Combining Model-Based and Risk-Based Testing for Effective Test Case Generation

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friendly technology **VESTEL**
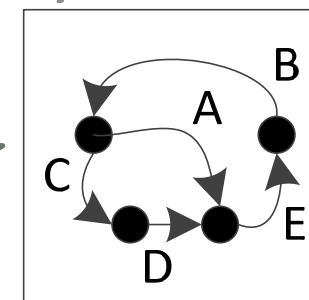
ÖZYEĞİN ÜNİVERSİTESİ

Setting the Context

Company Profile

- 900+ Customers
- 157 Different Brands
- 145 Countries

- 100 Software Engineers
- 100 Test Engineers/ Technicians

- ~10M DTV production annually
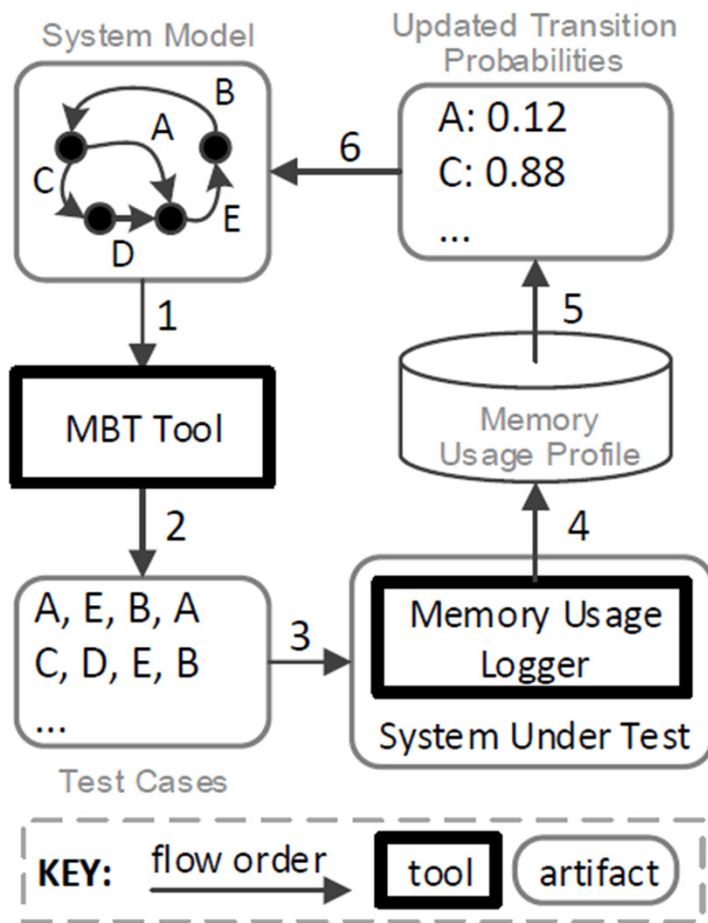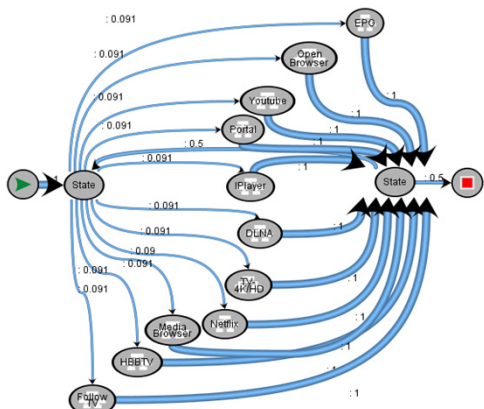- 5M LOC in total; ~1.5M LOC modified within 2013

Need for effective test case generation!

System Model

MBT Tool

Test Cases

A,E,B,A,E
A,E,B,C,D
C,D,E,B,A
C,A,E,B,A
...

The Overall Approach

After the Update

# of Test Cases	Update Effort	Exec. Time	# of Faults
79	1 hrs	6 hrs	3

# of Test Cases	Modelling Effort (+Scripts)	Exec. Time	# of Faults
110	9 days	10 hrs	0

System Model

Updated Transition Probabilities

A: 0.12
C: 0.88
...

MBT Tool

A, E, B, A
C, D, E, B
...

Test Cases

Memory Usage Logger
System Under Test

Memory Usage Profile

KEY: flow order   tool   artifact

	EPG	4K/HD	OB	Ytube	Portal	iPlayer	DLNA	Netflix	MB	HBBTV	FTV
Start	129	81	81	72	120	123	125	126	125	125	195
Finish	130	81	84	106	123	125	135	128	134	127	198