

Data Driven, Smart, Non-Pneumatic Tires

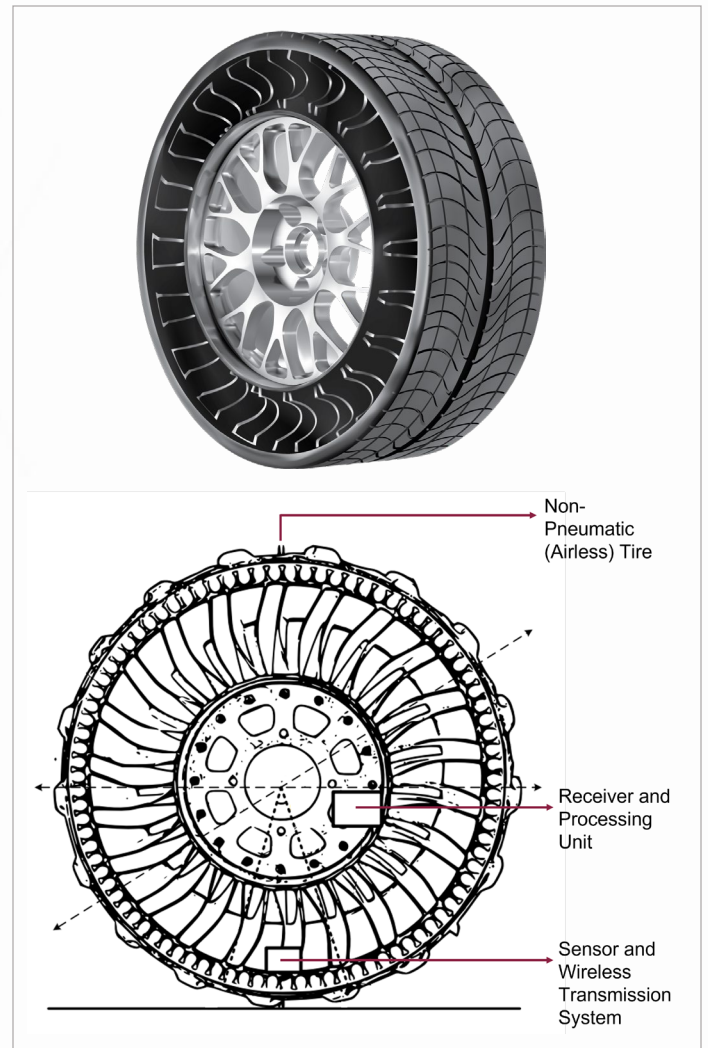
VTIP 21-079: “Data Driven, Smart, Non-Pneumatic Tires”

THE CHALLENGE

Non-pneumatic tires provide two main advantages over pneumatic tires, namely resistance to puncture and common road hazards which can result in tire blowouts. Currently, non-pneumatic tires are hampered by problems such as heat dissipation and ride discomfort, as the air in regular pneumatic tires dampens vibration.

OUR SOLUTION

Virginia Tech researchers have developed techniques which monitor real-time tire vibration data and subsequently stiffen or dampen structural aspects of the wheel-spoke framework based on road conditions. In order to obtain this data, the tire utilizes two accelerometers mounted on the wheel spokes in combination with machine learning algorithms to help to assess the efficiency of the wheel spoke structure in dampening vibrations.



Two generic non-pneumatic tire designs.



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