The most significant work by the nominee in India which makes him a contender for this award

His most significant research contributions in India can be broadly classified into the following areas:

1) Performance analysis of wireless and wireline communication systems,
2) Precoder and receiver design for recent and future cellular technologies.

In the area of performance analysis of wireless communication systems, the nominee has studied different wireless and wireline communication systems like cooperative communication, power line communication, free-space optical communication, hybrid satellite-terrestrial communication, and cognitive radio. All of these communication systems are very different from each other in terms of fading, bandwidth, and noise characteristics and hence offer significant analytical challenges. The nominee has made significant contributions to (1) error analysis of collocated multiple-input multiple-output (MIMO) communication systems, (2) error analysis of distributed MIMO systems, (3) information theoretic analysis under different fading scenarios and antenna set-ups. This has resulted in elegant closed-form analytical or series expressions of performance metrics which are easy to compute and give considerable insight into the variation of error performance and capacity with changes in system parameters such as transmitter power, receiver sensitivity, diversity order, modulation type, cooperative protocol, number of relaying nodes, etc.

In the area of precoder and receiver design for recent and future cellular technologies, the nominee has made important contributions to (1) designing precoding solutions for performance improvement over correlated fading in collocated MIMO communication systems and delay perturbed distributed MIMO systems utilizing the channel statistics, (2) proposing full/limited feedback based precoding and beamforming for collocated and distributed MIMO systems, (3) developing low complexity decoders for decode-and-forward protocol based cooperative communication systems. As a result of his research, the practical feasibility of decode-and-forward relaying based cooperative systems improved, as it now requires only local channel information and outperforms the amplify based relaying systems which pose several practical difficulties. Also his precoding solutions are applicable to arbitrary space-time block codes which find better applicability for practical MIMO communication systems.