Information Centric Networking (ICN): Design and Deployment of DTN and IoT networks

Title of the dissertation: Information Centric Networking for the Challenged Internet

Contents of the dissertation:

Today's Internet is primarily used as a means of content distribution and retrieval of a substantial amount of digital content, resulting in data growth on a huge scale. Considering this scale of growth, Content Delivery Networks (CDNs) solutions emerged to increase the availability of information and reduce latency from the end user's perspective. Apart from the proprietary solutions of CDNs, Information Centric Networking (ICN) is an approach to evolve the current Internet to support the CDN principles and promises better content distribution and sharing services by introducing named content as a network primitive and in-network caching. The driving paradigm in ICN is that everything is information and information is everything. ICN introduces a paradigm shift from a host centric communication model for the Future Internet (FI). ICN allows the user to retrieve a particular content regardless of any reference to the physical location of the content. However, the delay/disruption tolerance of ICN architecture in a fragmented network has become a crucial issue. Besides this, the domain of Internet of Things (IoT) is another crucial issue which should be considered in the design of ICN since IoT is expected to interconnect billions of (usually constrained) devices which generate a vast amount of information.

This dissertation considers DTN and IoT as the challenged Internet. The first part of this dissertation looks at the potential and feasibility of deploying DTN functionality in the ICN network and vice versa. In the second part of this dissertation looks at the possibility of deploying IP-based IoT solutions over ICN so that ICN features can be exploited to improve the performance of the existing IP protocols in IoT.

Field of the dissertation: Computer Science


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Opponent: Professor Tommi Mikkonen, University of Helsinki

Custos: Professor Antti Ylä-Jääski, Aalto University School of Science, Department of Computer Science

Doctoral candidate’s contact information: Hasan Mahmood Aminul Islam, Department of Computer Science
Tel: +358 50 4358998, email: hasan.islam@aalto.fi