IEEE Signal Processing MAGAZINE

CALL FOR PAPERS

IEEE SIGNAL PROCESSING MAGAZINE

Special Issue for Contactless Monitoring of Critical Infrastructure

Considerable research efforts have been increasingly devoted to the monitoring and protection of Industrial Control Systems (ICS) that supervise critical civil or military infrastructures such as transport systems, water treatment facilities, power plants, electricity grids, oil and gas refineries, etc. Attacks on such critical infrastructures can have severe social and economic consequences. However, the Industrial Internet of Things (IoT) brings the interconnection of sensors and controller devices that typically have limited protection capabilities. An important type of attacks on ICS systems can be performed without physical contact using side channel information, such as electromagnetic emanations, power dissipation, sound, temperature, etc. Typically, Side Channel Attacks (SCA) attempt to perform cryptanalysis based on time series processing of the side channel signals using statistical or machine learning methods. Since SCA can pose a serious authentication threat the importance of side channel analysis has been recently recognized both by the academic community and by the industry. The emerging area of side channel analysis already includes a wide range of signal processing and machine learning methods for attacking supervisory control and data acquisition (SCADA) systems as well as for detecting anomalous execution of programmable logic controller (PLC) programs.

This special issue invites the submission of tutorials-style surveys and overview papers that will bring the emerging area of side channel analysis to the attention of the signal processing community. The aim is to provide a comprehensive and accessible exposition of the various attack and anomaly detection methods, including profiling and non-profiling techniques, template attacks, probabilistic analysis, timing analysis, machine learning and deep learning methods, and stochastic cryptanalysis.

Topics of Interest include (but are not limited to):

- Bayesian methods for side channel attacks
- Deep learning methods for cryptanalysis
- Timing based side channel analysis
- Probabilistic side channel analysis
- Statistical methods for intrusion detection
- Contactless control flow monitoring
- Machine learning methods for side channel based disassembly
- Anomaly detection in industrial systems
- Template attacks
- Stochastic cryptanalysis
- Embedded systems security

White papers are required, and full articles are invited based on the review of white papers. Articles submitted to this issue must be of tutorial and overview/survey nature and in accessible style to a broad audience, and must contain significant relevance to the signal processing and its use in side channel analysis. Submissions will be reviewed according to the IEEE Signal Processing Magazine guidelines, and should not have been published or under review elsewhere. Submissions should be made online at http://mc.manuscriptcentral.com/sps-ieee. For guidelines and information on paper submissions, visit http://www.signalprocessingsociety.org/publications/periodicals/spm/.

Important Dates: Expected publication date for the special issue is **March 2019.**

White paper due	**April 10, 2018**
Invitation notification	**April 30, 2018**
Full length manuscript due	**June 30, 2018**
First review notification	**August 25, 2018**
Revised manuscript due	**September 25, 2018**
Second review decision	**November 1, 2018**
Final manuscript due	**December 1, 2018**

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