Reconfigurable Intelligent Surfaces for Future Wireless Communication

Qammer H. Abbasi

James Watt School of Engineering, University of Glasgow, UK
*corresponding author, E-mail: qammer.abbasi@glasgow.ac.uk

Abstract

A novel idea of a smart reflector that is gaining a lot of interest is the Reconfigurable Intelligent Surface (RIS) which operates by reflecting the waves in the same way as a backscattering device. It consists of planar, low cost, nearly passive elements that would smartly manipulate EM waves in specific directions. As a result, this would boost the signal at the receiver with no added hardware cost. As compared to existing complex transceiver architectures with multiple RF chains and complex signal processing hardware, RIS practically has no RF chain, i.e., no power amplifier, phase shifters, attenuators, mixers and ADC components. This, in turn, eliminates the hardware complexity and the exorbitant cost of the RF equipment. Hence the overall potential impact of RIS is reduced deployment and hardware costs, network complexity and power consumption. In this talk, I will discuss about the work on this topic in our group and different testbeds and their results.