

# **SBSE project proposal**

Search-based JavaScript Modelings  
for Static Analysis

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# JavaScript Static Analysis

## - JavaScript -



- The core programming language for **web applications**

## - Static Analysis -

- Analyze programs **before the execution**
- **Abstract interpretation**
- Contain all of the program behaviors
- **SAFE** / TAJIS / WALA / JSAI

# Modelings

- **Opaque functions:**  
executable but whose source is unavailable or difficult to process
- **Examples:**
  - Built-in functions: `String.prototype.slice`
  - DOM object functions: `document.getElementById`
  - Platform-specific functions: `Tizen.getDeviceId`

# Search-based Approach

- Generate opaque codes by searching program spaces
- Related work: **Mimic** (FSE'15) using a random search based on heuristic
- Extend Mimic for supporting other search-based algorithm(e.g. Genetic Algorithm) and other fitness functions or ranking systems