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Nota di contenuto	Intro -- Table of Content -- Title -- BENTHAM SCIENCE PUBLISHERS LTD. -- End User License Agreement (for non-institutional, personal use) -- Usage Rules: -- Disclaimer: -- Limitation of Liability: -- General: -- FOREWORD -- PREFACE -- List of Contributors --

Enhanced Machine Learning Techniques for Pest Control and Leaf Disease Identification -- Abstract -- INTRODUCTION -- RELATED WORK -- BACKGROUND STUDY -- Artificial Neural Network (ANN) -- Mayfly Optimization -- Male Mayflie's Movement -- Female Mayflie's Movement -- Mating of Mayfly -- BLACK WINDOW OPTIMIZATION -- Mathematical Evaluation -- PROPOSED METHODOLOGY -- Pre-processing -- Leaf Image from Plants - Segmentation Model Using Improved Canny Algorithm -- Steps of Improved Canny Algorithm -- Leaf Image Feature Selection Using Hybrid Black Widow Optimization Algorithm with Mayfly Optimization Algorithm (BWO-MA) -- Pseudo-Code of the Hybrid (BWO-MA) Algorithm -- Output: Objective Function's -RMSE -- Leaf Image Classification Using (BWO-MA) with ANN -- Hyper-Parameter Tuning With (BWO-MA) -- RESULT AND DISCUSSION -- Dataset Description -- Evaluation &amp -- Results -- CONCLUSION -- REFERENCES -- Automatic Recognition and Classification of Tomato Leaf Diseases Using Transfer Learning Model -- Abstract -- INTRODUCTION -- EXISTING WORKS -- MATERIALS AND METHODS -- Related Works -- Convolution Neural Network -- Convolution Layer -- Activation Layer -- Pooling Layer -- Fully Connected Layer -- SqueezeNet -- PROPOSED WORK -- Image Acquisition (Dataset) -- Image Pre-Processing -- Establishing a New Deep Network Using Transfer Learning -- Recognition and Classification -- EXPERIMENTAL RESULTS AND DISCUSSION -- Experimental Setting and Environment -- Evaluation Metrics -- Experiment Deployment and Result Analysis -- Comparison with Earlier Works -- CONCLUSION AND FUTURE SCOPE -- ACKNOWLEDGEMENTS. REFERENCES -- Detection and Categorization of Diseases in Pearl Millet Leaves using Novel Convolutional Neural Network Model -- Abstract -- INTRODUCTION -- LITERATURE STUDY AND RELATED WORK -- DATA AND METHODOLOGY -- Data Acquisition -- Data Pre-processing -- Model Building and Validation -- Evaluation Metrics -- RESULTS AND ANALYSIS -- CONCLUSION AND DISCUSSION -- ACKNOWLEDGEMENTS -- References -- Artificial Intelligence-based Solar Powered Robot to Identify Weed and Damage in Vegetables -- Abstract -- INTRODUCTION -- DIGITAL AGRICULTURE: IMPACT &amp -- CHALLENGES -- INTRODUCTION TO ROBOTICS -- Robotics -- Need of Robotics -- Industrial Robots -- Automation and Robotics -- Control Systems for Robotics -- Limited Sequence Robots (Non-Servo) -- Point to Point Motion -- Continuous Path Motion -- Intelligent Robots -- Presence of Movement for Robots in the Agriculture Sector -- AN INTRODUCTION TO SOLAR ENERGY -- Photovoltaic Effect on Solar Generation -- Solar Cell: Construction and Working -- LOAD CALCULATION OF SOLAR PANELS -- For DC Loads -- For AC Loads -- Deciding Battery capacity -- SAMPLE SYSTEM DESIGN -- AGRICULTURAL ROBOT -- Mechanical Design of Agricultural Robot -- WORKING OF SOLAR ROBOT -- COMPUTER VISION AND MACHINE LEARNING -- EVALUATING THE QUALITY OF VEGETABLES USING MACHINE VISION -- CLASSIFICATION ALGORITHM -- METHODS FOR COLOUR SELECTION AND EXTRACTION -- CONCLUSION AND FUTURE SCOPE -- ACKNOWLEDGEMENTS -- REFERENCES -- Field Prevention System from Wild Animals -- Abstract -- INTRODUCTION -- LITERATURE REVIEW -- PROPOSED INNOVATION SYSTEM -- Regular CNN -- FLOWCHART -- Algorithm: -- SYSTEM REQUIREMENTS -- OPERATING SYSTEM- -- SOFTWARE REQUIREMENTS -- HARDWARE REQUIREMENTS -- DESIGN AND IMPLEMENTATION CONSTRAINTS -- Sensors -- Boards -- Others -- BLOCK DIAGRAM -- HARDWARE RESULT -- CONCLUSION -- Acknowledgments -- REFERENCES.
Weather Forecasting using Machine Learning for Smart Farming --

Abstract -- INTRODUCTION -- LITERATURE REVIEW -- WEATHER FORECAST USING LINEAR REGRESSION, AUTOREGRESSIVE INTEGRATED MOVING AVERAGE AND LONG-SHORT TERM MEMORY MODEL -- Linear Regression -- Auto-Regressive Integrated Moving Average (ARIMA) -- Long short-term memory (LSTM) -- The Architecture of LSTM Network -- EXPERIMENTAL RESULTS -- CONCLUSION -- REFERENCES -- Intelligent Crop Planning and Precision Farming -- Abstract -- INTRODUCTION -- Precision Farming -- Need for Precision Farming -- Precision Farming and changing times -- Past -- Present -- Precision Farming: Scenario of India -- Precision Farming: An add on -- Tools and Techniques Used for Precision Farming -- Global Positioning System (GPS) -- Sensor Technologies -- Geographic Information System (GIS) -- Grid Soil Sampling and Variable-rate Fertilizer (VRT) Application -- Crop Management -- Soil and Plant Sensors -- Rate Controllers -- Precision Irrigation in Pressurized Systems -- Software -- Intelligent Crop Planning -- Intelligent Crop Planning and Artificial Intelligence -- Climate-smart Agriculture -- Challenges that Remain -- Data -- Infrastructure -- CONCLUSION -- REFERENCES -- Artificial Intelligence and Drones in Smart Farming -- Abstract -- INTRODUCTION -- CONTRIBUTION OF THE AGRICULTURE SECTOR IN DIFFERENT TERMS -- Contribution to Employment -- Contribution to Exports -- Contribution to GDP -- METHODS TO IMPROVE FARMING PRODUCTIVITY -- Reformation of Land -- Challenges -- Inter-plantation -- Challenges -- Smart Water Management -- Challenges -- Heat Tolerant Varieties -- Challenges -- Plant Protection -- Challenges -- USE OF TECHNOLOGY IN AGRICULTURE TO OVERCOME CHALLENGES -- Improvement in Productivity Through the Mechanization of Agriculture -- Climate Forecasting Prediction Through Artificial Intelligence.
Improving Farm Yields and Supply Chain Management Uses Big Data. -- Why Agricultural Drone Should be adopted? -- How can Drones Support Indian Agriculture? -- WORKING OF DRONE TECHNOLOGY -- BEST DRONE PRACTICES -- BENEFITS OF DRONE TECHNOLOGY -- DISCUSSION -- CONCLUSION -- REFERENCES.

Sommario/riassunto

Artificial Intelligence is vital to the evolution of agriculture into a smart industry. The objective of this book is to inform readers about how artificial intelligence is improving agriculture by exploring its applications. The book addresses several aspects of artificial intelligence applications in smart agriculture including, pest control, disease identification, weed detection, and security. Chapters are contributed by experts in agriculture, computer science and biotechnology. Key Themes: Advanced machine learning techniques for pest control and disease identificationAutomated recognition and classification of plant diseases, focusing on tomatoes and pearl milletIntegration of artificial intelligence for solar-powered robots to identify weeds and damages in vegetablesDevelopment of field prevention systems to deter wild animals in farming areasUtilization of machine learning for weather forecasting to facilitate smart agriculture practicesIntelligent crop planning and precision farming through AI applicationsIntegration of artificial intelligence and drones to enhance efficiency and effectiveness in smart farming operations Other features of the book include a list of references and simple summaries in each chapter to distil the information for readers. The book is a primary reference material for courses on automation in agriculture. It can also serve as a handbook for anyone interested in advances in farming.