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Impact Sensing for Pedestrian Protection with Piezoelectric Flexible Conformable Composite Film Sensors

A cost-effective, roll-to-roll fabricated piezoelectric sensor integrates into existing vehicle bumpers to quickly distinguish between pedestrian impacts and other obstructions, activating safety systems.

Researchers at Purdue University have developed a piezoelectric sensor that can be mounted within the front bumper assembly of a vehicle that is capable of distinguishing between impacts with pedestrians and other obstructions to deploy a pedestrian protection system and activate emergency braking. This sensor system is made via roll-to-roll fabrication, making it a cost-effective solution to impact detection while also being easily applied to the unique geometries of vehicle bumpers. Applications of this technology include impact detection in the automotive sector and any other fields where identifying collisions with pedestrians is critical.

Technology Validation: This technology has been validated through simulated impacts of a human leg model and a small animal model. The system was able to distinguish between the two and have a total response time on the order of a few milliseconds.

Advantages:

Low cost

Roll-to-roll manufacturing

Can be integrated into existing bumper designs

Applications:

Impact Detection

Technology ID
2022-CAKM-69813

Category
Robotics & Automation/Perception & Sensing

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View online

Automotive safety

Pedestrian safety

TRL: 4

Intellectual Property:

Provisional-Gov. Funding, 2022-11-30, United States | Utility-Gov. Funding, 2023-11-30, United States

Keywords: Piezoelectric sensor, impact detection, pedestrian protection system, emergency braking, roll-to-roll fabrication, cost-effective safety, vehicle safety, automotive safety, bumper sensor, collision identification, Automotive, collision, film, Impact detection, Piezoelectric, Polymer, Safety, sensor