Post Doctoral Proposal in Delay Tolerant Networking

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Area of Specialization: Computer Networking/Delay Tolerant Networking

Keywords: Delay Tolerant Networking, Sensor Networking, Performance Analysis, cyber physical systems

Description: Delay tolerant networks (DTNs) deal with communication over a network infrastructure that is periodically or aperiodically unavailable. Such networks have many applications including emergency response networking, rural communications networking, agricultural sensor networks, home networking, and deep space networking. There exist many challenges in realizing efficient communication over DTNs because DTNs vary in their characteristics. The Internet protocol stack may require redesign to meet the specific demands of a DTN environment. All the layers from Physical layer to the application layer may need changes to suit best on DTNs. Even today's broadband networks show characteristics that may be similar to a DTN under certain situations such as during the immediate aftermath of disasters. A new direction that is unexplored, in this area, is the operation of Cyber physical systems over DTNs. A cyber physical system involves computing systems that work closely with the physical world. That is, the input and output of a cyber system may be in physical form. Such systems may find examples in remote physio-therapy equipments, robotic surgical equipments, sensor-actor networks, and deep-space cyber physical systems such as remote controlled rovers.

This proposed research focuses on (i) design and analysis of efficient DTNs, (ii) co-designing cyber physical systems considering the characters of the underlying DTNs, and (iii) cognitive networking for cyber physical systems over DTNs.

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