

## **ABSTRACT:**

The goal of physics-based computer animation is to create virtual characters that automatically synthesise realistic human motion. Simulation of a dynamic articulated body is an extremely difficult task, especially when considering lifelike motor skills to control gravity and contact forces. In this project, we demonstrate a pose-based control in which a physical articulated model follows the key frames of animation sequence while maintaining physical interactivity with its virtual environment. This avoids the need to create motor skills of character for basic tasks like balancing or walking. Also, the displacement of center of mass in human body is replicated in virtual character while carrying a load. Along with this, various other techniques like a root balance method and optimization approach have been combined together to make character behave more naturally. The motion generated from this implementation naturally adapt according to user inputs, adjust the posture and joint configuration on the basis of its environment conditions.