Visible Light Communication and Positioning

Inventors: Maite Brandt-Pearce et al.
Wireless Data Communication

• Wi-Fi w/IEEE 802.11
• Consumption of data on devices growing ~50%/yr

Problem:
• Electromagnetic interference w/SOA
• Capacity and speed limits w/SOA
• No standard for indoor positioning systems
Indoor Visible Light Communications

Solution: UVA researchers have advanced optical wireless communications systems

- Expurgated pulse position modulation system and methods
- Clipping-enhanced optical orthogonal frequency division multiplexing
Indoor Visible Light Positioning

Solution: UVA researchers have developed optically-based location determination approaches

- Uses channel characteristics of impulse response to locate user/equipment
- Fingerprint mapping and RSS observations with Bayesian filtering
Relevant Publications


• IEEE ICC 2017 Optical Networks and Systems Symposium. Brandt-Pearce et al.

• IEEE WCNC 2017 Wireless Communications and Networking Conference. Brandt-Pearce et al.
Intellectual Property

• Tech ID: BRANDT-PEARCE-PPM
  – Title: Expurgated Pulse Position Modulation for Communication

• Tech ID: BRANDT-VLP
  – Title: Position Localization Using Visible Light Communication
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