

Preview

This paper proposes a real-time fusion algorithm of Ultra-Wideband (UWB) and Inertial Measurement Unit (IMU) information based on the Error-State Kalman Filter (ESKF) algorithm, aiming to achieve high-precision train positioning throughout the entire railway, particularly in tunnel. This paper proposes a real-time fusion algorithm of Ultra-Wideband (UWB) and Inertial Measurement Unit (IMU) information based on the Error-State Kalman Filter (ESKF) algorithm, aiming to achieve high-precision train positioning throughout the entire railway, particularly in tunnel. Three core improvements were integrated: 1) AVCSem module with variable convolution kernels to dynamically adapt to defects of different shapes and scales; 2) ADSPPF module using multi-scale pooling and multi-branch attention mechanisms to preserve fine-grained features across scales; 3) MSF. In response to these stringent requirements, this research proposes an Error-State Kalman Filter (ESKF) based real-time fusion train positioning system for urban rail transit, incorporating Ultra-Wideband (UWB) and Inertial Measurement Unit (IMU) technologies. Through practical measurements, an UWB. y placed along the railway track. Additionally, the train utilizes wayside reference points such as Balises to communicate providing a train safety system. However, the main drawback lies in the high i stallation and maintenance costs. Given that these infrastructure-si-de devices are.

With the saturation of the Moore's law, the development of emerging intelligent computing carriers and basic theories is imminent.

<p>The construction of high-precision urban rail maps is crucial for the safe and efficient operation of railway transportation systems.

Furthermore, achieving high-precision and reproducible measurements of the internal potential structure in reactor

Highly reflective and thermally stable mirror systems are essential components for commercial laser-driven

The research team has co-designed a high-density optical transmitter chip based on optoelectronic fusion, and successfully

These standards will also facilitate the adoption of flatland optoelectronics in applications where resilience to material

To address the limitations of existing Automatic Train Control (ATC) systems in active perception and early warning capabilities, this

Proposed selective soft attention fusion module based on feature-level fusion strategy. Practical experiments performed

Accordingly, this Special Issue aims to present research papers, communications, and review articles focusing on

The analysis results show that the detection methods for high-speed train rail damage mainly

Abstract Autonomous-rail Rapid Transit (ART) possesses various advantages in intelligent transportation, but it does

The optoelectronic integration and optical device field is a parade of "thermal cycle, mechanical reliability, and fatigue

Finally, the LSTM-KanFormer framework is designed, achieving high-precision passenger flow prediction via a novel

In response to these stringent requirements, this research proposes an Error-State Kalman Filter (ESKF) based real-time fusion train

In order to improve the operation safety and transportation efficiency of urban rail transit trains, a train speed ranging

This chapter presents the application of optoelectronic devices fusion as the base for those systems with non-lineal

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