EAGER: Enabling Secure Data Recovery for Mobile Devices against Malicious Attacks

Challenge:

- Mobile computing devices usually rely on off-device data recovery: periodically back up data remotely and restore them upon failures
- Cannot ensure restoration of data to the *exact* point of time right before the malware hacks (i.e., the corruption point)

Solution:

- Propose a novel data recovery framework combining both the traditional off-device data recovery and a new in-device data recovery
- Ensure recoverability of data by hiding them in the flash memory using special hardware features of flash

NSF EAGER grant CNS-1938130, Michigan Technological University, Bo Chen (bchen@mtu.edu)

Once a mobile device is hacked, how can we ensure restoration of data to the exact point right before the corruption? Ensure a latest A user-friendly off-device data recovery data copy is approach to correctly n-device data recovery efficiently retrieve committed to the delta from NAND remote server flash Ensure delta is always retrievable from NAND flash



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Scientific Impact:

- Challenge defects of the broadly used traditional off-device data recovery
- Allow restoration of data to the corruption point
- Establish a novel in-device data recovery concept, and enable it in computing devices using flash memory

Broader Impact:

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- Data recovery upon malicious attacks benefits individuals, enterprises, federal agencies, government sectors
 - Incorporate research results into 3 graduate courses and 2 undergraduate courses in MTU
- Disseminate project knowledge to K-12 students and teachers in UP of Michigan