

Wi-Fi Motion Sensing for Home Care

Privacy-First Awareness That Enables Proactive Care

Executive Overview

Cognitive's Wi-Fi Motion sensing technology transforms everyday Wi-Fi signals into continuous awareness of activity patterns within the home without requiring cameras, microphones, or wearable devices.

By analyzing subtle changes in Wi-Fi radio signals caused by movement, the technology learns each occupant's normal daily routines and identifies meaningful deviations over time. When integrated into platforms such as Lifeguard, these insights help care organizations detect potential risks earlier, intervene proactively, and improve operational visibility between caregiver visits. This approach enables scalable, privacy-first awareness designed specifically for real-world caregiving environments where client dignity, comfort, and simplicity are essential.

How Wi-Fi Motion Sensing Works

Wi-Fi motion signals travel throughout the home, allowing the system to detect movement across rooms without requiring line of sight. When a person moves—walking, sitting, or transitioning between rooms—those signals shift slightly. Cognitive's sensing technology detects these small signal changes and translates them into simple activity information, such as movement occurring in the home, activity patterns by room, sleep-related inactivity periods, and extended inactivity events.

WiFi Motion Plugs placed around the home observe these signal patterns many times per second, allowing the system to recognize everyday movement while using very little network bandwidth. Each device performs an initial motion check locally, filtering out background interference before sending summarized motion information to the secure cloud platform.

The platform combines motion information from multiple plugs to build a continuous timeline of activity patterns. Over time, these patterns are used to generate insights related to activity levels, sleep routines, and room usage trends.

Because the system measures signal movement rather than capturing images or audio, it provides meaningful awareness while preserving personal privacy. The technology does not use cameras, microphones, or wearable devices, and it does not collect biometric or identity data. Only anonymous motion patterns and derived activity trends are processed to generate alerts and insights, enabling continuous awareness while maintaining a respectful, non-intrusive client experience.

Establishing Individualized Behavioral Baselines

Each individual has unique daily habits and activity patterns. After installation, Cognitive's sensing platform begins learning the occupant's typical routines during an initial learning period. These patterns may include usual wake and sleep times, typical activity levels, how different rooms are used throughout the day, and overall daily rhythms.

During setup, WiFi Motion Plugs are associated with specific rooms in the home. By comparing motion signals detected across multiple devices, the system determines where activity is occurring and builds consistent room-level activity summaries, even in homes with complex layouts. As more data is collected, the system continuously improves its understanding of how activity patterns relate to each room.

Once the occupant's normal routine is established, the platform compares current activity patterns with historical patterns to identify meaningful changes. Because alerts are based on changes relative to each individual's own routine rather than generic thresholds, the resulting insights are more relevant and better aligned with real-world care needs.

From Motion Signals to Care Insights

Once the baseline routine is established, the platform continuously analyzes activity patterns to generate safety alerts, routine and wellness trends, and longer-term behavioral insights. Real-time alerts may be triggered when patterns suggest potential risk, such as extended periods of inactivity, unexpected nighttime movement, lack of expected morning activity, or system health events.

Insights are created by comparing recent activity patterns with the individual's historical routine over time. Activity, sleep, and room-usage trends are typically evaluated across 30-day, 90-day, and six-month timeframes to identify meaningful and sustained changes rather than short-term fluctuations. Alerts are based on changes relative to the individual's normal routine, with moderate changes generating early warning notifications and larger sustained changes generating higher-priority alerts.

Sleep insights are derived from nighttime activity patterns. Periods of extended nighttime inactivity are interpreted as likely sleep periods, while movement during these periods is interpreted as potential sleep interruptions. Bedtime and wake times are estimated based on the beginning and end of extended inactivity intervals, allowing the system to track sleep-pattern trends over time without requiring wearable devices or any action from the occupant.

Prolonged inactivity alerts are generated by continuously monitoring when motion was last detected in the home. If inactivity continues beyond defined time intervals, alerts are escalated accordingly. When door-sensor information or other signals indicate that the occupant is away from the home, alerts can be automatically suppressed to reduce unnecessary notifications.

Security and Data Protection

Cognitive's sensing platform incorporates enterprise-grade security and operational controls, including encrypted device-to-cloud communications, secure cloud data storage, tenant-level data isolation, and controlled access with audit logging. Only motion events, system telemetry, and derived activity insights are stored, and no audio, video, or identifiable recordings are collected.

Enabling the Future of Proactive Home Care

When integrated into care platforms such as Lifeguard, Cognitive's Wi-Fi sensing technology enables care providers to extend awareness beyond scheduled visits, detect meaningful behavioral changes earlier, and support more proactive, data-informed care delivery without increasing caregiver workload. By converting existing Wi-Fi infrastructure into a continuous, privacy-preserving source of behavioral insight, the platform supports safer aging at home while enabling care organizations to deliver smarter, more responsive services.