TWC: Small: Benchmarking Testing Methods for Access Control Policies
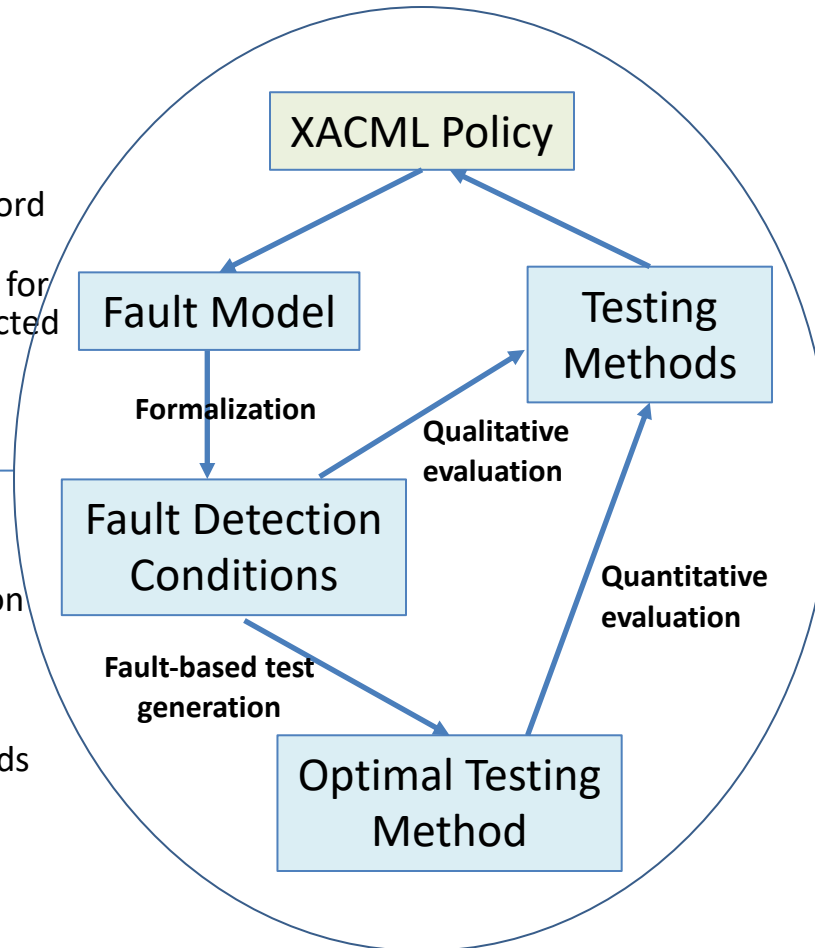
UMKC

Challenge:

- Testing methods for XACML have a poor record in fault detection
- There is no explanation for why faults are not detected

Solution:

- Formalize fault detection conditions (FDCs)
- Generate optimal tests from FDCs
- Evaluate testing methods qualitatively and quantitatively

XACML Policy

Fault Model

Testing Methods

Formalization

Fault Detection Conditions

Qualitative evaluation

Fault-based test generation

Quantitative evaluation

Optimal Testing Method

Scientific Impact:

- A theoretical foundation of testing XACML policies
- Qualitative evaluation of testing methods without specific policies
- Qualitative evaluation of cost-effectiveness of testing methods

Broader Impact and Broader Participation:

- Implemented an open-source tool
- Disseminated the results via conferences and textbook
- Supported four graduate and undergrad students