

1. Record Nr.	UNINA9911046643303321
Autore	Verma Neeta
Titolo	Prediction in Medicine
Pubbl/distr/stampa	Sharjah : , : Bentham Science Publishers, , 2024 ©2024
ISBN	9789815305128 9815305123
Edizione	[1st ed.]
Descrizione fisica	1 online resource (339 pages)
Altri autori (Persone)	SinghalAnjali SinghVijai
Soggetti	Machine learning Predictive analytics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	<p>Intro -- Title -- Copyright -- End User License Agreement -- Contents -- Foreword -- Preface -- List of Contributors -- Predictive Analysis: Forecasting Patient's Outcomes and Medical Trends -- Alka Singhal1,* and Dhanalekshmi Gopinathan1 -- INTRODUCTION -- Impact of Technology on Healthcare -- Improved Patient Care -- Enhanced Diagnostics and Treatment -- Medication Management -- Preventive Healthcare -- Big Data and Analytics -- Improved Communication -- Enhanced Research and Development -- Patient Empowerment -- Efficiency and Cost Reduction -- Predictive Analysis and Healthcare -- Disease Prevention and Early Intervention -- Optimizing Treatment Plans -- Reducing Hospital Readmissions -- Resource Allocation and Operational Efficiency -- Chronic Disease Management -- Fraud Detection and Revenue Management -- Personalized Medicine -- Population Health Management -- Enhancing Patient Engagement -- Preparing for Public Health Challenges -- PRINCIPLES OF HEALTH PREDICTIVE ANALYSIS -- Uncertainty and Error Measurement -- Focus of Health Forecasting -- Data Aggregation and Accuracy -- Horizons of Health Forecasting -- PATTERNS IN HEALTH PREDICTIVE ANALYSIS -- Temporal Patterns -- Applications -- Example -- Spatial Patterns -- Applications -- Example -- Epidemiological Patterns -- Applications --</p>

Example -- Genetic Patterns -- Applications -- Example -- Social and Behavioral Patterns -- Applications -- Example -- Clinical Patterns -- Applications -- Example -- Environmental Patterns -- Applications -- Example -- Pharmacological Patterns -- Applications -- Example -- Technological Patterns -- Applications -- Example -- Economic Patterns -- Applications -- Example -- STEPS IN PREDICTIVE ANALYSIS MODELING -- Planning -- Problem Definition -- Data Collection -- Data Preparation -- Data Cleaning -- Feature Selection -- Model Building.

Algorithm Selection -- Training the Model -- Model Evaluation -- Validation Dataset -- Metrics -- Model Selection and Fine-Tuning -- Hyperparameter Tuning -- Comparing Models -- Implementation -- Deployment -- Monitoring and Maintenance -- Continuous Monitoring -- Model Maintenance -- Predictive Analytics Modeling -- STEPS IN PREDICTIVE ANALYSIS MODELING IN HEALTHCARE -- Step 1 -- Step 2 -- Step 3 -- Step 4 -- Step 5 -- Step 6 -- Step 7 -- Predictive Analysis in Healthcare Using Machine Learning -- Predictions on Cardiovascular Diseases -- Diabetes Predictions -- Hepatitis Disease Prediction -- Cancer Predictions Using Machine Learning -- Predictive Analysis in Healthcare Using Artificial Intelligence (AI) -- Disease Diagnosis and Risk Prediction -- Patient Outcomes and Treatment Optimization -- Chronic Disease Management -- Fraud Detection and Revenue Cycle Management -- Resource Allocation and Operational Efficiency -- Drug Discovery and Development -- Natural Language Processing (NLP) for Unstructured Data -- CHALLENGES IN PREDICTIVE ANALYSIS IN HEALTHCARE -- CONCLUSION -- REFERENCES -- Prediction and Analysis of Digital Health Records, Geonomics, and Radiology Using Machine Learning -- Sundeep Raj1,*, Arun Prakash Agarwal1, Sandesh Tripathi2 and Nidhi Gupta1 -- INTRODUCTION -- OVERVIEW OF ARTIFICIAL INTELLIGENCE -- Different Learning Methodologies -- Healthcare Applications of Artificial Intelligence -- Digital Health Records -- Radiology -- Genetic Engineering and Genomics -- CHALLENGES AND RISKS -- CONCLUSION -- REFERENCES -- Medical Imaging Using Machine Learning and Deep Learning: A Survey -- Uma Sharma1,*, Deeksha Sharma1, Pooja Pathak2, Sanjay Kumar Singh2 and Pushpanjali Singh3 -- INTRODUCTION -- MEDICAL IMAGE ANALYSIS -- Medical Imaging -- X-Ray Imaging -- Ultrasound Imaging -- Magnetic Resonance Imaging -- Computerized Tomography.

Mammography -- MACHINE LEARNING -- Machine Learning Techniques -- Supervised Learning -- Unsupervised Learning -- DEEP LEARNING -- CNN (Convolution Neural Network) -- Basic Building Blocks of CNN -- Convolutional Layer -- Rectified Linear Unit (RELU) or Activation Layer -- Pooling Layer -- Fully Connected Layer -- RNN (Recurrent Neural Network) -- MEDICAL IMAGING ANALYSIS WITH MACHINE LEARNING AND DEEP LEARNING -- Image Preprocessing -- Segmentation -- Feature Extraction -- Pattern Recognition or Classification -- OPEN-SOURCE TOOLS -- CONCLUSION -- REFERENCES -- Applications of Machine Learning Practices in Human Healthcare Management Systems -- Ajay Satija1,*, Priti Pahuja2, Dipti Singh3 and Athar Hussain4 -- INTRODUCTION -- RESEARCH OBJECTIVES -- NEED FOR MACHINE LEARNING IN THE HEALTHCARE INDUSTRY -- CHALLENGES OF MACHINE LEARNING IN THE MEDICAL INDUSTRY -- Data Availability and Quality -- Data Security and Privacy -- Interpretability and Transparency -- Limited Sample Sizes -- Regulatory Compliance -- Integration into Healthcare Systems -- Bias and Fairness -- Clinical Adoption and Validation -- APPLICATIONS OF MACHINE LEARNING IN HEALTHCARE -- Machine Learning in Medical Diagnosis -- Machine Learning in Clinical Trail -- Patient Enrolment and Eligibility Requirements -- Trial Protocol

Design and Optimization -- Endpoint Prediction and Biomarker Identification -- Data Monitoring and Quality Assurance -- Drug Development and Discovery -- Predicting and Tracking Adverse Events -- Real-world Evidence (RWE) Generation -- Machine Learning in Drug Development -- Target Identification -- Predicting Drug-Drug Interactions -- Machine Learning Models Help with Drug Formulation Optimization -- Clinical Trial Optimization -- Drug Efficacy Prediction -- Drug Repurposing -- Toxicity Prediction -- Genomic Medicine -- Patient Stratification.

Utilization of Real-World Information -- Data Integration -- Market Access and Commercialization -- Robotic-based Surgery -- Machine Learning in Organ Image Processing -- RISK MANAGEMENT IN HEALTHCARE THROUGH MACHINE LEARNING -- Finding and Preventing Fraud -- Medical Decision Assistance Frameworks -- Risk Management for Security and Privacy -- Monitoring Adverse Drug Events -- FUTURE SCOPE OF MACHINE LEARNING IN THE HEALTHCARE INDUSTRY -- Personalized Medicine -- Better Diagnostics -- Drug Discovery and Development -- Robotics and Surgery -- Mental Health -- Public Health -- Administrative Efficient -- Research and Development -- Worldwide Health -- CONCLUSIONS -- REFERENCES -- Multimodal Deep Learning in Medical Diagnostics: A Comprehensive Exploration of Cardiovascular Risk Prediction -- Sonia Raj1,* and Neelima Bayappu1 -- INTRODUCTION -- DATA PREPARATION AND PREPROCESSING -- Image Dataset Characteristics -- Clinical Data Characteristics -- Demographics -- Medical History -- Medication and Treatment Records -- Laboratory Tests -- Vital Signs -- Imaging Data -- Clinical Assessments -- Symptoms and Subjective Data -- Electronic Health Records (EHRs) -- Environmental Factors -- Socioeconomic Variables -- Genetic and Genomic Data -- METHODOLOGY -- Multimodal Data Fusion -- Multimodal Deep Learning Algorithms -- MULTIMODAL DEEP LEARNING FOR CARDIOVASCULAR DISEASES -- CHALLENGES -- CONCLUSION -- REFERENCES -- Hypertension Detection System Using Machine Learning -- Amrita Bhatnagar1,* and Kamna Singh1 -- INTRODUCTION -- CHARACTERISTICS OF HYPERTENSION DETECTION SYSTEM -- Accurate Predictions -- Early Detection -- Personalized Risk Assessment -- Interpretability -- User-Friendly Interface -- Integration with Healthcare Workflow -- Security and Privacy -- Continuous Improvement -- Validation and Compliance -- PROCESS OF HYPERTENSION DETECTION MODEL.

Data Collection -- Wearable Devices -- Clinical Trials -- Public Health Databases -- Data Variables -- Various Data Collection Methods -- Data Quality Control -- Record Keeping -- Participant Recruitment -- Data Annotation -- Data Validation -- Example of Datasets -- Framingham Heart Study -- PTB Diagnostic ECG Database -- PhysioNet -- Data Preprocessing -- Data Gathering -- Data Cleaning -- Data Transformation with Feature Scaling -- Feature Engineering -- Temporal Aggregation -- Balancing the Dataset -- Normalization -- Feature Selection on Data Sets -- Correlation Analysis -- Information Gain -- SelectKBest -- Data Splitting -- Random Sampling -- Stratified Random Sampling -- Nonrandom Sampling -- Machine Learning Models for Hyper Tension Detection -- Logistic Regression -- Support Vector Machines (SVM) -- Random Forest -- Gradient Boosting Algorithms (e.g., XGBoost, LightGBM) -- Artificial Neural Networks (ANN) -- K-Nearest Neighbors (KNN) -- Decision Trees -- Naive Bayes -- Ensemble Methods -- Gaussian Processes -- Long Short-Term Memory (LSTM) Networks -- Testing and Interoperability -- Preprocess Test Data -- Load Trained Model -- Predict on Test Data -- Interpret Results -- Adjust and Refine -- Deploy the Model (Optional) --

Continuous Monitoring and Updating -- Ethical Considerations -- Applications of Hypertension Detection System -- Early Diagnosis and Prevention -- Personalized Health Monitoring -- Clinical Decision Support -- Population Health Management -- Employee Wellness Programs -- Integration with Electronic Health Records (EHR) -- Pharmacovigilance and Medication Adherence -- Health Coaching Platforms -- Clinical Trials and Research -- Public Health Campaigns -- Existing Models -- DeepHype -- Hypertension Detection Using Wearable Devices -- Mobile Health (mHealth) Apps -- Integration of Genetic Information -- Telehealth Platforms. Explainable AI (XAI).

Sommario/riassunto

Prediction in Medicine: The Impact of Machine Learning on Healthcare explores the transformative power of advanced data analytics and machine learning in healthcare. This comprehensive guide covers predictive analysis, leveraging electronic health records (EHRs) and wearable devices to optimize patient care and healthcare planning. Key topics include disease diagnosis, risk assessment, and precision medicine advancements in cardiovascular health and hypertension management. The book also addresses challenges in interpreting clinical data and navigating ethical considerations. It examines the role of AI in healthcare emergencies and infectious disease management, highlighting the integration of diverse data sources like medical imaging and genomic data. Prediction in Medicine is essential for students, researchers, healthcare professionals, and general readers interested in the future of healthcare and technological innovation. Readership: Graduate and undergraduate, researchers, professionals, general.
