

CREST Open Workshop: Security and Code

6 April 2011

Centre for Research on Evolution Search and Testing Est. 2006

CREST



Centre for Research on Evolution Search and Testing Est. 2006

| admin

CREST



Centre for Research on Evolution Search and Testing Est. 2006

1 admin

4 faculty

CREST



Centre for Research on Evolution Search and Testing Est. 2006

1 admin

4 faculty

8 post docs

CREST



Centre for Research on Evolution Search and Testing Est. 2006

1 admin

4 faculty

8 post docs

11 PhD students

CREST



Centre for Research on Evolution Search and Testing Est. 2006

1 admin

4 faculty

8 post docs

11 PhD students

1-4 resident visiting scholars

CREST



Research

Research

Malware detection

Service Oriented Computing

Search Based Software Engineering

Clone Detection

Dependence Analysis

Quantitative Information Flow

Digital Humanities

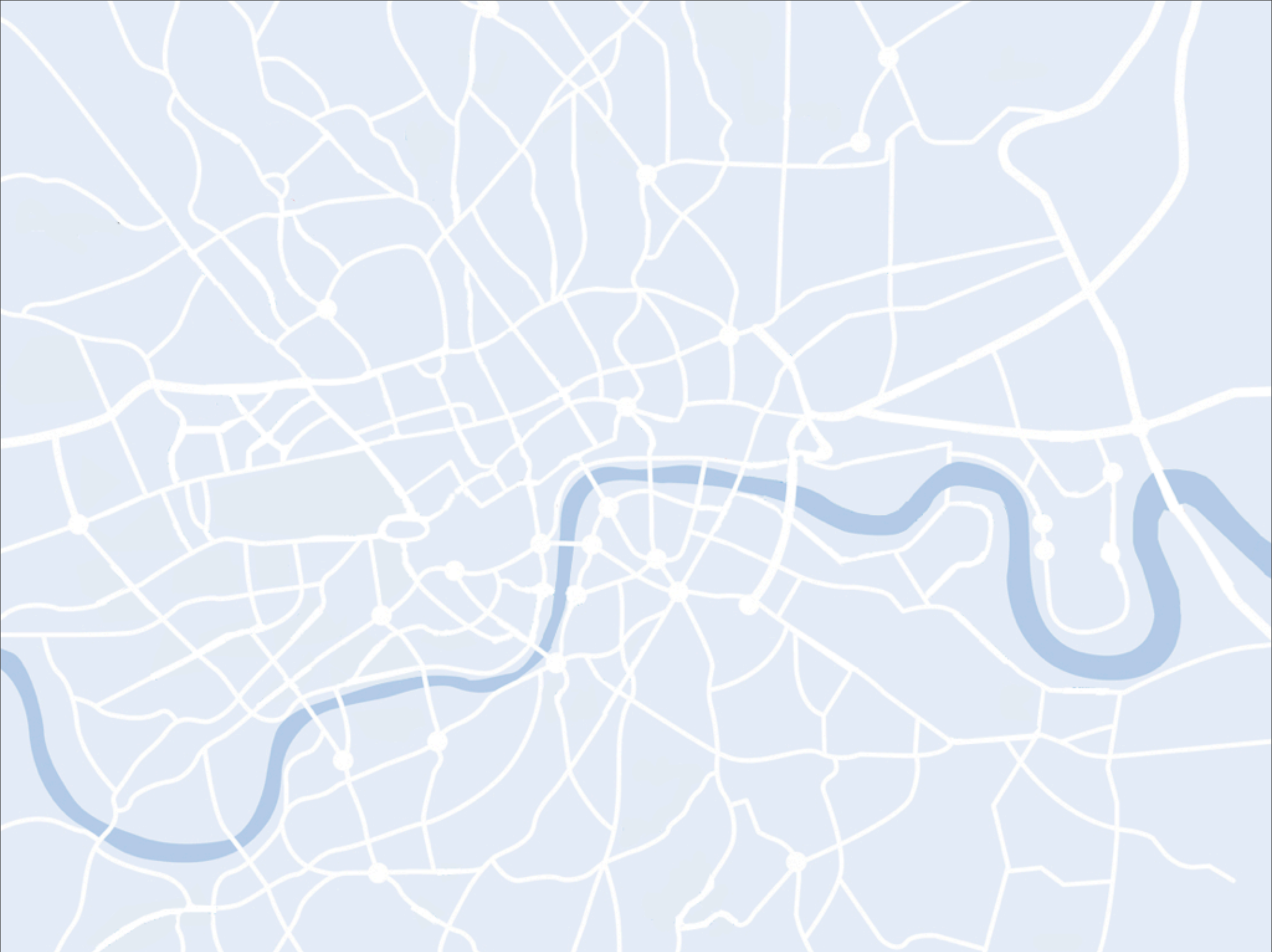
Testing

Requirement Engineering

Slicing

Funding





University College London



David Clark
Secure COW



Friday, 8 April 2011

University College London

20 mins walk



David Clark
Secure COW



University College London

20 mins walk



Nelson's Column



London Eye



Tate Modern



Royal Courts of Justice



Globe Theatre



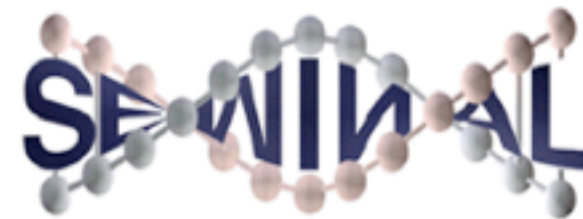
St. Paul's

Search Based Software Engineering

Apply **search techniques** to Software Engineering

Multi objective optimisation:

- cost and value
- faults, coverage, time
- metric sets
- risk and reward



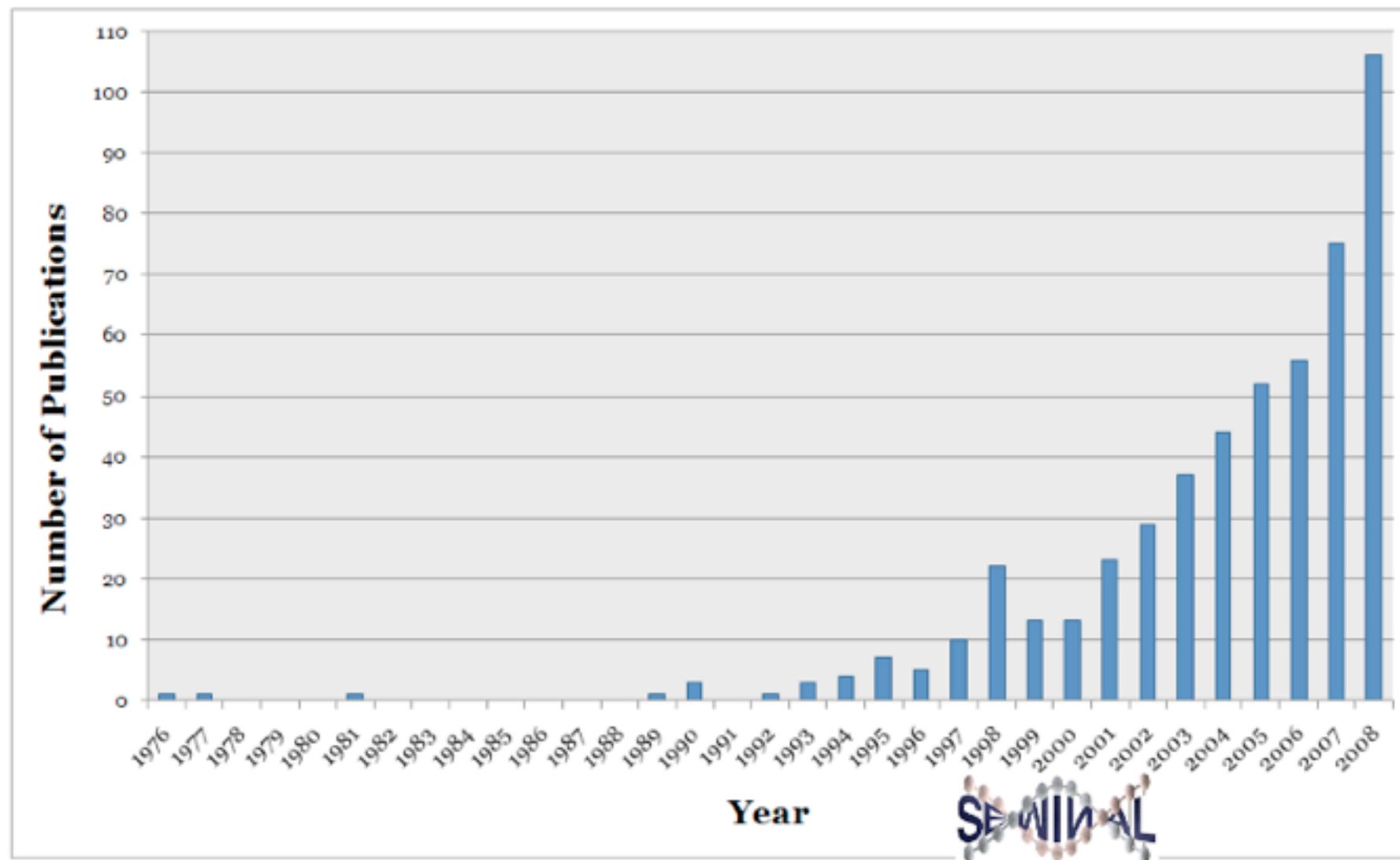
Centre for Research in
Evolution, Search &

Software Engineering Application areas:

- Requirements
- Testing
- Project Management
- Refactoring
- Source Code Analysis



Search Based Software Engineering



Testing, Testing, Testing

Testing, Testing, Testing

Mutation testing

Model based testing

Automated test data generation

Web application testing

Service oriented testing

Fuzz testing

Security testing

Regression testing

Dependence Analysis

dependence clusters

impact analysis

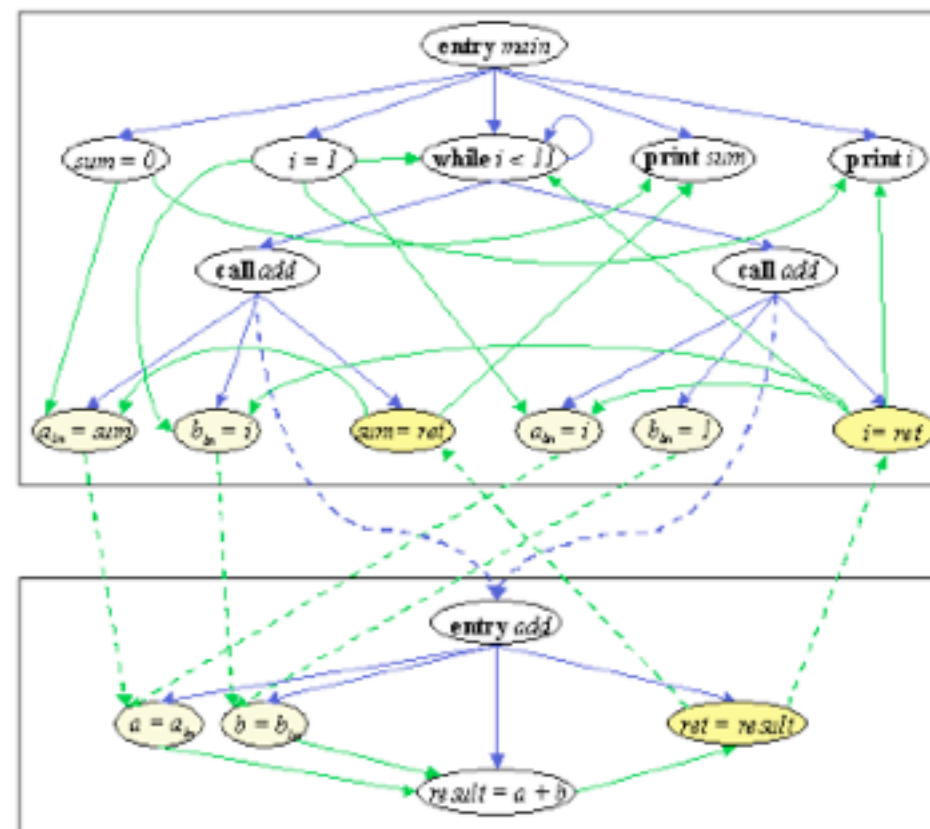
program and model based slicing

assessing third party code

SLIM

SLicing state based Models

ASTReNet



Quantitative Information Flow

calculate amount of information flowing

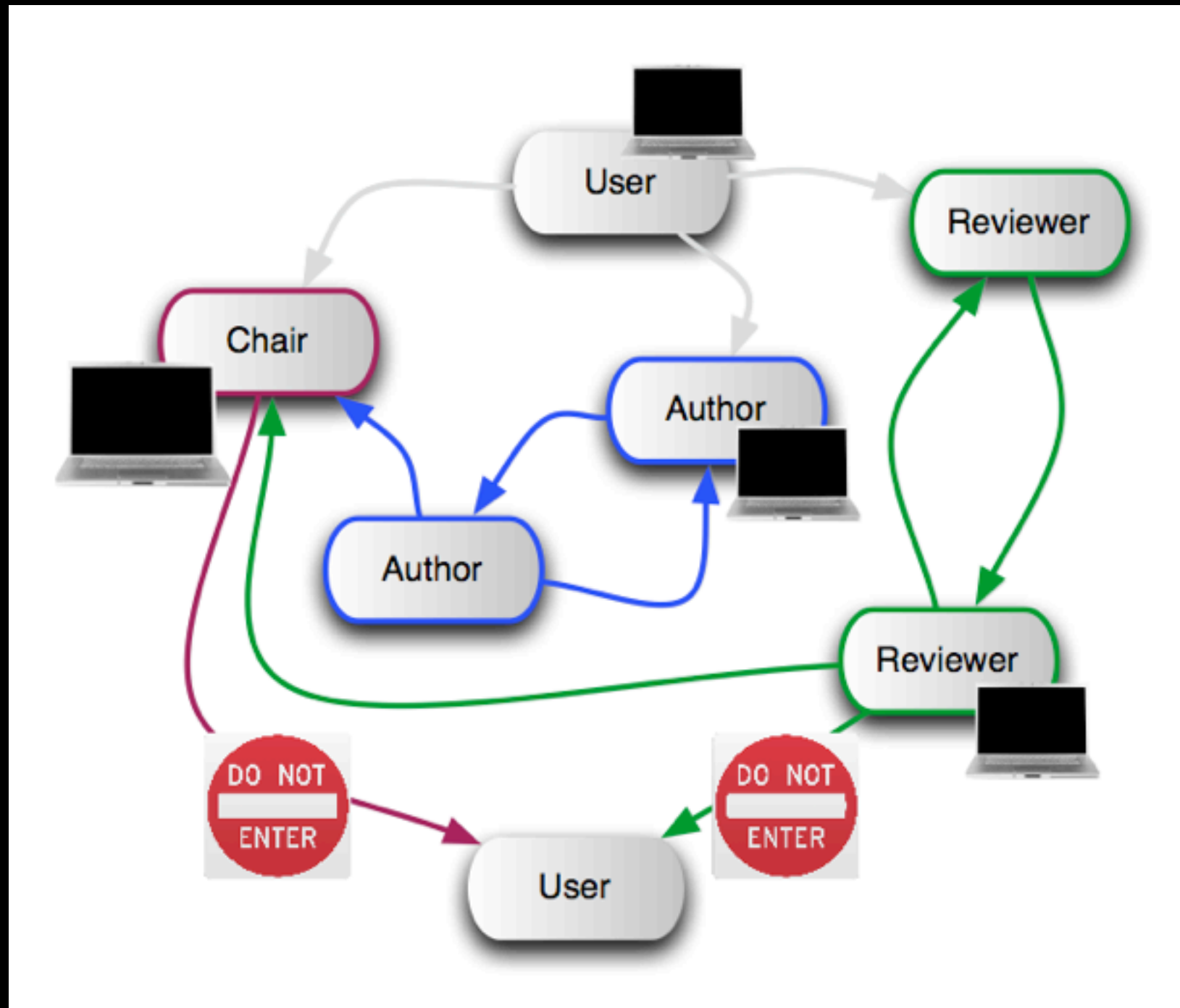
find security leaks

Quantitative Information Flow

An [EPSRC](#) funded research project based at three sites in London:

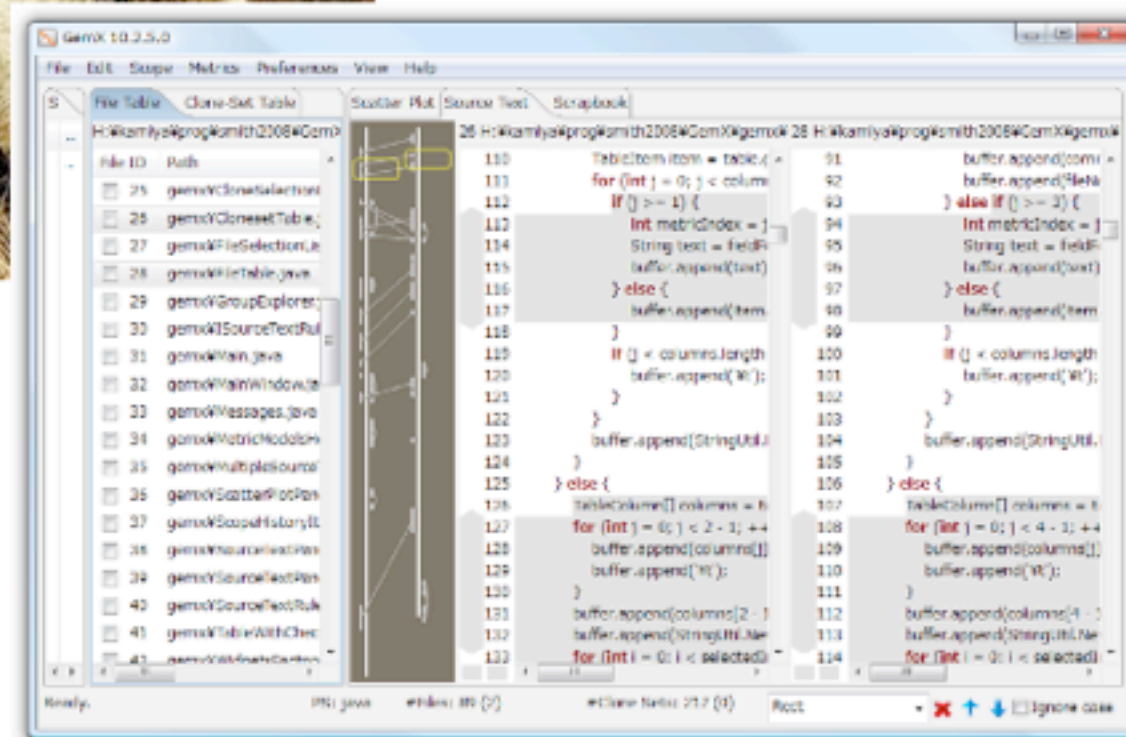


Information Flow Control



Clone Detection

using static analysis
applied to code provenance
applied to graphical languages



Digital Humanities

Mapping outwards from software to systems


Software Engineering Analysis translates to

- musicology
- archaeology



PERSONAL-TOUCH

SBSE Repository


 Software Engineering By Automated SEarch

Project Community


Publications | Applications | Collaborations | Who's who

REPOSITORY


This page collects the work which address the software engineering problems using metaheuristic search optimisation techniques (i. e. Genetic Algorithms) into the [Repository of Publications on Search Based Software Engineering](#)




- SBSE repository is maintained by [Yuanyuan Zhang](#)
- 616 relevant publications are included
- Last updated on the 1 December 2009 ([Update logs](#))



The number of publications in the year from 1976 to 2009.




The ratio of SE research fields that involved SBSE.



The ratio of publications number in the world countries.

GP Bibliography


bibliography

The Genetic Programming Bibliography

[[Search It](#) | [Most recent](#) | [Top 10 Cited](#) | [Most Downloaded](#) | [Add to It](#)]

The bibliography is part of the [Collection of Computer Science Bibliographies](#).
It is maintained and managed by [William Langdon](#), [Steven Gustafson](#), and [John Koza](#).

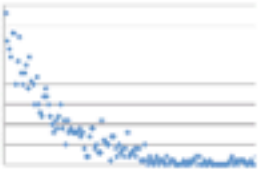
[Add single entries](#) or email [William Langdon](#) or firstname D0T lastname AT-SYMBOL research D0T ge D0T com
a bibtex file containing the entries.


Bibtex file

[gp-bibliography.bib \(Compressed\)](#) Over 6000 GP references

Other formats

[refer format \(Compressed\)](#)
[text file \(Compressed\)](#)


[Author](#) format (split by first author)


[co authorship graphs](#)

Search Interfaces

The GP bibliography is one of the many online computer science bibliographies.
There are several on line search tools for these bibliographies. For example:

- o [WWW form](#) based search
- o The [coauthor graphs](#) can also be used for searching by author name.
- o You can find all entries for an author using a URL like this one: <http://www.cs.bham.ac.uk/~wbl/biblio/gp-html/WilliamBLangdon.html>
Naturally you must replace **WilliamBLangdon.html** by the author's name.

Other Resources

- o [Bibliographies of evolutionary computation conferences](#).
- o [Hints](#) on using bibliographies with PC based word processing packages
- o [Links](#) to other information on bibliographies.
- o [Subdirectory](#) containing some [tools](#) and [templates](#) for maintaining bibliographies.
- o [Links](#) to other bibliographies.
- o [Home pages](#) of some GP researchers




Mutation Testing Repository

[HOME](#) [REPOSITORY](#) [THEORY](#) [TECHNIQUES](#) [ANALYSIS](#)

[PUBLICATION](#) [EMPIRICAL STUDY](#) [TOOL](#)

Mutation Testing Repository

Publications on Mutation Testing



Mutation Testing remains an active research area with growing interest...

[READ MORE](#)

Repository News

Welcome to Mutation Testing repository

Mutation Testing is a fault-based software testing technique that has been widely studied for over three decades. The literature on mutation testing has contributed a set of approaches, tools and empirical studies. This repository aims to provide a full coverage of the publications in the literature on Mutation Testing.

Mutation Testing Survey

Using this repository, a comprehensive analysis and survey of Mutation Testing work has been conducted. The paper presents the results of several development trend analyses. These analyses provide evidence that mutation testing techniques and tools are reaching a state of maturity and applicability, while the topic of mutation testing itself is the subject of increasing interest. This paper is currently published as a technical report, available from [here](#). If you want to cite results from the survey, here is the BibTeX entry:

```
@ARTICLE{Jia10,  
  author = {Yue Jia and Mark Harman},  
  title = {(A)n (A)alysis and (S)urvey of the (D)evelopment of (M)utation (T)esting},  
  journal = {IEEE Transactions on Software Engineering},  
  year = {2010},  
  volume = {To appear},  
  number = {},  
  pages = {}  
}
```

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Repository Status

Last update: 16/06/10
Number of Papers: 415
Number of Authors: 298
[Detailed status ...](#)

Missing Paper?

Email:
Title:
 | [email us](#)

Links

[.: Mutation Testing Online](#)
[.: Mutation Testing Wiki](#)

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COWs

CREST Open Workshop

Typically last week of the month

Aim for last Wednesday (where rooms available)

Discussion based

Recorded and archived

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Previous COWs

Previous COWs

Mar 10: Information Theory for Search Based software Engineering

Apr 10: Dependence Analysis and Slicing for Programs and Models

May 10: Information Flow and Security

Oct 10: Advanced Mutation Testing

Nov 10: Code Provenance and Clone Detection

Jan 11: Program Analysis and Slicing

Feb 11: SBSE for Early Life-cycle SE

Upcoming COWs

13th CREST Open Workshop

Search Based Software Engineering (SBSE)

Date: 12 - 13 May, 2011

Venue: William Goodenough Room, Goodenough Club

Thanks

Jian Ren, COW Programme manager

Lena Hierl, Administrative arrangements

Yue Jia, visitor liaison

EPSRC, funding

Attendees and speakers

Thanks

Jian Ren, COW Programme manager

Lena Hierl, Administrative arrangements

Yue Jia, visitor liaison

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Lena Hierl, Administrative arrangements

Yue Jia, visitor liaison

EPSRC, funding

Attendees and speakers

Domestics

Fire or other alarm

Toilets

Discussions

Domestics

Fire or other alarm

Toilets

Discussions

Introductions ...