(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :16/10/2025
(21) Application No.202511100449 A
(43) Publication Date : 05/12/2025

(54) Title of the invention : A COMPUTER-ENABLED MODEL FOR PREDICTING HUMAN SLEEP PATTERNS

(51) International classification	:G06N0020000000, A61B0005000000, G06N0020200000, G16H0050200000, G16H0010600000
(31) Priority Document No	:NA
(32) Priority Date	:NA
(33) Name of priority country	:NA
(86) International Application No Filing Date	: :01/01/1900
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

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(57) Abstract :
The invention discloses a computer-enabled model for predicting human sleep patterns comprising a data acquisition module (101), preprocessing unit (102), machine learning engine (103), predictive analytics module (104), feedback loop (105), and user interface (106). The system integrates physiological, environmental, and behavioral data to forecast sleep onset, duration, and stage transitions. A hybrid algorithm combining recurrent neural networks and ensemble learning ensures robust predictions. The feedback mechanism refines accuracy over time. The model offers real-time monitoring, personalization, and actionable recommendations, enhancing both individual wellness and clinical applications.

No. of Pages : 15 No. of Claims : 6