# Vetting and Improving the Usage of Trusted Execution Environments for Authentication in Mobile Devices

Challenge:

- Use Trusted Execution Environments (**TEEs**) to enable **safer authentication** in mobile apps

- Use TEEs to implement authentication **resilient against "root" attackers**

- **Help developers** in using TEEs

Scientific Impact:

- **Large-scale studies** on existing apps

- **Program analysis techniques** to automatically vet the usage of TEEs for authentication

- **Usability studies**

Mobile Device

Mobile App

TEE API

OS

Attacker

App's Backend

TEE

User
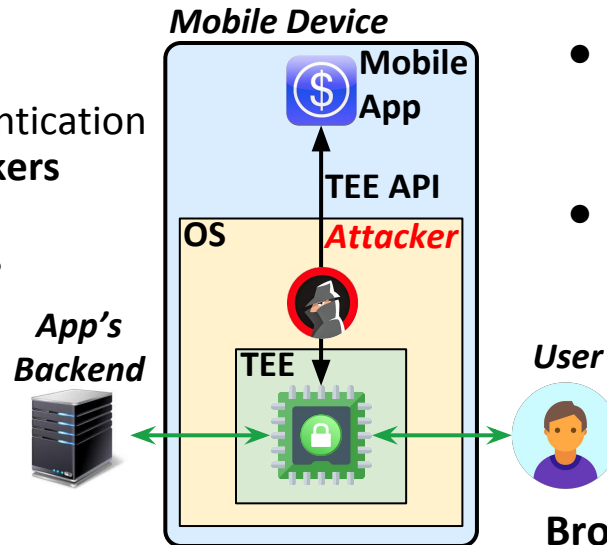
Solution:

- **Systematic study** of existing APIs enabling the usage of TEEs in mobile apps (TEE APIs)

- Use program analysis to **automatically vet** existing apps

- Develop new libraries to **help developers** using TEE APIs

Broader Impact:

- Scientific **publications**

- **Collaboration with vendors**
  - Improve existing TEE APIs

- Open source releases
  - **New authentication library**