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Dynamic Interactions and Predictive Insights: Revolutionizing Robotics with Piezoelectric Technology

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Abstract: *Piezoelectric sensors have emerged as a pivotal innovation in robotics, propelling advances in motion-sensing precision and encouraging the creation of adaptive, responsive robotic systems. These sensors, which transform mechanical stress into electrical impulses, allow for reliable detection of forces, vibrations, and pressures, making them vital in dynamic situations. This review explores how piezoelectric sensors improve robotic precision and responsiveness, allowing for seamless interaction with humans and other systems. The capacity to continually measure vibrations, accelerations, and strain is critical for machine predictive maintenance and wearable motion tracking. This review emphasized the revolutionary importance of piezoelectric sensors in defining the future of robotics and sensor-based technology.*

Keywords: Piezoelectric sensors, motion-sensing, robotics

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