SEMINAR NOTICE:

Physical-Layer Security in Wireless Localization and Communications

Monday, October 1
8:00 p.m.
CSL 238

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Abstract:

Localization systems have become increasingly popular in recent years due to the emergence of mobile phones, public GPS, and smartphones. Nowadays, such hand-held devices allow the user to find his position via GSM triangulation, GPS or WLAN-based localization. From a security perspective, most localization protocols are inherently insecure as they use physical-layer characteristics such a message propagation delay, received signal strength, or angle-of-arrival to estimate the location. Such physical-layer characteristics cannot be protected by cryptographic measures only--even if such measures are applied, attackers can influence the localization result by selective forwarding and replay of the signals, or other manipulations. In this talk, I present my recent work on physical-layer security of localization systems and secure distance bounding.

Biosketch:

Nils Ole Tippenhauer received his Dipl Ing degree in computer engineering from the TU Hamburg, Germany, in 2007, and the PhD degree in Computer Science in the System Security Group of ETH Zurich, Switzerland, in 2012. He is currently a post-doc at the Institute of Information Security of ETH. His research covers physical-layer security in wireless communications and embedded systems, in particular he focuses on attacker models, practical attacks, and countermeasures. During his PhD, Nils worked in the area of security of wireless localization systems, secure distance measurements and their implementation, and attacker models for physical-layer attacks on wireless systems.