Researchers at the University of South Florida have developed a novel wireless communication protocol aimed at improving the throughput efficiency in large-scale IoT networks.

The “Internet of Things” (IoT) describes the massive network of wireless devices and other internet capable products. A classic example of an IoT scenario is the “Smart Home” in which there are a large number of appliances and devices with “Machine-to-Machine” (M2M) communication ability, all connected to the same WiFi network. These devices depend on their connection to the internet, and they might simultaneously communicate with an IoT gateway that connects them to the internet. As you may imagine, the signals from these devices can essentially become “crowded” at the IoT gateway, and collisions between signals can occur. Network devices are able to resolve these collision issues, however the occurrence of collisions greatly reduces the overall network throughput.

USF inventors have developed an improved signal transmission protocol capable of resolving the throughput degradation due to collisions in IoT networks and significantly increasing the system throughput in comparison with other random access protocols. The new protocol, dubbed Slotted Aloha-NOMA (SAN), achieves high throughput efficiency in an IoT network, meaning a larger number of devices can connect to the internet more efficiently. SAN is not overly complex, making it easier to integrate into current network systems. Other advantages of the new IoT protocol are that it is scalable, flexible, and energy efficient. The SAN protocol can be useful in various scenarios, such as smart homes with an IoT network, where many IoT devices are transmitting simultaneously.

**ADVANTAGES:**
- Higher signal throughput
- Scalable, flexible, energy efficient
- Low complexity
- Addresses sporadic traffic pattern of IoT devices

**Wireless Protocol to Improve IoT Network Throughput Efficiency**

**Illustration of SAN Protocol Used in a Smart Home to Connect Multiple IoT Devices to the Internet**

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