

Spring 2015 Seminar Series

Presented by the CS Division

**EXPLORING EXTANT AND EMERGING ISSUES IN ANONYMOUS NETWORKS:
A TAXONOMY AND SURVEY OF PROTOCOLS AND METRICS**

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10:00 AM – HEC 450

The desire to preserve privacy in cyberspace drives research in the area of anonymous networks. Any entity operating in cyberspace is susceptible to debilitating cyberattacks. As part of the National Strategy to Secure Cyberspace, the United States acknowledges that the speed and anonymity of cyberattacks makes distinguishing among the actions of terrorists, criminals, and nation states difficult. Indeed, today's Internet is an incredibly effective, uncontrolled weapon for eavesdropping and spying.

Therefore, anonymity and privacy are increasingly important issues. A plethora of existing or proposed anonymous networks achieve diverse levels of anonymity against a variety of adversarial attacks. However, no known taxonomy provides a comprehensive classification of the varied set of wired, wireless, and hybrid anonymous communications networks. We develop a novel cubic taxonomy to facilitate the systematic definition and classification of anonymity in anonymous communications networks. Three key anonymity components: anonymity property, adversary capability, and network type are thoroughly explored. More importantly, an in-depth description of a new tree-based taxonomy for the state-of-the-art in wireless anonymous protocols is offered. For completeness, a tree-based taxonomy of wired and hybrid anonymous protocols are also provided. Lastly, several evolving anonymity metrics which quantify anonymity preservation, degradation, and elimination in existing and future anonymous networks are examined. Hence, this paper explores extant and emerging issues in anonymous networks via an intuitive taxonomy and surveys anonymous protocols and quantifiable metrics essential for any entity determined to assure anonymity and preserve privacy in cyberspace against an adversary.

Hosted by: Dr. Lotzi Boloni

