University of Washington researchers propose a novel gesture detection technology-- WiSee, a system using regular wifi signals instead of cameras or sensors to detect control gestures, without need for line-of-sight.

The technology measures the so-called "Doppler frequency shift" caused in wireless signal frequency by body movements. Such frequency changes are very small (several hertz compared to 5GHz wifi signals), yet UW says the technology identifies up to 9 different whole-body gestures through a clever algorithm measuring these slight shifts.

“This is repurposing wireless signals that already exist in new ways,” UW lead researcher Shyam Gollakota says. “You can actually use wireless for gesture recognition without needing to deploy more sensors.”

In theory the concept is similar to the camera-using Kinect, only not bound to line-of-sight or sound restrictions. All it requires is a receiver (technically a modified wifi router) carrying multiple antennas. Each antenna tunes into a specific user's movements, allowing up to 5 persons to move simultaneously in the same house without confusing the receiver.

A specific gesture sequence (think of a movement-based password of sorts) allows the WiSee receiver to access gestures.

WiSee is not the first technology using wifi in innovative ways-- a team at MIT developed Wi-Vi , a technology using wifi signals track movement through walls and behind closed doors, while researchers at Duke University used wifi for indoor navigations in UnLoc (unsupervised indoor localisation).

Go WiSee

Go Wifi Signals Enable Gesture Recognition Throughout Entire Home