

WiMove: Ceiling-Based Access Point for Wireless Communications (#8154)

A device that incorporates machine-learning algorithms to ultimately deliver better and faster communication in telecommunications

Inventors at Georgia Tech have constructed a ceiling-based device that improves line of sight (LoS) by mobilizing the access point within an indoor network. WiMove addresses the optimization of LoS utilizing machine-learning algorithms. LoS is a key requirement for mmWave communication, to further achieve the most significant and optimal bandwidth. The algorithm relies purely on the connectivity matrix between clients and the access point in order to decide if, and where, it should adjust for the maximum LoS performance. The invention enables infrastructure mobility to gain LoS connectivity with its clients, by focusing on the orientation of its access point.

Benefits/Advantages

- **Ceiling-based access point:** allows for optimal line of sight and reduces noise by physical barriers
- **Faster communication:** utilizes machine-learning algorithms to re-position line of sight

Potential Commercial Applications

- Mobile and wireless network industry

Background/Context for This Invention

In the field of telecommunications, millimeter wave (mmWave) is optimized to deliver services on mobile and wireless networks. Current technologies relevant to the transmission of mmWave communication are vulnerable to non-line-of sight conditions in comparison to conventional WiFi. Communication performance often drops when the wireless link has an obstacle, such as a wall or a cabinet in the way. Recent research indicates that if the WiFi access point is enabled to move intelligently, it could discover an optimal location for itself and move to that location in order to offer the best possible performance. Reducing barrier noise by focusing on the orientation of the access point increases the bandwidth of the spectrum, resulting in faster communication.

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More Information

Publications

For more information about this technology, please visit:

<https://licensing.research.gatech.edu/technology/wimove-ceiling-based-access-point-wireless-communications>

Images:

The automated sequential delivery of multiple fluids. A varying number of delay gates imprinted in the

branches are shown in the figure.

COVID-19 and flu saliva test on paper: (A) The automatic sequential delivery of multiple reagents required for virus test; (B) Water pouring into the device triggers the virus assay, allowing the presence of SARS-CoV-2 and influenza A & B viruses to be visually identified by the color changes in the corresponding detection spot