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(57) Abstract :

The present disclosure introduces a wearable neurological monitoring device 100 designed to provide non-invasive, real-time brain activity monitoring and cognitive enhancement. The device features a headband structure 102 that securely houses all components, ensuring comfort and stability. It is equipped with sensors 104 to capture brainwave patterns and physiological signals, which are processed by an integrated AI system 106 for cognitive state analysis. A biofeedback system 108 delivers tailored stimulation, such as auditory, visual, or vibrational cues, to improve cognitive performance. Real-time data and feedback are displayed on a display unit 110, enabling users to track progress. A power supply 112 ensures uninterrupted operation, while connection ports 114 facilitate data transfer to external devices or cloud systems for advanced analytics. This comprehensive integration of components provides a user-friendly, portable system for brain activity monitoring and enhancement, addressing limitations of traditional invasive and stationary systems. Reference Fig 1

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