Paper	Category	Input	Main Approach	Need Extra Human Interactions	Output	Benefits of the system
Specification Extraction by Symbolic Execution	Formula Extraction	1) program in pseudo code ; 2) user provided input for the program	dynamic symbolic execution guided by concrete program execution	Yes	Computation Formula and Path Conditions	Understand the essential computation and constraints of complex programs
Prospex: Protocol Specification Extraction	Protocol Analysis	sequence of typed messages between clients and servers	reverse engineering the protocol state machine	No	application-level protocol specification: meaningful message formats and protocol state machines	automatically find vulnerabilities in real-world applications
Mining API Patterns as Partial Orders from Source Code: From Usage Scenarios to Specifications	API usage mining	user-specified APIs; API client code	1. use push-down model checking technique to generate API invocation sequences in a program; 2. A scenario extraction algorithm is used to extract different API usage scenarios from the API invocation sequences; 3. A miner summarizes different usage scenarios as compact partial orders. 4. Specifications are extracted from the frequent partial orders using a specification extraction algorithm	No	frequent partial orders; API ordering rules (specification)	Correct and effective API reuse