ACM First International Workshop on

Data-intensive Software Management and Mining (DSMM 2009)

Co-located with CIKM 2009

November 6th, 2009
Hongkong, China

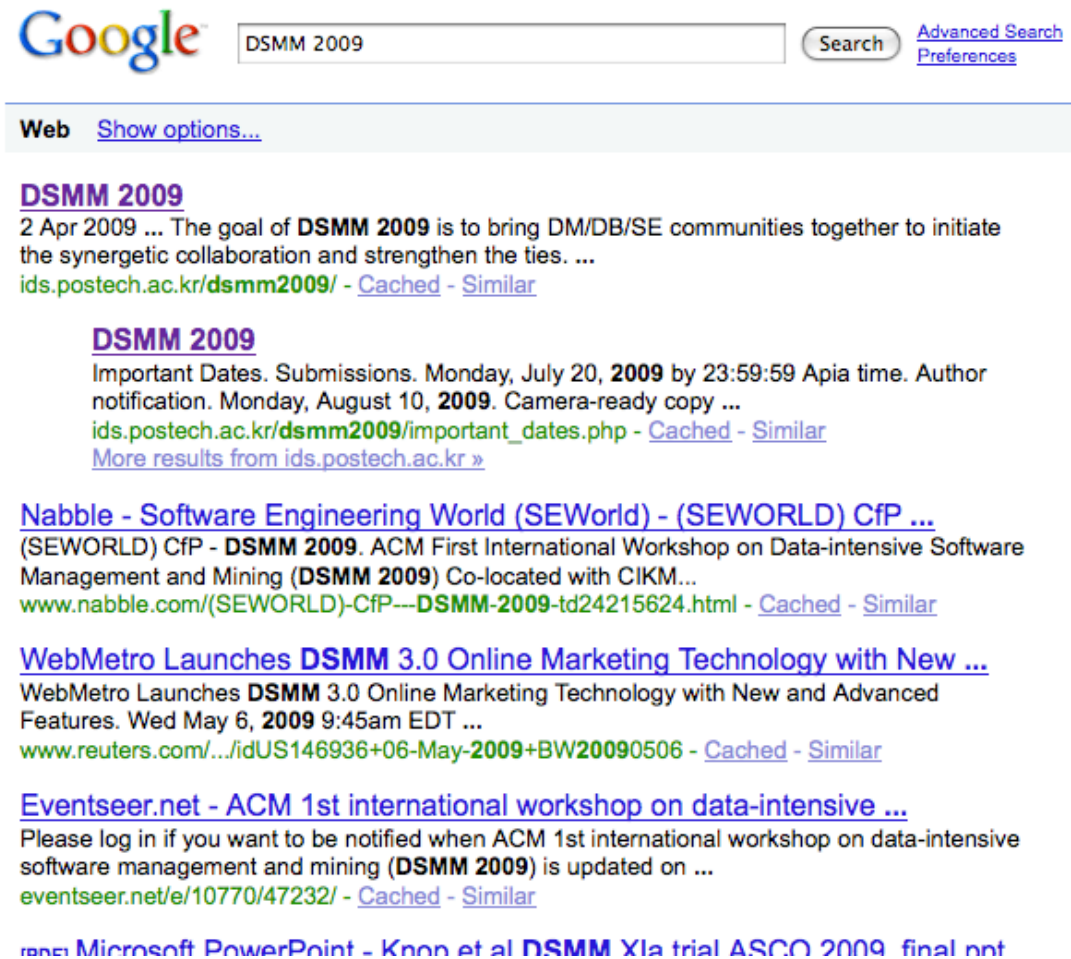
Organization

- Co-organizers
  - Audris Mockus (Avaya Labs, USA)
  - Seung-won Hwang (POSTECH, Korea)
  - Sunghun Kim (HKUST, China)
- Keynote speaker
  - Brendan Murphy (MSR, USA)
- Program Committee
  - Sebastian Michel, EJ Jung, Joachim Selke, Bin He, Chengkai Li, Ahmed Hassan, Shay Artzi, Thomas Zimmermann, Yann-Gael Gueheneuc, Miryung Kim, Lingxiao Jiang, Martin Theobald

Call For Papers

- Looking for any SE/PL research using DATA
- 5-page (or less) by July 20, Monday
- ACM Paper(s) with Hong Kong and HKUST visit!

More Information



OCAT: Object Capturing based Automated Testing

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with Hojun Jaygarl (ISU) and Tao Xie (NCSU)

Automated Testing

- Useful in practice
- Evaluated by *PIE* [TSE92]
- Current *state of the art* covers 20~40% paths
- Creating *valid objects* is challenging

Invalid Objects

```
public DSAKeyValue(Document doc, Key key) throws IllegalArgumentException {

    super(doc);

    XMLUtils.addReturnToElement(this._constructionElement);

    if (JavaUtils.implementsInterface(
            (Object) key, "java.security.interfaces.DSAPublicKey"))
        this.addBigIntegerElement(((DSAPublicKey) key).getParams().getP(),
                                  Constants._TAG_P);
        this.addBigIntegerElement(((DSAPublicKey) key).getParams().getQ(),
                                  Constants._TAG_Q);
        this.addBigIntegerElement(((DSAPublicKey) key).getParams().getG(),
                                  Constants._TAG_G);
        this.addBigIntegerElement(((DSAPublicKey) key).getY(),
                                  Constants._TAG_Y);
    } else {
        Object exArgs[] = { Constants._TAG_DSAKEYVALUE,
                            key.getClass().getName() };

        throw new IllegalArgumentException(I18n
```

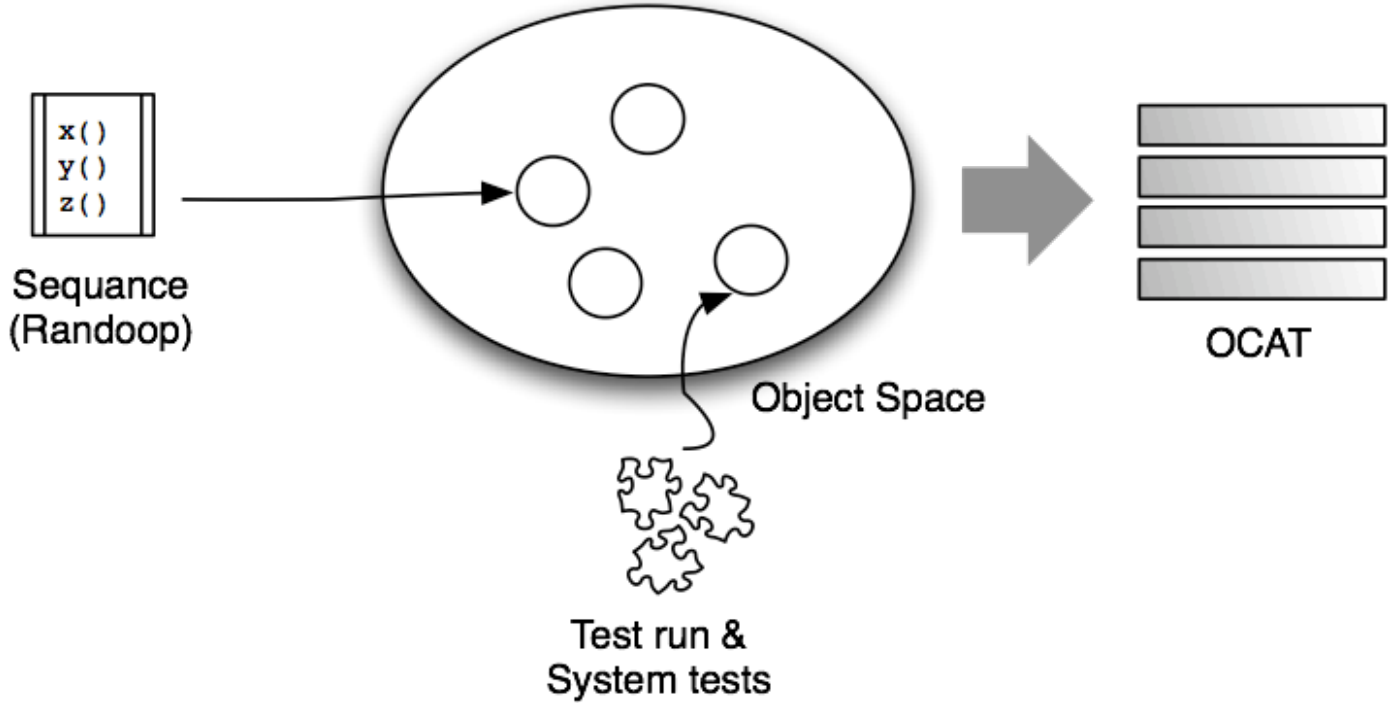
Generating Objects
Randoop and *SMOOT*

- Automated testing techniques
- Generating valid objects from
  - Randoop: feedback based method sequences [ICSE 07, ISSTA 08]
  - SMOOT: code repertories [ESEC/FSE 09]

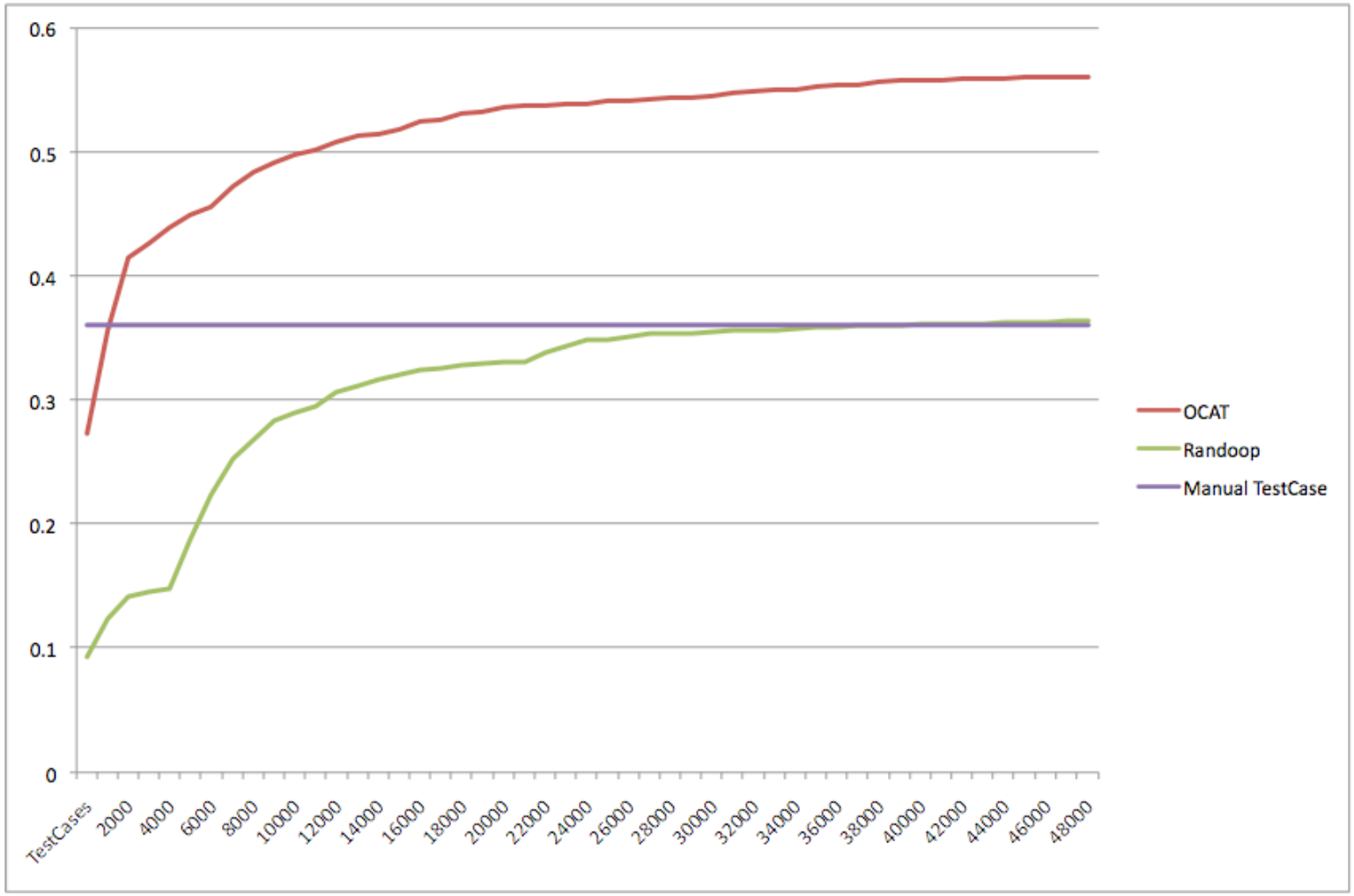
Limitations

- Statically identifying sequences
- Need to execute code to get objects
- Cannot capture environments
  - I/O, user inputs, etc

OCAT Approach



Preliminary Result



Future Work

- Combine OCAT with SMOOT
- Mutate objects based on path constrains
- Looking for collaborators