Master Class III: Cyber-security

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This master class will consist of two components: first, we will look at the effectivity of cyber security strategies for organizations in face of recent USB-born malware such as StuxNet. Second, we will take a deep dive into the security of WiFi and analyze how design failures in the original WiFi protocol results in very a insecure communication ecosystem.

Organizational Security in the Times of APT malware

Traditionally, cyber and network security solutions are perimeter-based. A firewall shields the organization from outside threats, passwords on accounts and WiFi networks prevent access from unauthorized users, and networks separated into compartments stop the flow of threats throughout an organization.

The advent of recent malware such as StuxNet etc. which not only propagates through the network but also by other means such as USB storage and thus carried and propagated by people calls into question the efficacy of existing cyber security defense tools. In this talk, I will present results from a measurement study showing how this new generation of malware spreads differently within organizations and circumvents existing protection schemes. The fight against such new malware is however not hopeless, but can be efficiently combated with new means.

Protocol Design Failures - A Deep Dive into WiFi and what we can learn from it

Already a few years after the introduction of WiFi, major security flaws of this protocol became evident. In this talk, we will take an in-detail look at how this defacto standard for wireless networking works, and the fundamental assumptions and design decisions beneath it. We will then review the algorithms and design failures around the WiFi protocol in depth, and draw out conclusions on how to securely design wireless communication for future applications.

Master Class

- The next generation of malware
- New means to combat malware
- Wireless networking flaws
- Fundamental assumptions and design decisions of WiFi standard
- Review of algorithms and design failures around WiFi protocol
- Secure design for future wireless communication

The content of the Master Class has not yet been finalised. We would appreciate it if you could forward any suggestions for subjects to be included to us.