Patent Search

Invention Title	ADVANCED PROSTHETIC DEVICE WITH INTEGRATED BRAIN-COMPUTER INTERFACE AND MACHINE LEARNING CAPABILITIES
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Inventor

Name	Address	Country	Nationality
Thottempudi Pardhu	Department of ECE,BVRIT HYDERABAD College of Engineering for Women, Bachupally, 8-5/4, Nizampet Rd, Hyderabad, Telangana 500090	India	India

Applicant

Name	Address	Country	Nationality
Thottempudi Pardhu	Department of ECE,BVRIT HYDERABAD College of Engineering for Women, Bachupally, 8-5/4, Nizampet Rd, Hyderabad, Telangana 500090	India	India
BVRIT HYDERABAD College of Engineering For Women	Plot No-8-5/4, Rajiv Gandhi Nagar Colony, Nizampet Bachupally,Hyderabad, 500090, Telangana, India	India	India

Abstract:

The present invention is an advanced prosthetic device designed to improve mobility and quality of life for amputees. The device offers a suite of prosthetic limbs tailored for different amputation levels, providing a more intuitive and natural user experience. Key features include a brain-computer interface that translates neural activity into movements of the prosthetic limb, machine learning algorithms that adapt to the user's movements and preferences over time, and sensory feedback systems that provide real-time information about the environment. The device integrates high-capacity rechargeable batteries and a user-friendly interface, accessible via a mobile app or an integrated control panel. The durable, waterproof construction and remote monitoring system ensure reliable and optimal performance. This invention embodies a unique and innovative technology integration, significantly enhancing amputees' overall well-being and quality of life.

Complete Specification

Description:Field of the Invention: The present invention pertains to the field of medical devices, more specifically, to advanced prosthetic devices designed to enhance the mobility, agility, and control of amputees.
Background of the Invention:
Prosthetic devices are critical in restoring the quality of life for individuals who have lost limbs due to accidents, diseases, or congenital conditions. Over the past few decades, prosthetic advancements have led to the development of devices that not only replace the physical aspect of a missing limb but also aim to restore its functionality.
Traditional prosthetic limbs are primarily focused on replicating the aesthetic appearance of a natural limb without necessarily offering significant functionality. They were passive devices that offered the wearer little to no active control.
Over time, more advanced prosthetics were developed, providing a higher degree of function. This was achieved by incorporating simple mechanical systems or, in some cases, electronic systems that used signals from the user's residual limb to control the prosthetic. However, these devices were often limited in terms of their level of control and the range of movements they could achieve.
More recently, developments in brain-computer interface (BCI) technology have enabled the creation of prosthetics that the user's thoughts can directly control. These devices interpret electrical signals from the user's brain and translate them into movements of the prosthetic limb. Despite this advancement, there are still significant challenges in making these devices affordable, user-friendly, and capable of seamlessly integrating with the user's natural movements and daily activities.
Furthermore, many current prosthetic devices do not adequately incorporate adaptive learning capabilities or real-time sensory feedback, which could enhance the user's

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