

Exoskeleton Robotic Hand With Wolf Claw Mechanism

Bryan Li, Yanpei Zhu, Nolan Yu

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Abstract

This report presents the conceptual design, mathematical modeling, and mechanical analysis of an exoskeleton robotic hand integrated with a retractable wolf claw mechanism. Inspired by Marvel's Wolverine character, the project aims to explore a multi-functional prosthetic or assistive device solution that combines grasping capabilities with tool functionality.

The report details two alternative wolf claw drive mechanisms (planetary gear system and compound gear train), analyzes their input-output relationships through mathematical models, and covers the kinematic modeling of the finger exoskeleton, wrist design, and overall system integration analysis, laying the foundation for the next stage of detailed design and manufacturing.

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