# Modelling and Control of An Upper Extremity Exoskeleton for Rehabilitation

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**ABSTRACT**
This paper presents the modelling and control of a two degree of freedom upper extremity exoskeleton for rehabilitation. The Lagrangian formulation was employed to obtain the dynamic modelling of both the anthropometric based human upper limb as well as the exoskeleton that comprises of the upper arm and the forearm. A proportional-derivative (PD) architecture is employed to investigate its efficacy performing a joint task trajectory tracking in performing flexion/extension on the elbow joint as well as the forward adduction/abduction on the shoulder joint. An active force control (AFC) algorithm is also incorporated into the aforementioned controller to examine its effectiveness in compensating disturbances. It was found from the study that the AFC-PD performed well against the disturbances introduced into the system without compromising its tracking performances as compared to the conventional PD control architecture.

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