

Translating Code Comments to Procedure Specifications

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Wanted: missing specification

Specifications help test case generation:

- ✓ act as assertions
- ✓ filter invalid tests

But formal specifications are:

- ✗ seldom available
- ✗ hard to write

What we do have: *Javadoc comments*

```
/**
 * @param vertex, must not be null
 * @return list of vertex's neighbors, not empty
 * @throws IllegalArgumentException if vertex is not found in the graph
 */
public List neighborsOf(V vertex){...}
```

Jdoctor generates procedure specifications from Javadoc comments

Pattern match

@param vertex, must not be null

vertex != null

Syntax match

@return list of vertex neighbors, not empty

!result.isEmpty()

Semantic match

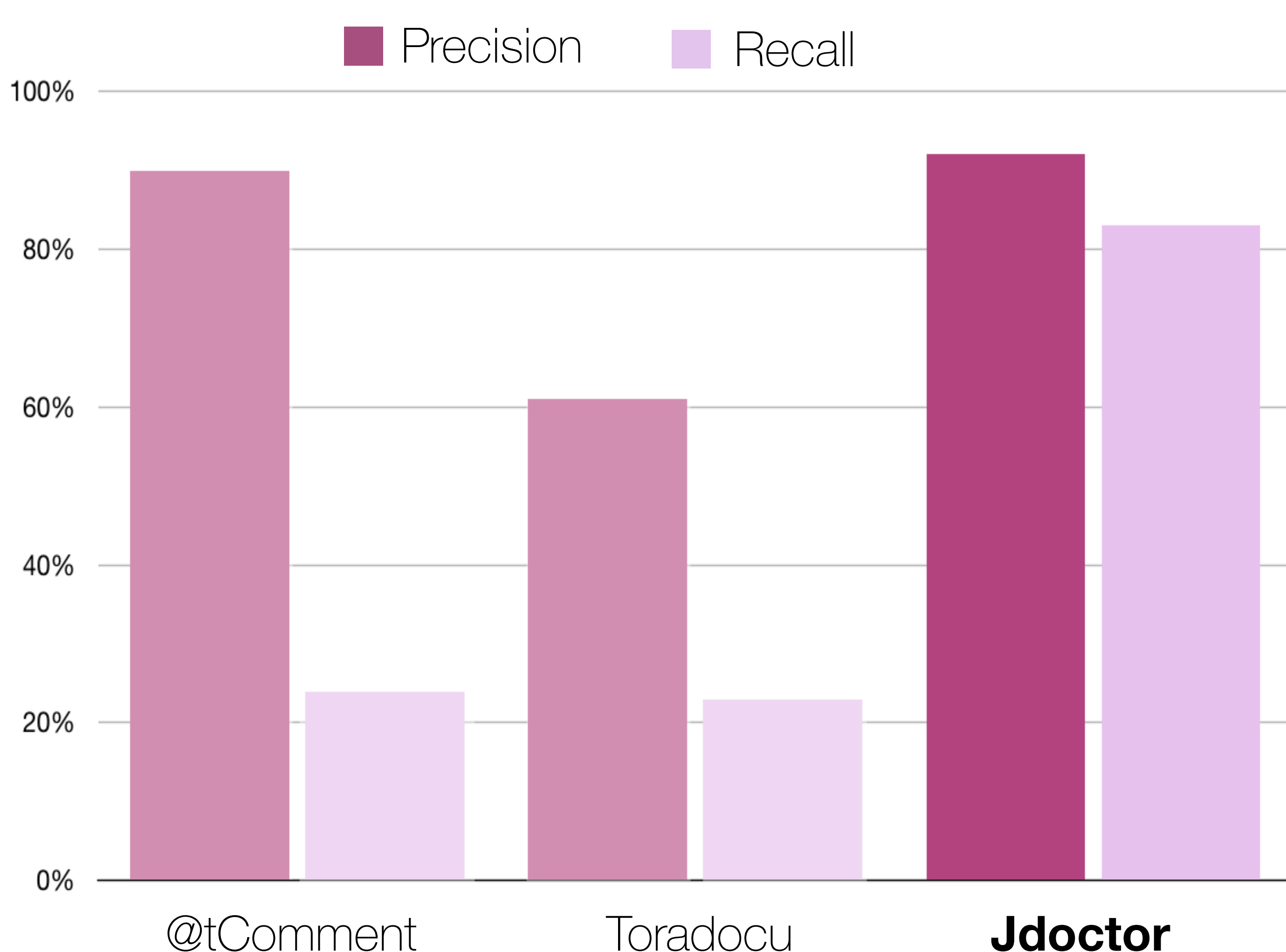
@throws IllegalArgumentException if vertex is not found in the graph

!graph.contains(vertex) -> IllegalArgumentException

Evaluation

6 projects
829 translations

Jdoctor outperforms the state of the art



Application

Jdoctor improves Randoop's output by revealing more:

