ASSISTIVE EXOSKELETON FOR ELDERLY

A DESIGN PROJECT REPORT (MEB 441)

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BONAFIDE CERTIFICATE

Certified that this project report titled "**ASSISTIVE EXOSKELETON FOR ELDERLY"** is the bonafide work of "**P.V.N.S. SATHWIK (15127001), D. JASWANTH (15127032), D. MAHESH (15127064), D. VISHNU VARDHAN (15127066)"** who carried out the design project work under my supervision. Certified further that to the best of my knowledge the work reported here does not form part of any other project / research work on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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INTERNAL EXAMINER **EXTERNAL EXAMINER**

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ABSTRACT

Exoskeletons are wearable robots that are created to assist the human body or increase the muscular power of the wearer. Depending on the situation they may be used to protect soldiers and construction workers, aid the survival of people in dangerous environments, or assist patients in rehabilitation. According to a study on gait in older adults, at age of 60, 85% of seniors have normal gait and this proportion drops to 18% by age 85. Usually gait problems in adults is due to two major reasons, one is the depletion of calcium in bones due to ageing and other is due to sudden increase in weight of the adult which is termed as obesity. A study shows that the percentage of older people with obesity in India will increase from 7.5% to 21 % by 2050. This project centres to the design of an assistive exoskeleton for elderly people. The exoskeleton is designed and tested for its structural strength by carrying static structural analysis in Ansys workbench. Modal analysis is done to find the mode frequency of the exoskeleton in Ansys workbench.

Regardless of the application there are strict requirements for designing and producing exoskeleton suites. They must be durable but light weight and flexible, have reliable power control. The exoskeleton needs to be designed with natural and intuitive interface to be a true extension of human body. The exoskeleton should be designed to be self-sufficient between energy system recharge. Last but not the least, the exoskeleton should be comfortable and safe to wear. In this project we are trying to develop an exoskeleton which assists old people those who find it difficult to sit-stand and walk.

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