Center for Advanced Signal and Image Sciences Workshop

CYBER ATTACKS ON INTERNET OF THINGS SENSOR SYSTEMS FOR INFERENCE

15 MAY 2019

The internet of things (IoT) improves pervasive sensing and control capabilities by connecting digital communication, signal processing, and massively deployed sensors. But low-cost, spatially distributed IoT sensor nodes with limited hardware and battery power, combined with the low latency needed to avoid unstable control loops, presents severe security challenges. By modifying data communications among IoT sensors, attackers can compromise any algorithm using the data for inference.

Professor Blum describes tight bounds on algorithms that estimate a parameter derived from the attacked data and communications, under any statistical model. The results hold regardless of the estimation algorithm adopted. Attacks that make the target data useless for reducing these bounds and applications to IEEE 1588 for clock synchronization are discussed.

Lawrence Livermore National Laboratory, HPC Innovation Center (HPCIC) Workshop begins at 9:00 am— Keynote address at 1:00 pm



Rick S. Blum has taught at Lehigh University since 1991, researching signal processing for cybersecurity, smart grids, communications, sensor networking, and radar and sensor processing. An IEEE Third Millennium medal winner, SPS Distinguished Lecturer, and IEEE fellow with several patents, he has edited IEEE Transactions on Signal Processing, IEEE Communications Letters, and select IEEE journals, while serving on three technical committees: the Sensor Array (SPS), Multichannel and Signal Processing for Communications (SPS), and Communications Theory (CS). He holds a B.S.E.E. from Penn State (1984) and M.S. and Ph.D in EE from University of Pennsylvania (1991).

For information and to register, go to https://casis.llnl.gov/



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Joint technical meeting with, and refreshments provided by, the Oakland-East Bay Chapter of the IEEE Signal Processing Society