewed -- 4.2 Machine Learning Methods Using in Production Area in SS Project -- 5 Findings and Recommendations for Additional Future Research -- References -- Toward ML-Based Application for Vehicles Operation Cost Management -- 1 Introduction -- 2 Material and Methods -- 3 Results -- 4 Discussion -- 4.1 Limitations of the Current Approaches -- 4.2 Directions for Further Studies -- 5 Conclusions -- References. Parametric Evaluation Samples Made by SLM Technology Measured Using Micro-Computed Tomography -- 1 Introduction -- 2 Materials and Methods -- 2.1 Additively Manufactured Parts -- 2.2 Methodology for Analyzing the Structure of the Studied Surfaces -- 3 Results and Discussion -- 4 Conclusions -- References -- Evaluation of the Tool Set Overhang Effect on Surface Topography in the Finish Turning Process of Inconel 718 alloy -- 1 Introduction -- 2 Material and Methods -- 3 Results and Discussion -- 4 Conclusions -- References -- A Method for Developing Acoustic Maps for Noise Management in Terms of the SmartCity Concept -- 1 An Introduction -- 2 The Problem of Taking into Account the Subjective Assessment of Noise Hazard -- 2.1 Similarity of Features of Objects in Urbanized Areas -- 2.2 Description of the Possibility of Including Subjective Aspects of Noise in an Acoustic Map -- 3 Proposal of an Acoustic Model for the Assessment of the Urban Environment -- 4 Summary and Conclusions -- References -- Detecting Motor Defects Using Noise Analysis -- 1 Theoretical Aspects -- 1.1 Introduction -- 2 Methodology -- 3 Data Analysis and Measurement -- 4 Conclusions -- References -- The Design of an Injection Mould for the "ENGINE BUFFER" Benchmark - Case Study -- 1 Introduction -- 2 General Considerations on Plastics -- 3 Plastic Injection Moulding Process -- 4 Calculations for the Sizing of the Mould Forming Plates -- 5 Mould Design, Modelling, Simulation -- 6 Analytical Results and Simulations -- 7 Machining Simulation - Lower Forming Plate - Solidcam -- 8 Conclusion -- References -- Qualification of AI-Based Surface Topography Inspection Systems for Inline Measurement in Series Production: Tactile Touch Systems Versus Optical AI Analysis -- 1 Introduction -- 1.1 Research Goals.  
1.2 Criteria for Comparing Classic Inline Testing (Tactile) Versus AI-Based Approach -- 1.3 Paper Structure -- 2 Inline Measurement: Production Metrology for Surface Topography (State of the Art) -- 2.1 Overview for Assessing the Surface Topography -- 2.2 Measuring Method for Determining Surface Characteristics (Laboratory and Inline): Fundamentals and Pros/Cons -- 2.3 Application Areas Within Automobile Industry -- 3 Concept: Qualification of an AI-Based Surface Inspection System for Inline Measurements -- 4 Case Study: Surface Analysis -- 4.1 Experiments -- 4.2 AI-Based System Qualification Program and Evaluation -- 5 Summary and Outlook -- References -- Identifying an Image Classification Model for Welding Defects Detection -- 1 Introduction -- 2 State of the Art -- 3 Image Classification Models -- 3.1 EfficientNets -- 3.2 MobilNets -- 3.3 Yolo -- 4 Methodology --

5 Results -- 6 Discussion -- 6.1 YOLOv7 Application on Weld Beads Dataset -- 7 Conclusion -- References -- Effect of Material and Pretreatments on Surface Cleanliness -- 1 First Section -- 1.1 An Introduction -- 2 Recognoil QB -- 3 Experimental Part -- 4 Discussion of Results -- 5 Conclusion -- References -- Comparative Analysis of VGGish and YAMNet Models for Welding Defect Detection -- 1 Introduction -- 2 Literature Review -- 2.1 Convolutional Neural Networks -- 2.2 VGGish Model -- 2.3 Transfer Learning Technique in Bearing Health Assessment -- 3 Audio Detection Models -- 3.1 Sound Preprocessing -- 3.2 Prediction and Classification Models for Sounds -- 4 Methodology -- 4.1 Data Collection -- 4.2 Data Preprocessing -- 4.3 Training of YAMNet and VGGish Models -- 4.4 Prediction Code with YAMNet and VGGish -- 4.5 Adjustments -- 5 Results -- 5.1 Experimental Setup -- 5.2 Evaluation -- 5.3 VGGish Model Results -- 5.4 YAMNet Model Results -- 6 Discussion -- 6.1 Model Accuracy.

6.2 Inference Time -- 7 Conclusions -- References -- Influence of Selected Measurement Conditions on the Reliability of the Representation of Ring and Rim Features -- 1 Introduction -- 2 Materials and Measures -- 3 Results and Discussion -- 4 Evaluation of Measurement Uncertainty -- 5 Conclusions -- References -- Digital Twin Application for Vision Control in the Production of Mechatronic Ladders -- 1 Introduction -- 2 Contemporary Perspective of Digital Twin Technology -- 3 Innovative Line for the Production of Mechatronic Ladders -- 4 Digital Twin Application for Vision Control System -- 4.1 Digital Twin Application Concept -- 4.2 Virtual Scene of Digital Twin Application Unity Environment -- 4.3 Verification of the Application -- 5 Summary and Future Works -- References -- Machine Vision System for Quality Control of Stents Used in Angioplasty -- 1 Introduction -- 2 Machine Vision Systems -- 3 Research Object -- 3.1 Stents -- 3.2 Manufacturing Process -- 3.3 Quality Control -- 4 Proposal for a Solution -- 4.1 Vision System -- 4.2 Vision System Verification -- 5 Discussion and Conclusion -- References -- Author Index.

---

#### Sommario/riassunto

This book gathers timely contributions on metrology and measurement and control systems, across different disciplines and fields of applications. The chapters, which were presented at the 8th International Scientific-Technical Conference, MANUFACTURING 2024, held on May 14-16, 2024, in Poznan, Poland, cover cutting-edge research and best-practices concerning the use of AI-based optical, computed tomographic, coordinate metrology and vision inspection systems to assess manufacturing processes and products. They discuss strategies for automating, and for improving the effectiveness of quality control and measuring processes. All in all, this book provides both researchers and practitioners with a timely guide on cutting-edge measuring and control systems supporting the development of modern manufacturing in the context of digitalization, sustainability and industry applications.

---