**Intelligent Reflective Surface Deployment in Wireless Networks**

**Keywords**


**Description**

Intelligent reflective surface (IRS) is an enabling technology for managing radio signal propagation in wireless networks. Recently, IRS has shown a strong capability in enhancing the communication quality between access point (AP) and users. By accordingly tuning the phase shifts of the reflecting units (the greed blocks in the figure), IRS is able to reflect the signal from AP to the user as a constructive component (or a destructive component). By adding this component (blue one) to the direct transmission component (orange one), the finally resulting signal at user can be enhanced (or the undesired interference from AP can be suppressed). As a result, an improved communication quality can be obtained. The operation flexibility and low power cost have also made IRS rather attractive in deployments.

In IRS-aided networks, the deployment orientation, beamforming design and the additionally introduced interference should all be carefully considered while deploying IRS.

**Goal**

As for the goal, the student will be expected to learn about the characters of IRS, and under guidance to propose a deployment (or resource allocation) strategy for IRS. The proposed strategy is expected to be supported by theoretical analysis, and validated via simulations.

**Requirements**

- Basic knowledge of wireless communications
- MATLAB/Python programming skills
- Motivation to learn new material and work efficiently

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