(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :05/05/2023

(21) Application No.202341031975 A
(43) Publication Date : 23/06/2023

(54) Title of the invention : IoT-driven Deep Learning Technique for Biometric Authentication Using ECG

(51) International classification :A61B 050000, G06F 213200, G06N 030400, G06N 030800, G06Q 204000
(86) International Application No :PCT// /
Filing Date :01/01/1900
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

(71)**Name of Applicant :**
1)Mr.Vinay Dwivedi, Noida Institute of Engineering & Technology
Address of Applicant :Assistant Professor, Department of CSE(AIML), Noida Institute of Engineering & Technology, 19, Institutional Area, Knowledge Park II, Greater Noida, Uttar Pradesh – 201306 Greater Noida ---------- ----------
2)Mrs.Sanchi Kaushik, Noida Institute of Engineering & Technology
3)Mr.Subhash Chandra, Noida Institute of Engineering & Technology
4)Ms.Shweta, Noida Institute of Engineering & Technology
5)Mrs.Neelam, Noida Institute of Engineering & Technology
6)Mrs.Anamika Tiwari, Noida Institute of Engineering & Technology
7)Mr.Padmanabhan P, Noida Institute of Engineering & Technology
8)Mr.Rajakumar P, Galgotias University
9)Mr.Venkatesan A, Galgotias University
10)Dr. P.Ramesh, Arasu Engineering College Kumbakonam
Name of Applicant : NA
Address of Applicant : NA
(72)**Name of Inventor :**
1)Mr.Vinay Dwivedi, Noida Institute of Engineering & Technology
Address of Applicant :Assistant Professor, Department of CSE(AIML), Noida Institute of Engineering & Technology, 19, Institutional Area, Knowledge Park II, Greater Noida, Uttar Pradesh – 201306 Greater Noida ---------- ----------
2)Mrs.Sanchi Kaushik, Noida Institute of Engineering & Technology
Address of Applicant :Assistant Professor, Department of CSE(AIML), Noida Institute of Engineering & Technology, 19, Institutional Area, Knowledge Park II, Greater Noida, Uttar Pradesh – 201306 Greater Noida ---------- ----------
3)Mr.Subhash Chandra, Noida Institute of Engineering & Technology
Address of Applicant :Assistant Professor, Department of CSE(AIML), Noida Institute of Engineering & Technology, 19, Institutional Area, Knowledge Park II, Greater Noida, Uttar Pradesh – 201306 Greater Noida ---------- ----------
4)Ms.Shweta, Noida Institute of Engineering & Technology
Address of Applicant :Assistant Professor, Department of CSE(AIML), Noida Institute of Engineering & Technology, 19, Institutional Area, Knowledge Park II, Greater Noida, Uttar Pradesh – 201306 Greater Noida ---------- ----------
5)Mrs.Neelam, Noida Institute of Engineering & Technology
Address of Applicant :Assistant Professor, Department of CSE(AIML), Noida Institute of Engineering & Technology, 19, Institutional Area, Knowledge Park II, Greater Noida, Uttar Pradesh – 201306 Greater Noida ---------- ----------
6)Mrs.Anamika Tiwari, Noida Institute of Engineering & Technology
Address of Applicant :Assistant Professor, Department of CSE(AIML), Noida Institute of Engineering & Technology, 19, Institutional Area, Knowledge Park II, Greater Noida, Uttar Pradesh – 201306 Greater Noida ---------- ----------
7)Mr.Padmanabhan P, Noida Institute of Engineering & Technology
Address of Applicant :Assistant Professor, Department of CSE(AIML), Noida Institute of Engineering & Technology, 19, Institutional Area, Knowledge Park II, Greater Noida, Uttar Pradesh – 201306 Greater Noida ---------- ----------
8)Mr.Rajakumar P, Galgotias University
Address of Applicant :Assistant Professor, School of Computing Science and Engineering, Galgotias University, Plot No. - 2, Sector 17A, Yamuna Expressway, Greater Noida, Gautam Buddha Nagar, Uttar Pradesh, India. Pin: 201310 Greater Noida ---------- ----------
9)Mr.Venkatesan A, Galgotias University
Address of Applicant :Assistant Professor, School of Electronics and Communication Engineering, Galgotias University, Plot No. - 2, Sector 17A, Yamuna Expressway, Greater Noida, Gautam Buddha Nagar, Uttar Pradesh, India. Pin: 201310 Greater Noida ---------- ----------
10)Dr. P.Ramesh, Arasu Engineering College Kumbakonam
Address of Applicant :Associate Professor, Department of Computer Science and Engineering Arasu Engineering College, Chennai Main Road, Kumbakonam – 612501 Thanjavur Dist., Tamilnadu, INDIA Greater Noida ---------- ----------

(57) Abstract :
Just as fingerprints are unique for everyone, so too are electrocardiograms (ECGs) in terms of their rhythm and form. Electrocardiogram (ECG) biometric systems are notoriously difficult to clone or hack. Therefore, electrocardiogram signals have been implemented in several secure biometric recognition systems. Problems with (i) signal noise, (ii) automatic feature extraction, and (iii) system performance are highlighted throughout the existing research. This work proposes a deep learning (DL) method based on matching templates to music to address issues that have so far defied conventional approaches. In the pre-processing stage of the proposed method, beat denoising, R-peak detection, and segmentation of the electrocardiogram (ECG) are performed. The suggested deep learning method is applied to grayscale images of these noise-free ECG beats. For the deep learning network to converge more quickly, a tailored activation function is also constructed in this work. Automatic feature extraction is a strength of the proposed network. The efficacy of the network is evaluated using the free biometric database ECGID.

No. of Pages : 11 No. of Claims : 2