

ABSTRACT

The Kinect by Microsoft was initially developed as an auxiliary motion sensing device to augment the game-play of Microsoft's video game console, the Xbox 360. The Kinect provided its user a new gaming experience where one's body movements are used to control various functions in the game. Third-party developers quickly saw and acted on the potential of the Kinect, not only as an accessory for games, but as a device for real-world applications, such as for educational, military, scientific, and medical purposes. This study focuses on repurposing the Kinect to improve dental procedures. During a dental operation or procedure, the dentist often moves around auxiliary equipment, such as lamps and monitors, to accommodate each patient by his or her gloved hands. This could create problems relating to contaminants being transmitted between patients. Much of this equipment is also supported by mechanical linkages for easy accessibility and maneuverability during a dental procedure. By adding actuators and gesture control to these mechanical linkages, one can create gesture-controlled robotic arms to support dental equipment. This report presents a proof of concept study in that a user can utilize a Kinect to easily maneuver a robotic arm.