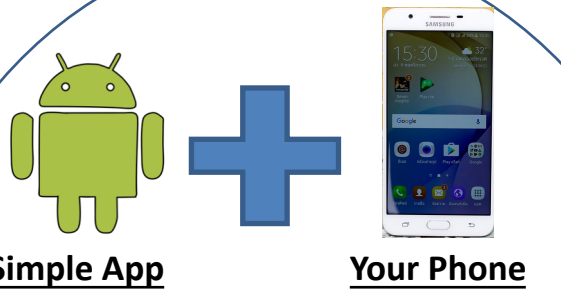
SaTC: NSF-BSF: CORE: Small: Attacking and Defending the Lifespan of Mobile and Embedded Flash Storage

THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

TECHNION Israel Institute of Technology

Challenge:

- Flash storage wears out
- SSD wear management hard at mobile price-point
- Are mobile and embedded devices more vulnerable to attack?



Bricked in weeks

Mobile OSes must manage flash wear

Contributions:

- Effective wear-out attack against mobile phones
- Large-scale study of benign app I/O
- New OS wear management policies, tolerates common "bursts"

Scientific Impact:

- Identify new vulnerabilities that can leave devices permanently inoperable
- System policies to manage permanently depletable resources

Broader Impact:

- Flash-based mobile and embedded devices ubiquitous and vulnerable
- If unpatched, major risk to business, medicine, critical infrastructure
- Android defenses are practical and open-source
- Curricular development in systems and security

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