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Hack-Proofing Our Devices

Research@SMU (12/24/16) Sim Shuzhen

Singapore Management University (SMU) professor Li Yingjiu aims to make radio-frequency identification (RFID) and smartphones hackproof by incorporating better safeguards. Li and his team are designing and evaluating new RFID protocols with augmented security features, including adding unpredictability to the protocol's output, making two tags indistinguishable to the hacker, and barring hackers from acquiring useful information even if they manage to interact with the tags. Li also says there are many cases in which sharing such information would be beneficial, but lacking appropriate security controls makes most companies hesitant. Li's team is designing better access control mechanisms that shield RFID information when it is shared online. Li particularly focuses on detecting potential exploits in smartphone operating systems. "We see the opportunities to work with industry in this area because it is important for smartphone manufacturers to make their products better in terms of security," he says. In addition, Li is working with SMU professor Robert Deng to devise new solutions for attribute-based encryption. Li cites a yawning gap between industry and academia as a key challenge to bringing new data security solutions to market. He says success lies in bridging the communities, "which have completely different incentives and evaluation criteria."

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Singapore Unveils Its First Petascale Supercomputer

Asian Scientist (12/22/16) Rebecca Tan

The unveiling of the National Supercomputing Center Singapore's (NSCC) Advanced Supercomputer for Petascale Innovation, Research, and Enterprise (ASPIRE 1) marks Singapore's entry into the ranks of countries with petascale computing capability. The one-petaFLOPS system that debuted on Dec. 20 is based on x86 architecture from Fujitsu Asia and features 1,288 nodes and 30,912 cores. ASPIRE 1 has 13 petabytes of storage with an input/output burst rate of 500 Gbps and a total memory of 229 terabytes. It provides supercomputing resources to both academic and industrial high-performance computing (HPC) users, including the Technology Center for Offshore and Marine Singapore (TCOMS). The TCOMS core drives the next-generation Deepwater Ocean Basin facility, which employs advanced wave and current generation systems to simulate ocean environments. "NSCC's long-term vision is to continually make HPC accessible by all, thereby democratizing HPC and building

a healthy ecosystem of supercomputing users," says NSCC's Jon Lau. "We aim to play a leading role in global efforts to build an integrated research platform that will support research at the speed of thought."

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