

1. Record Nr.	UNINA9911046228903321
Autore	Gudipalli Abhishek
Titolo	Integrated Systems : Embedded, Signal Processing, and Communication
Pubbl/distr/stampa	Newark : , : John Wiley & Sons, Incorporated, , 2026 ©2026
ISBN	1-394-31176-1 1-394-31175-3
Edizione	[1st ed.]
Descrizione fisica	1 online resource (612 pages)
Disciplina	006.2/2
Soggetti	Embedded computer systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Cover -- Series Page -- Title Page -- Copyright Page -- Contents -- Preface -- Chapter 1 Integration of Industrial Robots to Enhance Warehouse Efficiency in an Industry 4.0 Environment Using Digital Twin Technology -- Abbreviations -- 1.1 Introduction -- 1.2 Industry Internet of Things and Robot Applications in Warehouse -- 1.3 Programming Using CODESYS V3.5 SP19 -- 1.4 Creation of Warehouse in Factory IO -- 1.5 Sequential Function Chart Programming Using CODESYS V3.5 -- 1.6 Conclusions -- Bibliography -- Chapter 2 QR Code-Enabled Anytime Pill Dispenser -- 2.1 Introduction -- 2.2 Literature Review -- 2.3 Methodology -- 2.3.1 Hardware Requirements -- 2.3.2 Workflow -- 2.4 Results and Discussions -- 2.4.1 System Initialization -- 2.4.2 QR Code Scanning -- 2.5 Conclusion -- References -- Chapter 3 Analysis on Insulation Properties of Carbon Quantum Dots-SiO ₂ Oil Fillers in Mineral Oil -- 3.1 Introduction -- 3.2 Experimental Arrangement and Preparation Method -- 3.2.1 Preparation of Nanofluid -- 3.2.2 AC Breakdown Voltage Test -- 3.2.3 Tan Delta and Volume Resistivity Test -- 3.3 Results and Discussion -- 3.4 Conclusion -- Bibliography -- Chapter 4 Comparative Analysis of Partial Discharge Characteristics in Different Electrode Configurations of Biodegradable Nanofluid -- 4.1 Introduction -- 4.2 Sample and Procedure for Test -- 4.2.1 Mixture of Test Solution and Nanofluids -- 4.2.2 Test Arrangements and Procedures -- 4.3 Test Results and

Analysis -- 4.3.1 Partial Discharge Magnitude and Its Inception -- 4.4 Conclusion -- References -- Chapter 5 Cost-Effective Real-Time Facial Recognition and Database Integration Using Firebase -- 5.1 Introduction -- 5.2 Literature Review -- 5.2.1 Overview of Facial Recognition Techniques -- 5.2.2 Existing Systems and Technologies -- 5.2.3 Applications of Facial Recognition in Various Fields. 5.2.3.1 Education Attendance Monitoring -- 5.2.3.2 Exam Proctoring -- 5.2.3.3 Financial Services and Banking Secure Transactions -- 5.2.3.4 Fraud Prevention -- 5.2.3.5 Healthcare Patient Identification -- 5.2.3.6 Emotion Detection -- 5.2.3.7 Safety and Monitoring -- 5.2.3.8 Access Control -- 5.2.3.9 Border Control -- 5.3 Methodology -- 5.4 Implementation -- 5.4.1 Real-Time Facial Recognition System -- 5.4.2 Face Encoding Generation Script -- 5.4.3 Database Initialization Script -- 5.5 Conclusion -- References -- Chapter 6 Remote Light Monitoring for Energy Efficiency -- 6.1 Introduction -- 6.2 Methodology -- 6.3 Design Approach -- 6.4 Results -- 6.4.1 Cost Analysis -- 6.5 Conclusion -- References -- Chapter 7 Buffer for Critical Path VLSI Circuits -- 7.1 Introduction -- 7.2 Conventional Buffer -- 7.3 Schematic Design of the Proposed Buffer -- 7.4 Results and Discussions -- 7.4.1 Scaling of Voltage and Load -- 7.4.1.1 Delay Due to Scaling of Voltage and Load -- 7.4.1.2 Power Dissipation for Scaling of Voltage and Load -- 7.4.2 Scaling the Technology Node -- 7.5 Conclusion -- References -- Chapter 8 Fuzzy Logic-Based Navigation Control for Khepera Robot -- 8.1 Introduction -- 8.1.1 Scope and Limitations -- 8.2 Research Methodology -- 8.2.1 Environment Modeling -- 8.2.2 Robot Modeling -- 8.2.3 Fuzzy Logic Controller Design -- 8.2.4 Simulation-Based -- 8.3 Results and Discussions -- 8.3.1 Fuzzy System Inputs and Outputs -- 8.3.2 Khepera's Trajectory -- 8.3.3 Khepera's Performances with Fuzzy and without Fuzzy Controller -- 8.4 Conclusions -- References -- Chapter 9 Detection and Recurrence of Breast Cancer Through Image Processing and Attention Awareness: A Comparative Analysis of Algorithms -- 9.1 Introduction -- 9.2 Literature Review -- 9.3 System Implementation -- 9.4 Results and Discussion -- 9.5 Conclusion -- References. Chapter 10 Transformative Innovations in Tomato Plant Disease Detection: A Comprehensive Examination of Advanced Sensing Technologies and Algorithmic Precision -- 10.1 Introduction -- 10.2 Problem Statement -- 10.3 Related Works -- 10.4 Materials and Methods -- 10.4.1 Architecture -- 10.4.2 Algorithm -- 10.4.3 Mathematics -- 10.4.3.1 Intersection Over Union -- 10.4.3.2 Average Precision -- 10.4.4 Implementation -- 10.4.5 Dataset -- 10.5 Experiments and Results -- 10.5.1 Test Bench -- 10.5.2 Test Case -- 10.5.3 Benchmarking -- 10.5.4 Results -- 10.6 Conclusion -- References -- Chapter 11 Triples, Helmet, Number Plate Design On Real-Time Information System -- Introduction -- Abbreviations -- Proposed System -- Models Implemented -- Advanced Picture Handling Includes a Few Major Advances -- Picture Compression -- Image Compression Types -- Compression Ratio -- Image Lossy Compression -- Lossless Image Input -- Experimental Results -- Limitations -- Future Works -- Conclusion -- References -- Chapter 12 Brain Tumor Segmentation Using U-Net, U-Net with Attention, and ResNeXt50 -- 12.1 Introduction -- 12.2 Dataset Description -- 12.2.1 MRI Images -- 12.2.2 Manual FLAIR Abnormality Segmentation Masks -- 12.2.3 Patient Information -- 12.2.4 Purpose -- 12.2.5 Availability -- 12.3 Methodology -- 12.3.1 Data Preprocessing -- 12.3.2 Data Augmentation and Transformations -- 12.3.3 Algorithm Selection -- 12.4 Segmentation Quality Metrics and Loss Functions -- 12.4.1 Segmentation Quality Metric -- 12.4.2 Segmentation Loss Function --

12.5 Training Procedure -- 12.5.1 Model Training and Optimization --
12.5.2 Test Performance Evaluation -- 12.6 Test Results and
Visualization -- 12.7 Performance Evaluation of Segmentation Models
-- 12.8 Discussion -- 12.8.1 Model Performance Comparison -- 12.8.2
Architectural Advantages.
12.8.3 Training Strategy and Data Augmentation -- 12.9 Future Scope
-- 12.10 Conclusion -- Acknowledgment -- References -- Chapter 13
Skin Disease Classification for Healthcare Using a Federated Learning-
Based Ensemble Learning -- 13.1 Introduction -- 13.2 Literature
Review -- 13.3 Dataset and Methodology -- 13.4 Results and
Discussion -- 13.5 Conclusion -- References -- Chapter 14 Fingerprint
Recognition Using Image Processing and Neural Networks -- 14.1
Introduction -- 14.2 Related Works -- 14.3 Proposed Methodology --
14.4 Results and Discussion -- 14.5 Methodology Comparison -- 14.6
Conclusion and Future Work -- Bibliography -- Chapter 15 Machine
Learning Algorithms to Predict and Detect Malicious Network Traffic
and Cyberattacks -- Introduction -- Literature Review -- Proposed
Methodologies -- Algorithms Used -- Decision Tree Algorithm --
XGBoost Algorithm -- Performance Metrics -- Confusion Matrix --
Results and Output -- Conclusion -- References -- Chapter 16
Machine Learning-Based Term Retrieval Method for Text Extraction
from Emojipedia -- 16.1 Introduction -- 16.2 Related Works -- 16.3
Proposed Methodology -- 16.3.1 Preprocessing -- 16.3.2 Feature
Extraction -- 16.3.3 Automated Term-Based Retrieval Method --
16.3.4 Stemming -- 16.3.5 Stop Words -- 16.3.6 Feature Extraction-
Term Frequency-IDF -- 16.4 Result and Discussion -- 16.5 Conclusion
-- Bibliography -- Chapter 17 Experimentations on Eulerian Video
Magnification -- 17.1 Introduction -- 17.2 Related Works -- 17.3
Methodology -- 17.3.1 Video Acquisition -- 17.3.2 Spatial
Decomposition -- 17.3.3 Time Domain Filtering -- 17.3.4
Amplification Filtering -- 17.3.5 Synthesized Images -- 17.4
Experiments -- 17.4.1 Video Acquisition -- 17.4.1.1 Methods -- 17.5
Results -- 17.5.1 Horizontal Vibration Video -- 17.5.2 Vertical
Vibration Video -- 17.6 Discussion -- 17.6.1 Significance of Findings.
17.6.2 Challenges Encountered -- 17.6.3 Noise Amplification -- 17.6.4
Artifact Introduction -- 17.6.5 Computational Efficiency -- 17.6.6
Potential Applications -- 17.6.6.1 Medical Diagnostics -- 17.6.6.2
Structural Health Monitoring -- 17.6.6.3 Video Forensics -- 17.6.6.4
Materials Science -- 17.6.7 Future Research Directions -- 17.6.7.1
Advanced Noise Reduction Techniques -- 17.6.7.2 Artifact
Minimization -- 17.6.7.3 Real-Time Processing -- 17.6.7.4
Application-Specific Customization -- 17.6.7.5 Extended Validation --
17.7 Conclusion -- Data Availability -- References -- Chapter 18
Predictive Modeling for Early Detection of Mental Health Crisis Among
Employees -- 18.1 Introduction -- 18.2 Related Works -- 18.3
Methodology and Model Development -- 18.3.1 Mental Health
Prediction Models -- 18.3.2 Logistic Regression -- 18.3.3 K-Nearest
Neighbors -- 18.3.4 Decision Tree Classifier -- 18.3.5 Random Forest
-- 18.3.6 Bagging (Bootstrap Aggregating) -- 18.3.7 Boosting --
18.3.8 Stacking -- 18.3.9 Data Collection and Preprocessing Methods
-- 18.4 Evaluation Methodologies -- 18.4.1 Comparison with Baseline
Methods -- 18.4.2 Model Performance -- 18.4.3 Challenges and
Solutions -- 18.4.4 Limited Access to Large and High-Quality Datasets
-- 18.4.5 Feature Selection -- 18.4.6 Class Imbalance -- 18.4.7 Model
Overfitting -- 18.5 Conclusion -- References -- Chapter 19
Enhancement of Spatial Resolution with Deep CNN-Based Fusion of
Panchromatic-Multispectral Images -- 19.1 Introduction -- 19.2
Literature Survey -- 19.3 Methodology -- 19.3.1 Input Layers -- 19.3.2

Multi-Filter Layer (Edge Filters) -- 19.3.3 Upsampling and Concatenation (C) -- 19.3.4 Convolutional Layers -- 19.3.5 Residual Skip Connection -- 19.3.6 Output Layer -- 19.4 Experimental Results and Analysis -- 19.4.1 Datasets -- 19.4.2 Quantitative Metrics -- 19.4.3 Metrics and Graphs -- 19.5 Conclusion. References.

Sommario/riassunto

Future-proof your technical expertise with this essential book, offering a comprehensive guide to the latest innovations, trends, and solutions at the critical intersection of embedded systems, signal processing, and communication systems. Embedded systems play a pivotal role in our modern lives.
