**Data-Centric Security for In-Network Big Data Sharing**

Huge amount of big data raise a strong demand for a network infrastructure with the capability to support data sharing and retrieval efficiently. Information-centric networking (ICN) is an emerging approach to satisfy this demand, where big data are ubiquitously cached at the intermediate physical entities (IPEs) in the network and users retrieve the published data from the close copy holders. However, the unpredictability of users, IPEs, copy holders, and publishers during in-network big data sharing poses a challenge to design data-centric security mechanisms to inhibit the malicious users to flood data requests and prevent the fake data from being cached and provided. To solve these problems, we propose a data-centric authentication scheme and a distributed authentication and authorization scheme to achieve the authentication and authorization for in-network big data sharing. A suspension-chain model is proposed to seamlessly merge certificate authority-based trust and neighbor-based trust. Based on it, the proposed data-centric authentication scheme integrates certificate collection and packet forwarding for realizing any authentication to the unpredictable users/IPEs/publishers without accessing servers. For a distributed authentication and authorization scheme, an identity-based signature is used to achieve distributed verifications of the identities of publishers and users, and ciphertext-policy attribute-based encryption is used to enable the distributed and fine-grained authorization. We also propose trustworthy registration and network operator and authority manifest dissemination to provide initial secure registration and enable efficient authentication for global data retrieval.