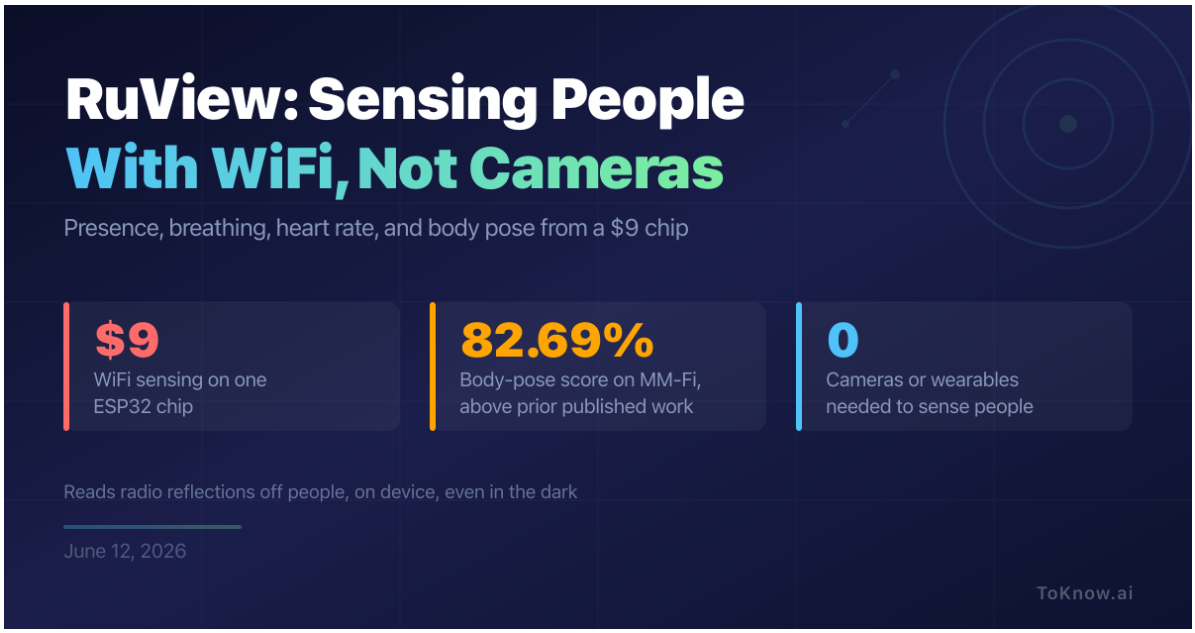
RuView: Sensing People With WiFi, Not Cameras

Kabui, Charles

2026-06-12

Read at ToKnow.ai



RuView is an open-source project that turns ordinary WiFi into a sensor for the people in a room. WiFi chips measure how a radio wave arrives after bouncing around a space, a reading called Channel State Information. A breathing chest, a beating heart, or a walking person each shift those reflections, and RuView learns to read them. From a $9 ESP32 board it detects presence, estimates breathing (6 to 30 breaths a minute) and heart rate (40 to 120 beats a

minute), counts people, flags falls, and tracks 17 body joints, with no camera and no wearable, even in the dark. Its pose model scores 82.69% on MM-Fi, a public WiFi-sensing benchmark, ahead of earlier results of 72.25% and 68.41%.

The appeal is cost and privacy. A camera in a bedroom or a care home raises obvious problems; a $9 chip that senses only radio reflections records no pixels, and all processing stays on the device. For elderly care that means fall alerts and overnight breathing and heart-rate checks with no wearable and no lens pointed at a bed. The pose model runs in 8.4 milliseconds on a Raspberry Pi 5, cheap enough for every room.

What stands out is the honesty about limits. The team corrected its pose score down from an inflated 91.86% to 82.69% before publishing, then showed that in a room the model has never seen, accuracy falls to 17.5%. The radio physics works; making it generalize from one room to any is the unsolved part.

Read More: FreeMoCap reaches the same kind of 3D body pose from ordinary webcams, where RuView uses no camera at all.

Sources:

- RuView on GitHub
- WiFi-DensePose pose model (Hugging Face)
- WiFi-DensePose sensing model (Hugging Face)
- ruview on PyPI
- RuView Observatory live demo
