

PhD Position in Malware detection through side-channel information

Environment The TAMIS team is among the largest security teams at IRISA, Inria Rennes - Bretagne Atlantique, including competences from hardware attacks to (post-quantum) cryptography, and from software vulnerability detection to malware analysis.

Research topic While malware detection and mitigation research is now trending, a lot of challenges and unsolved problems still remain. Recently, sophisticated malware designers invented techniques to circumvent software detection techniques, which make them unreliable in practice. A new direction consists in using unintentionally emitted hardware side-channel information such as electromagnetic emanation, power consumption, timing, performance counters as mechanism to detect malware. The big advantage of this information is the non-detection by malware designers. Still, those approaches have to be established in real-world scenarios and efficient analysis techniques developed and implemented.

You will

- study IoT devices with and without malware infection,
- derive side-channel algorithms to detect malware based on machine learning,
- drive top-quality research and publish in A*/A-class security and malware conferences.

Prerequisites We are looking for team players who are motivated to drive top-quality research. The area of research lies between two fields and we expect at least competences in one of them: embedded devices and/or malware analysis. An ideal candidate should have:

- MS degree in Computer Science, Computer Engineering, Electrical Engineering, or related fields,
- interest and experience in security and machine learning, and/or experience in embedded systems and/or malware analysis/detection,

- programming skills (e.g. Python, C/C++),
- good level in written and spoken English,
- motivation to save the world.

Duration/Starting date The PhD program is estimated for 3 years. The starting date is planned to be March 2019 but negotiable.

Contact Interested candidates should send their detailed CV, cover letter and references to Annelie Heuser, annelie.heuser@irisa.fr.