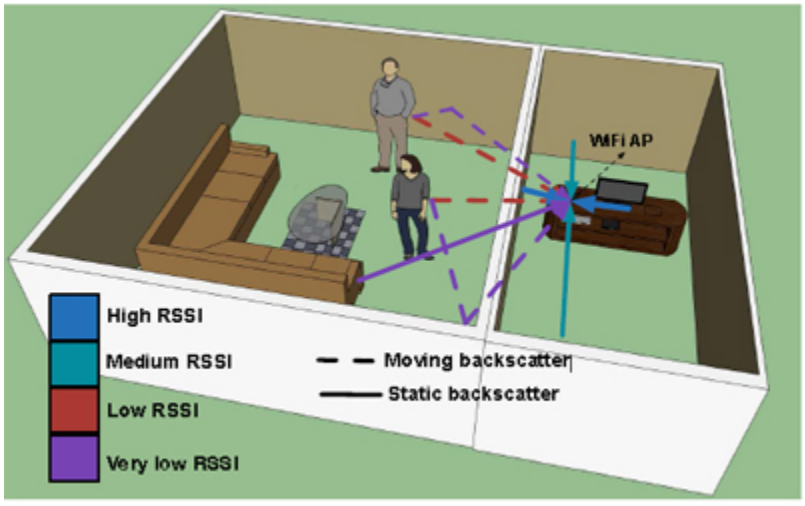
Docket #: S14-059

WiDeo: A Motion Tracing Camera using WiFi Signals

Researchers in Prof. Sachin Katti's laboratory have developed WiDeo, a motion tracing camera using WiFi signals as the light source. This patented, high resolution system accurately traces human motion in indoor environments using WiFi signals and compact WiFi radios. It can track fine grained human motion through walls and other objects without the need for any wearable device nor transmitter. Using off-the-shelf software radio components, the WiDeo prototype accurately traces motion even with multiple independent human motions occurring concurrently (up to 4) with a median error in the traced path of less than 12cm. WiDeo has broad applications in security, navigation, search and rescue, and people monitoring.



WiDeo in operation: The compact WiFi Access Point (AP) integrates WiDeo's motion tracing, and reconstructs hand movements made by humans in the living room without wearable devices. WiDeo traces motion even though the AP is separated by a wall and does not have a Line Of Sight path to the humans.

Stage of Development - Prototype

Applications

- Security
- Navigation
- Search and rescue operations
- Gesture recognition
- Adult and child monitoring

Advantages

- **Accurate**
- **High resolution**
- **Penetrates walls and other objects** - RF signal penetrates most materials used for partition in office or home.
- **No wearable devicerequired** - The system can track fine grained human motion without the need for any wearable device.

Publications

- Joshi, K., Bharadia, D., Kotaru, M., & Katti, S. (2015). {WiDeo}: Fine-grained device-free motion tracing using {RF} backscatter. In *12th USENIX Symposium on Networked Systems Design and Implementation (NSDI 15)* (pp. 189-204).

Patents

- Published Application: WO2015168700
- Published Application: 20170090026
- Issued: 11,209,536 (USA)

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