F1

Submission Form for

PROJECT IDEA

CIIT-ATK-EE-02-F1

Dated: *08-11-2024*

AREAS OF RESEARCH
Embedded system
Control System
Signal Processing and Robotics
Machine Learning

NUMBER OF STUDENTS
3

TITLE Innovative wearable robotics for enhancing lower limb mobility and function.

ABSTRACT

Most people, after crossing the age of 60, are either bedridden, unable to walk, or require assistance to walk. There is now a need for a device that can address this age-related mobility issue and be affordable for the common person. Previously, such devices have been used in international hospitals to stabilize patients and enable them to walk. In this project, we aim to develop similar devices at a lower cost. To achieve this, we are using Electromyography sensor, Inertial measurement unit, Servo motors, Embedded microcontroller, Power source (rechargeable battery). This project aims to promotes the improvement of lower limb functions and independent living. The EMG sensors and IMU detect the user's muscle signals and limb movement. The microcontroller processes this data and sends commands to the servo motors. The servo motors then move the limb, which is supported and guided by the mechanical structure. This innovative approach aims to significantly improve mobility and quality of life for patients in chronic stages.

RESOURCES REQUIRED

Electromyography sensor, Inertial measurement unit, Embedded micro-controller, Servo motors, Power Supply (Rechargeable battery), Lightweight metal

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PRE-REQUISITE SKILLS	Robotic, CAD , Control systems, Kinematics, Electronics, Embedded systems, Arduino IDE software, Control system, Human-Machine interface design.

PROPOSED BY	Muhammad Aamir	
	Abdullah Khan	
	Mubashir Aslam	
		SIGNATURES

ALL FORMS SHOULD BE SUBMITTED TO THE PROJECTS COORDINATOR