

Visible Light Communication and Positioning

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Wireless Data Communication

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

Problem:

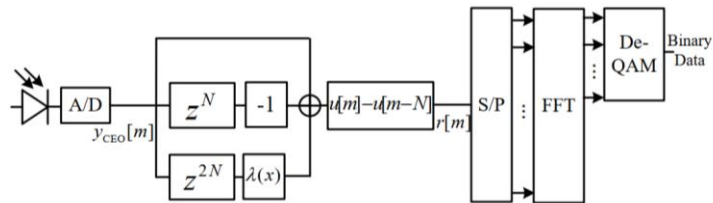
- Electromagnetic interference w/SOA
- Capacity and speed limits w/SOA
- No standard for indoor positioning systems



Indoor Visible Light Communications

Solution: UVA researchers have advanced optical wireless communications systems

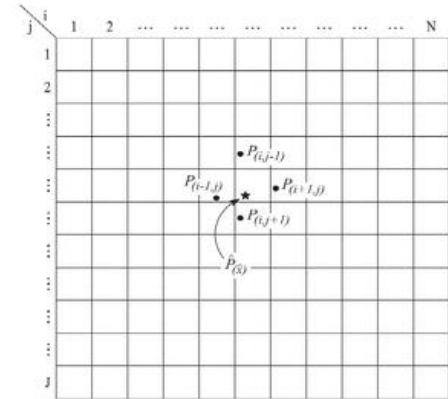
- Expurgated pulse position modulation system and methods
- Clipping-enhanced optical orthogonal frequency division multiplexing



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

- Journal of Lightwave Technology 32(5), Sept. 2013. Brandt-Pearce et al.
- 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
 - US Patent 9571312 granted Feb. 14, 2017
- Tech ID: BRANDT-VLP
 - Title: Position Localization Using Visible Light Communication
 - US Patent App. 15/840690 filed Dec. 13, 2017

Contact

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