

(54) Title of the invention : WEARABLE DEVICE FOR FATIGUE RISK MANAGEMENT AND METHOD OF WORKING THE DEVICE

(51) International classification :A61B0005000000, G06Q0010060000, G16H0040670000, A61B0005110000, G16H0050300000 (86) International Application No :NA Filing Date :NA (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)INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), DHANBAD Address of Applicant :Dhanbad - 826004, Jharkhand, India Dhanbad ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Shikha Singh Address of Applicant :Department of Management studies and Industrial Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, IIT Dhanbad Internal Rd, Housing Colony, Sardar Patel Nagar, Dhanbad - 826004, Jharkhand, India Dhanbad ----- 2)Prateek Sarkar Address of Applicant :Department of Management studies and Industrial Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, IIT Dhanbad Internal Rd, Housing Colony, Sardar Patel Nagar, Dhanbad - 826004, Jharkhand, India Dhanbad -----
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(57) Abstract :
The present invention relates to a wearable device (100) for fatigue risk management and method of working the device. At the user layer, two wearable modules are deployed, each equipped with an array of sensors (2-6) and a microcontroller unit (1). These modules serve as dynamic biomarkers, actively gathering and transmitting quantifiable physiological data. The wearable device (100) function as personalized physiological monitors, offering users real-time updates on their fatigue levels and concurrently assessing ergonomic and environmental risks. The device (100) works in four phases: fatigue detection with AI enabled microcontroller (1), fatigue detection, fatigue diagnosis and fatigue recovery. This invention conducts in-depth, continuous analysis to assess both short-term and long-term fatigue trends for individual users. Additionally, it extends its insights to the user, which may encompass supervisors, management, and other stakeholders. The user accesses a specialized operational dashboard, allowing for collective and individual monitoring, thus facilitating informed decision-making and enhanced workplace safety in labour-centric industries such as mining and beyond.

No. of Pages : 21 No. of Claims : 4