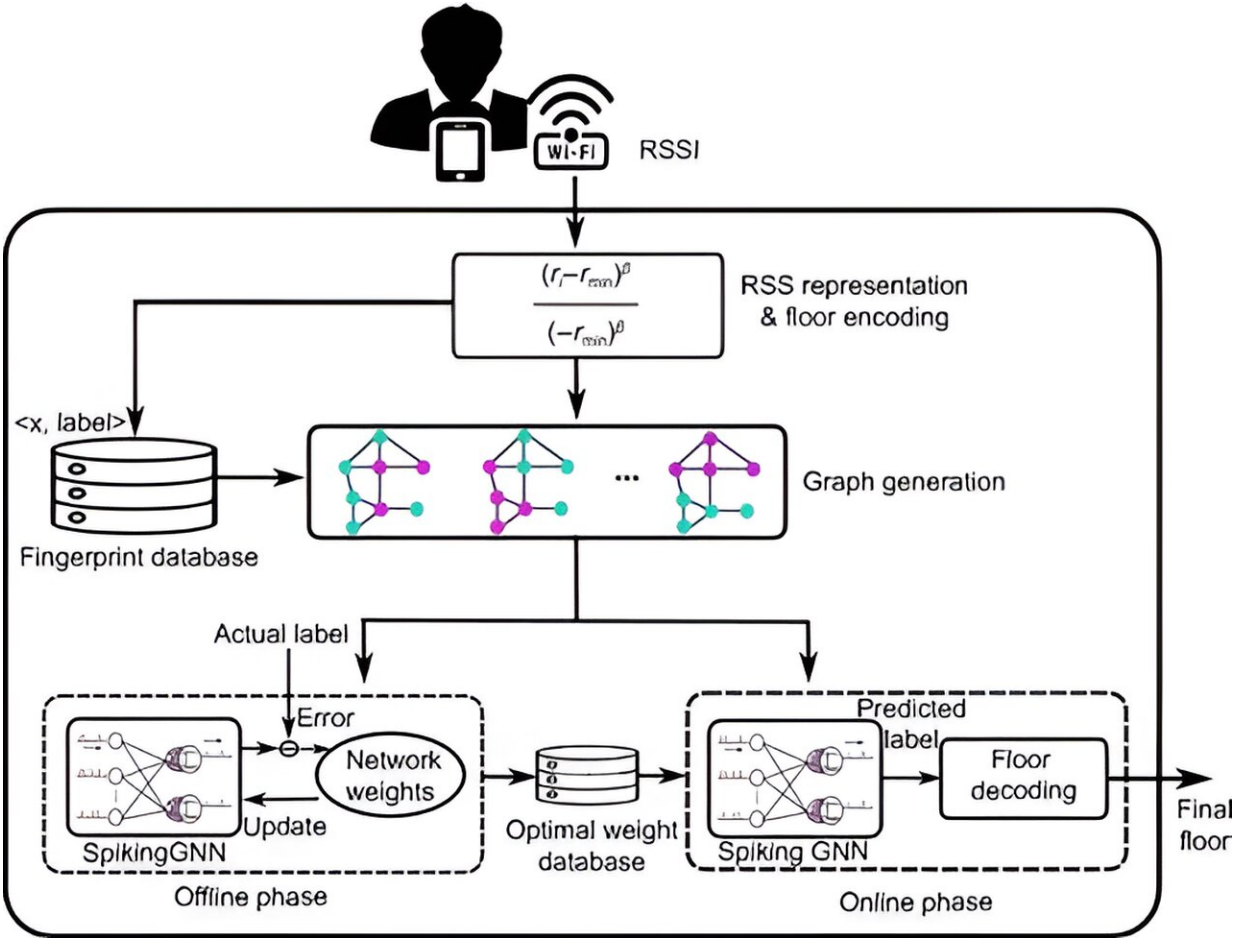


Introducing Floorlocator, a system that enhances indoor navigation

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Overview of FloorLocator. It takes as input WiFi scans, which are organized in a graph of visible APs before feeding into a spiking graph neural network for training and predicting. Each module of FloorLocator will be detailed in Section V. Credit: *Satellite Navigation*

Indoor positioning is transforming with applications demanding precise location tracking. Traditional methods, including fingerprinting and sensor-based techniques, though widely used, face significant drawbacks, such as the need for extensive training data, poor scalability, and reliance on additional sensor information. Recent advancements have sought to leverage deep learning, yet issues such as low scalability and high computational costs remain unaddressed.

In a recent study [published](#) in *Satellite Navigation*, researchers from Chongqing University have unveiled "FloorLocator," a system that revolutionizes indoor navigation with unprecedented accuracy and efficiency.

FloorLocator sets a new benchmark in indoor navigation, significantly outshining traditional technologies with superior accuracy, [scalability](#), and computational efficiency. This innovative system integrates Spiking Neural Networks (SNNs) with Graph Neural Networks (GNNs), marrying SNNs' computational efficiency with GNNs' advanced pattern recognition. SNNs bring unparalleled computational efficiency to the table, while GNNs excel in sophisticated pattern recognition.

This blend not only boosts floor localization performance but also deviates from the data-intensive, inflexible approaches of the past. FloorLocator reimagines floor localization as a graph-based learning challenge, mapping Access Points (APs) to a dynamic graph for effortless adaptation to new settings, a feat unmatched by current technologies.

Achieving at least 10% higher accuracy in complex, multi-floor buildings than the latest methods, FloorLocator's success is attributed to the strategic integration of SNNs for efficient computation and GNNs for adaptive learning, revolutionizing indoor navigation.

Dr. Xianlei Long, the lead researcher, emphasized, "FloorLocator is not just an advancement in technology; it's a leap towards creating more resilient, efficient, and accurate [indoor navigation](#) systems. By utilizing a graph-based learning approach, it can easily scale to new environments without the burden of high computational costs and extensive data collection."

FloorLocator surpasses current technologies in [accuracy](#), scalability, and efficiency. This approach enables dynamic adaptation to new environments and sets a new standard in the field, offering vast applications from enhancing emergency responses to improving indoor positioning and personalized recommendations, establishing it as a key solution for future indoor.

More information: Fuqiang Gu et al, Accurate and efficient floor localization with scalable spiking graph neural networks, *Satellite Navigation* (2024). [DOI: 10.1186/s43020-024-00127-8](https://doi.org/10.1186/s43020-024-00127-8)

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