A Scalable and Statistically Robust Beam Alignment Technique for mm-Wave Systems

ABSTRACT

Millimeter-Wave (mm-Wave) frequency bands provide an opportunity for much wider channel bandwidth compared with the traditional sub-6 GHz band. Communication at mm-Waves is, however, quite challenging due to the severe propagation pathloss incurred by conventional isotropic antennas. To cope with this problem, directional beamforming both at the *Base Station (BS) side and at the User Equipment (UE) side is* necessary in order to establish a strong path conveying enough signal power. Extensive simulation results illustrate that our approach is superior to the state-of-the-art BA schemes proposed in the literature in terms of training overhead in multi-user scenarios and robustness to variations in the channel dynamics.

EXISTING SYSTEM

- In Existing system, CS-based algorithms have been proposed for BA in mm-Waves. These algorithms are efficient and particularly attractive for multiuser scenarios, but they are based on the assumption that the instantaneous channel remains invariant during the whole probing/measuring stage.
- This is typically not satisfied in practice due to the large Doppler spread at mm-Waves, implying significant time-variations of the channel coefficients even in conditions of moderate mobility.

PROPOSED SYSTEM

- In the proposed scheme, the channel is periodically probed by the BS while the UEs remain in the listening mode.
- During the data slots, the UE stays in listening mode using its own estimated beam. It follows that the ACK enjoys the full (two-sided) beamforming gain.
- All the users no matter whether they are weak or strong are able to gather as many measurements as they need.

SYSTEM REQUIREMENTS

HARDWARE REQUIREMENTS

- Processor - Intel core i3
- RAM - 2B
- Hard Disk - 20 GB

SOFTWARE REQUIREMENTS

- Operating System : LINUX
- Tool : Network Simulator-2
- Front End : OTCL (Object Oriented Tool Command Language)

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