

AI-Enabled Smart Healthcare Using Biomedical Signals



Table of Contents

| | |
|---|----|
| Preface | XV |
| Chapter 1 | |
| Basics and Descriptions of Different Biomedical Signals | 1 |
| <i>Macha Sarada, Jawaharlal Nehru Technological University, Hyderabad, India</i> | |
| Chapter 2 | |
| A Comprehensive Review on a Brain Simulation Tool and Its Applications..... | 26 |
| <i>Ankita Raghuvanshi, Indian Institute of Technology, Gandhinagar, India</i> | |
| <i>Mohit Sarin, National Institute of Technology, Raipur, India</i> | |
| <i>Praveen Kumar Shukla, VIT Bhopal University, India</i> | |
| <i>Shrish Verma, National Institute of Technology, Raipur, India</i> | |
| <i>Rahul Kumar Chaurasiya, Maulana Azad National Institute of Technology, Bhopal, India</i> | |
| Chapter 3 | |
| Adaptive Data Analysis Methods for Biomedical Signal Processing Applications..... | 52 |
| <i>Haroon Yousuf Mir, National Institute of Technology, Srinagar, India</i> | |
| <i>Omkar Singh, National Institute of Technology, Srinagar, India</i> | |
| Chapter 4 | |
| A Review for Neuroimaging Techniques in Multimedia Learning: Methodological Framework..... | 72 |
| <i>Pinar Ozel, Nevsehir Haci Bektas Veli University, Turkey</i> | |
| <i>Duygu Mutlu Bayraktar, Hasan Ali Yucel Faculty of Education, Turkey</i> | |
| <i>Tugba Altan, Faculty of Education, Kahramanmaraş Sutcu Imam University, Turkey</i> | |
| <i>Veysel Coskun, Faculty of Education, Hatay Mustafa Kemal University, Turkey</i> | |
| <i>Ali Olamat, Faculty of Engineering, Istanbul University-Cerrahpasa, Turkey</i> | |
| Chapter 5 | |
| A Review of Automated Diagnosis of ECG Arrhythmia Using Deep Learning Methods..... | 98 |
| <i>Praveen Kumar Tyagi, Maulana Azad National Institute of Technology, Bhopal, India</i> | |
| <i>Neha Rathore, Maulana Azad National Institute of Technology, Bhopal, India</i> | |
| <i>Deepak Parashar, IES College of Technology, Bhopal, India</i> | |
| <i>Dheeraj Agrawal, Maulana Azad National Institute of Technology, Bhopal, India</i> | |

Chapter 6

Quality-Controlled ECG Data Compression and Classification for Cardiac Healthcare Devices..... 112
Chandan Kumar Jha, Indian Institute of Information Technology, Bhagalpur, India

Chapter 7

Analogy of Wrist Pulse Signals in the Context of ECG Signals: A Review 129
Neha Rathore, Maulana Azad National Institute of Technology, Bhopal, India
Praveen Kumar Tyagi, Maulana Azad National Institute of Technology, Bhopal, India
Deepak Parashar, IES College of Technology, Bhopal, India
Dheraj Agrawal, Maulana Azad National Institute of Technology, Bhopal, India

Chapter 8

ECG Signal Analysis for Automated Cardiac Arrhythmia Detection..... 140
Chandan Kumar Jha, Indian Institute of Information Technology, Bhagalpur, India

Chapter 9

A Frequency Discrimination Technique for SSVEP-Based BCIs Using Common Feature Analysis and Support Vector Machine 158
Akshat Verma, National Institute of Technology, Raipur, India
Praveen Kumar Shukla, VIT Bhopal University, India
Shrish Verma, National Institute of Technology, Raipur, India
Rahul Kumar Chaurasiya, Maulana Azad National Institute of Technology, Bhopal, India

Chapter 10

A Robust Classification Approach for Character Detection Using P300-Based Brain-Computer Interface 179
Deepthi Hitesh Mehta, National Institute of Technology, Raipur, India
Mohit Sarin, National Institute of Technology, Raipur, India
Praveen Kumar Shukla, VIT Bhopal University, India
Shrish Verma, National Institute of Technology, Raipur, India
Rahul Kumar Chaurasiya, Maulana Azad National Institute of Technology, Bhopal, India

Chapter 11

Emotion Identification From TQWT-Based EEG Rhythms 195
Aditya Nalwaya, Indian Institute of Technology Indore, Indore, India
Kritiprasanna Das, Indian Institute of Technology Indore, Indore, India
Ram Bilas Pachori, Indian Institute of Technology Indore, Indore, India

Chapter 12

Empirical Wavelet Transform-Based Framework for Diagnosis of Epilepsy Using EEG Signals..... 217
Sibghatullah I. Khan, Sreenidhi Institute of Science and Technology, Hyderabad, India
Ram Bilas Pachori, Indian Institute of Technology, Indore, India

Chapter 13

| | |
|---|------------|
| Automated Glaucoma Classification Using Advanced Image Decomposition Techniques From Retinal Fundus Images..... | 240 |
| <i>Deepak Parashar, IES College of Technology, Bhopal, India</i> | |
| <i>Dheraj Kumar Agrawal, Maulana Azad National Institute of Technology, Bhopal, India</i> | |
| <i>Praveen Kumar Tyagi, Maulana Azad National Institute of Technology, Bhopal, India</i> | |
| <i>Neha Rathore, Maulana Azad National Institute of Technology, Bhopal, India</i> | |
| Chapter 14 | |
| Deep Learning-Based Approach to Detect Leukemia, Lymphoma, and Multiple Myeloma in Bone Marrow..... | 259 |
| <i>Janasruti U., Avinashilingam Institute for Home Science and Higher Education for Women, India</i> | |
| <i>Kavya S., Avinashilingam Institute for Home Science and Higher Education for Women, India</i> | |
| <i>Merwin A., Avinashilingam Institute for Home Science and Higher Education for Women, India</i> | |
| <i>Vanithamani Rangasamy, Avinashilingam Institute for Home Science and Higher Education for Women, India</i> | |
| Compilation of References | 283 |
| About the Contributors | 317 |
| Index..... | 320 |

Chapter 14

Deep Learning–Based Approach to Detect Leukemia, Lymphoma, and Multiple Myeloma in Bone Marrow

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ABSTRACT

Bone marrow cancer is one of the life-threatening diseases which may cause death to many individuals. Leukemia, lymphoma, multiple myeloma, and other cancers that form in the blood-forming stem cells of the bone marrow constitute bone marrow cancer. Early detection can increase the chance for remission. Accurate and rapid segmentation techniques can assist physicians to identify diseases and provide better treatment at the right time. CAD systems can be useful for the early discovery of bone marrow cancer. It features the latest updated algorithm that combines deep learning with MATLAB for health assessment. This can assist in the early detection of leukemia, lymphoma, and multiple myeloma. For denoising histopathological images, new K-SVD and fast non-local mean filter algorithms are employed. For pre-processing, algorithms like multilayer perceptron and novel hybrid histogram-based soft covering rough k-means clustering techniques are employed. Three classifiers, namely R-CNN, ResNet 50, and LSTM, are used to classify, and the performance is compared based on the accuracy.

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Navigate This Page

Description & Coverage

Table of Contents

Editor/Author Biographies

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