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ABSTRACT



PRESENTATION



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Rubén Usamentiaga is a professor in the field of computer architecture and technology at the Department of Computer Engineering of the University of Oviedo. He has a PhD degree in Computer Engineering from the University of Oviedo.

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ROBUST TEMPERATURE MEASUREMENT IN DYNAMIC ENVIRONMENTS THROUGH DETECTION AND TRACKING

Temperature measurement is a fundamental aspect of scientific inquiry, industrial processes, healthcare, environmental monitoring, and countless other domains. The ability to quantify temperature accurately and reliably is crucial for understanding and controlling a wide range of phenomena, from the microscopic scale of molecular interactions to the macroscopic world of climate systems. In the landscape of temperature sensing technologies, a myriad of solutions has been developed to meet diverse application needs. Among these, infrared thermography-based temperature sensors stand out for their distinctive advantages over other sensor types. The non-contact nature of infrared thermography allows for remote temperature measurement, eliminating the need for physical contact with the object or surface. Additionally, infrared sensors offer rapid and real-time monitoring capabilities, covering a wide temperature range with high spatial resolution and providing a visual representation of temperature distributions.

Leveraging the principles of non-contact temperature measurement and thermal imaging, infrared thermography plays

a pivotal role in quality control and defect detection, offering a dynamic and non-intrusive approach to analyze materials and processes in various industries. This technology proves invaluable in identifying subtle temperature variations that may signal defects or irregularities within manufactured components. The ability to capture detailed thermal images and analyze temperature distributions facilitates the early detection of anomalies, contributing to proactive quality control measures. This has resulted in a wide variety of applications that involve either exploiting naturally occurring temperature differences or introducing an external stimulus to identify defects in materials such as composites, metals, and ceramics. This capability has proven indispensable in predictive maintenance and condition monitoring for identifying potential equipment failures by monitoring temperature variations in machinery components. Moreover, the advent of technological advancements has opened new frontiers in temperature measurement, allowing for real-time monitoring, remote sensing, and the measurement of temperature in dynamic and challenging environments.