

## SP-AMC scheme for visual data transmission over wireless fading channel

### ABSTRACT

In this paper, an efficient superposition coding with adaptive modulation and coding (SP-AMC) system, for the optimal system performance, is proposed. The proposed SP-AMC system switches its modulation and coding scheme (MCS) adaptively in order to select the suitable modulation order and coding rate that are best match with the instantaneous channel condition. Hence, better performances in both data rate and error probability can be attained. Moreover, the source data is divided into a number of different priority layers with different importance. The bit streams of these layers are then encoded and modulated individually with different unequal error protection (UEP) levels against channel corruption. The highest UEP level is assigned to the highest priority layer which has the highest effect on the reception quality, and vice versa. The modulated bit streams of all layers are then superimposed together and transmitted over Rayleigh fading channel. At the receiver side, a multi-stage decoding (MSD) receiver is used to reconstruct the source data by applying the ordered successive interference cancellation (O-SIC) technique, which demodulates the layers according to the order of their priorities.

**Keyword:** AMC; Fading channel; Real-time; Superposition coding; UEP; Wireless transmission