

CREST Open Workshop: Code Provenance and Clone Detection

23 November 2010

Cloned COW: COWs are Type 3 Clones

CREST



Cloned COW: COWs are Type 3 Clones

CREST

CREST



Centre for **R**esearch on **E**volution
Search and **T**esting *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

Service Oriented Computing

Search Based Software Engineering

Clone Detection

Dependence Analysis

Quantitative Information Flow

Digital Humanities

Testing

Requirement Engineering

Slicing

Research

Service Oriented Computing

Search Based Software Engineering **Clone Detection**

Dependence Analysis

Quantitative Information Flow

Digital Humanities

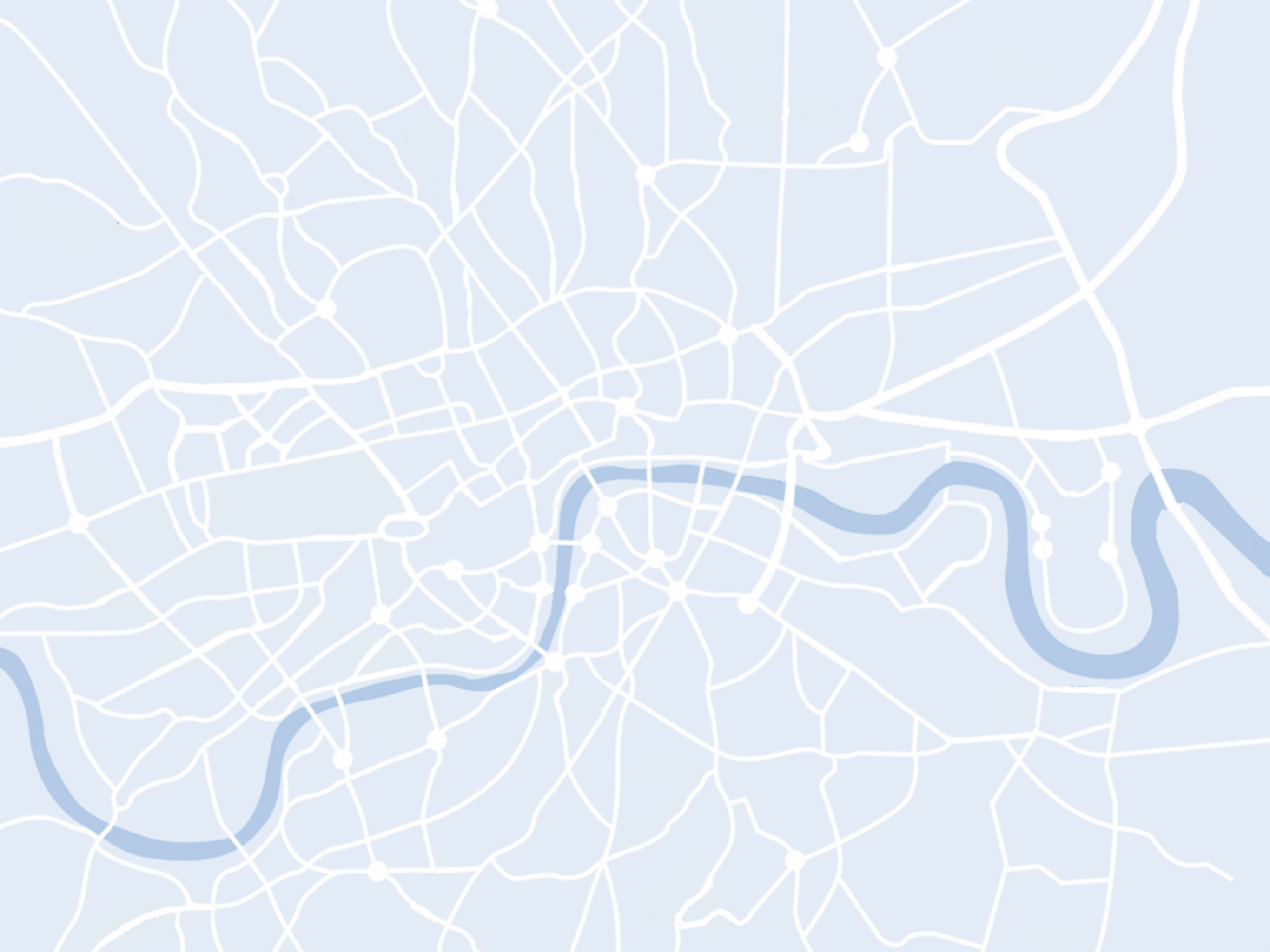
Testing

Requirement Engineering

Slicing

Funding





University College London



University College London




20 mins walk




Jens Kristian
London COW



University College London 20 mins walk

 Sherlock Holmes Museum
 Madame Tussaud's


 Marble Arch

 Eros

 National Gallery

 Westminster Abbey

 Nelson's Column

 House of Parliament

 British Museum

 Covent Garden Market

 London Eye

 Tate Modern

 Royal Courts of Justice

 Globe Theatre

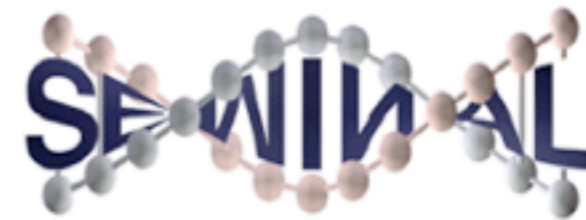
 St. Paul's

Search Based Software Engineering

Apply **search techniques** to Software Engineering

Multi objective optimisation:

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



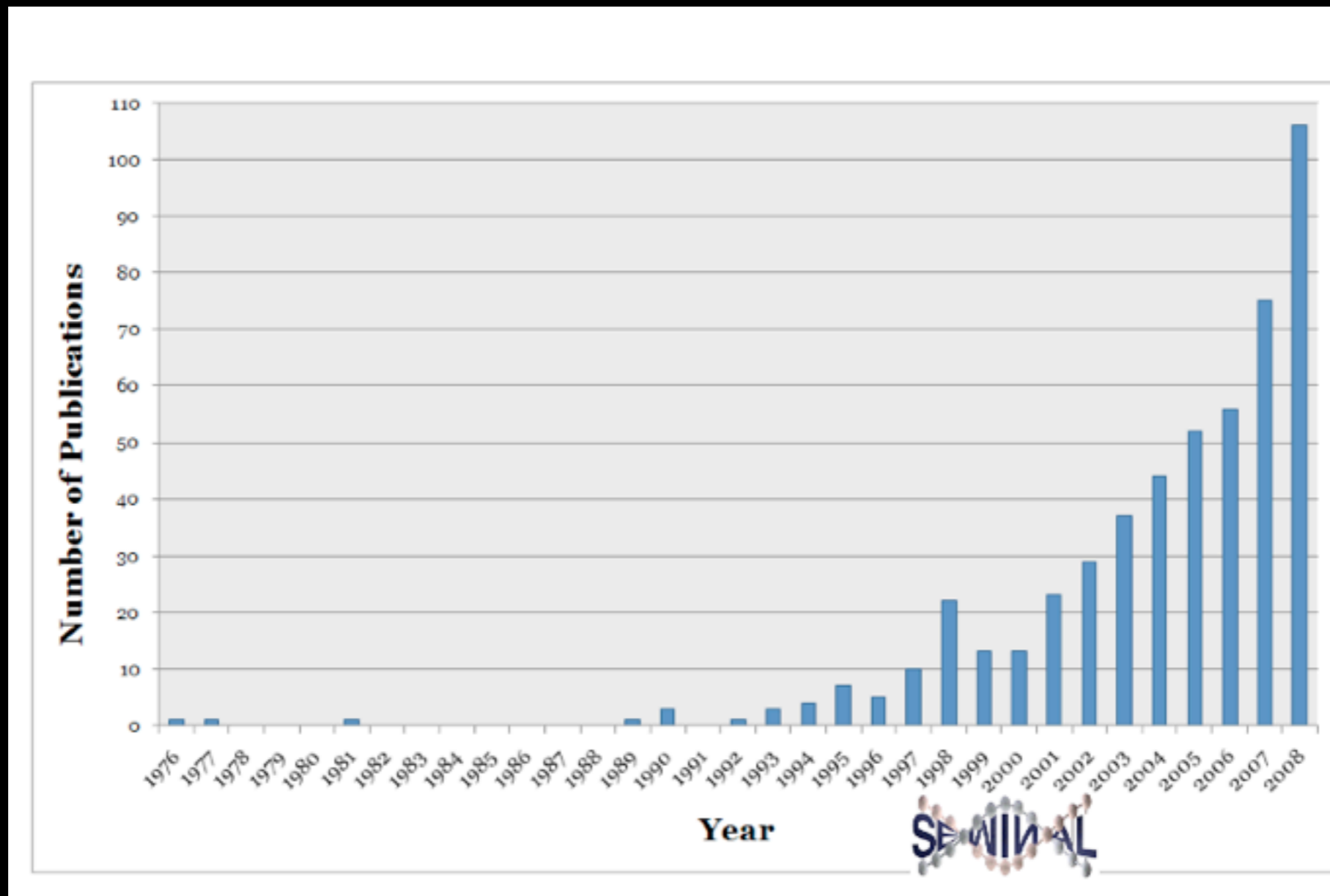
Centre for Research in
Evolution, Search &

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

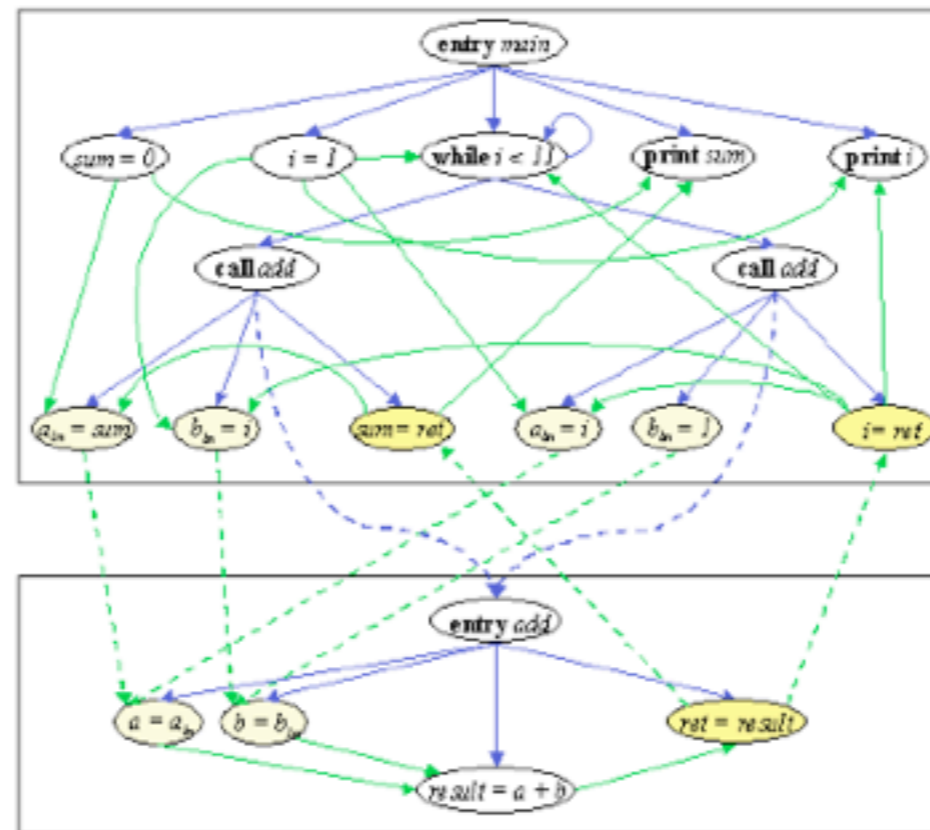
program and model based slicing

assessing third party code

SLIM

SLicing state based Models

ASTReNet



Quantitative Information Flow

calculate amount of information flowing

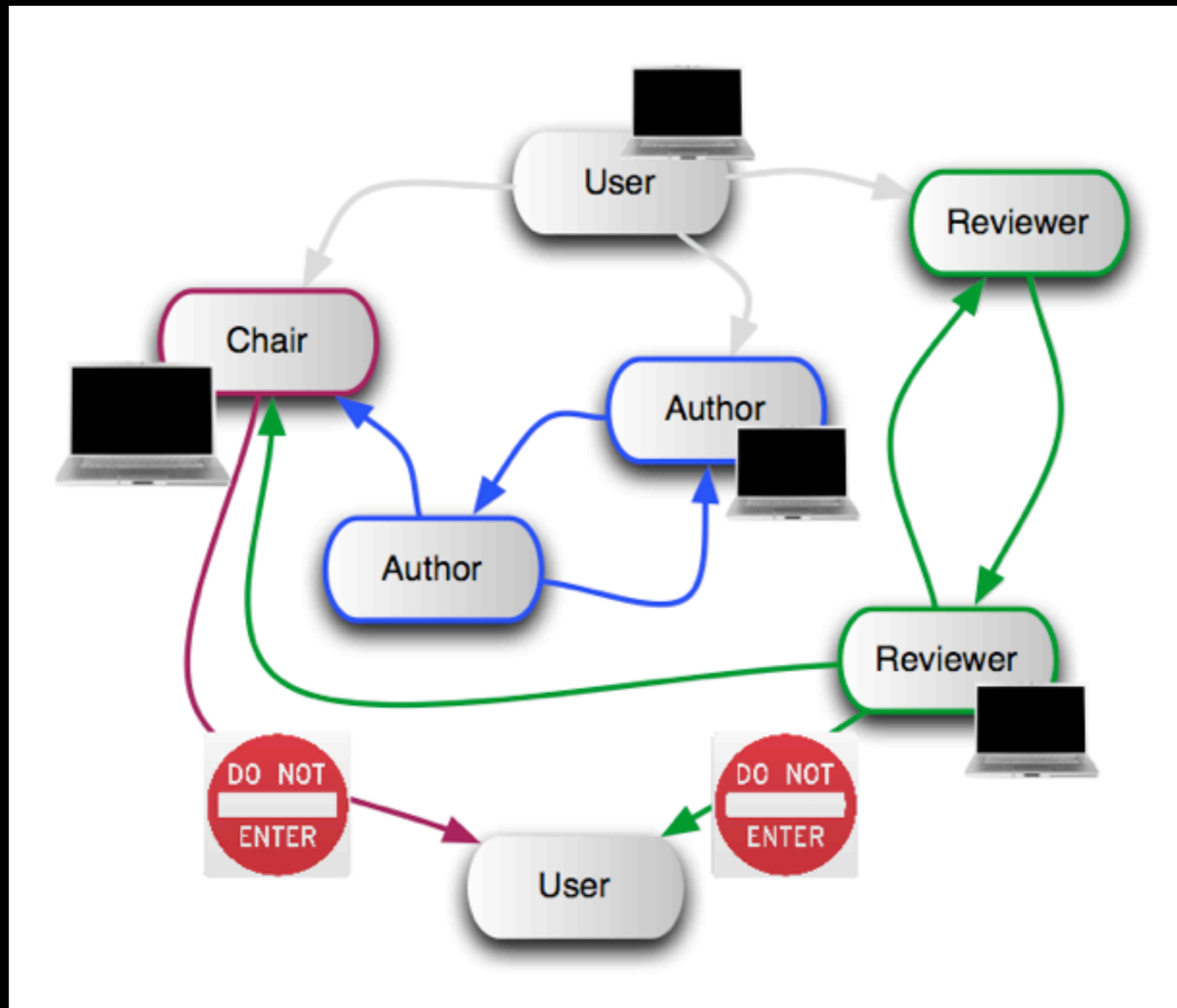
find security leaks

Quantitative Information Flow

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

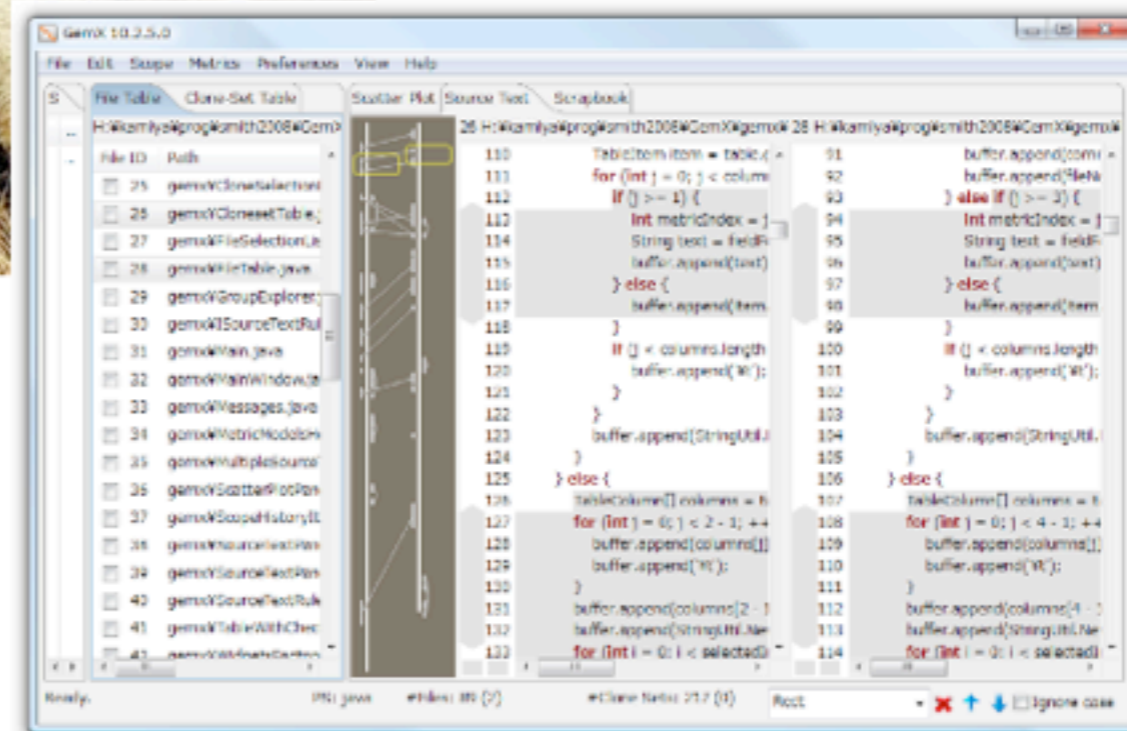


Information Flow Control



Clone Detection

using static analysis
applied to code provenance
applied to graphical languages



Digital Humanities

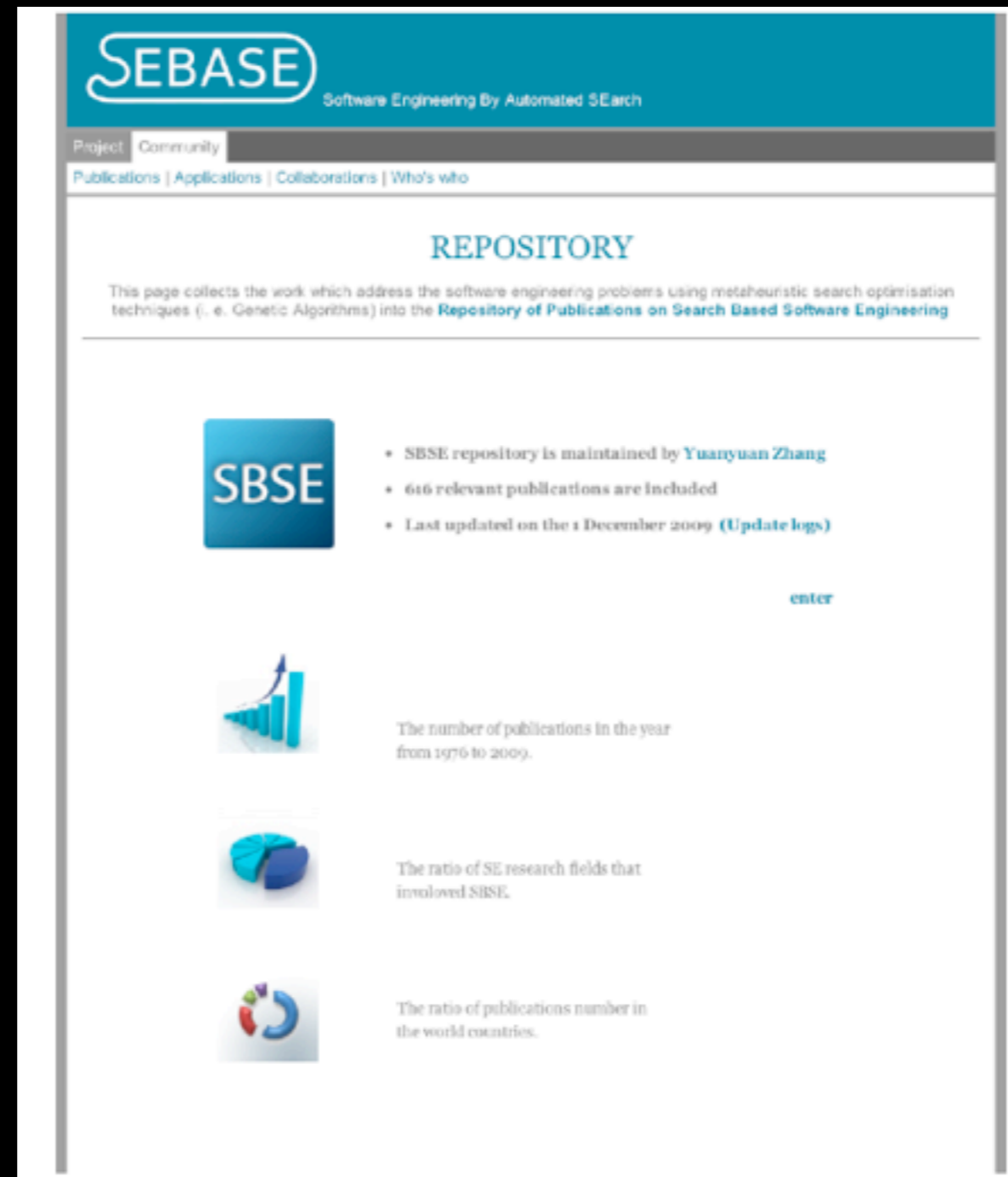
Mapping outwards from software to systems
Software Engineering Analysis translates to

- musicology
- archaeology



PERSONAL-TOUCH

SBSE Repository



SEBASE 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

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

enter

 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



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.

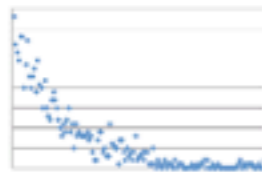
Bibtex file

[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 online 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 Mutaiton 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 Haman},  
  title = {(A)n (A)nalysis and (S)urvey of the (D)evlopment of (M)utation (T)esting},  
  journal = {IEEE Transactions of Software Engineering},  
  year = {2010},  
  volume = {To appear},  
  number = {},  
  pages = {}  
}
```

Quick Search

Search for paper author

[View all papers](#) | [authors](#)

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

Nov 09: Search Based Software Engineering

Dec 09: Software Testing

Jan 10: Using Static Analysis for Fault Prediction

Feb 10: Operational Research for Software Engineering Methods

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

Happy Birthday!

First COW: 24/25 November 2009

Upcoming COWs

10th CREST Open Workshop
Program Analysis and Slicing

Date: 24 - 25 Jan, 2011

Venue: William Goodenough Room, Goodenough Club

11th CREST Open Workshop

SBSE for Early Lifecycle Software Engineering: Requirements and Management

Date: Wed 23 Feb, 2011

Venue: Engineering Front Executive Suite, Roberts Building

Thanks

Jian Ren, COW Programme manager

Lena Hierl, Administrative arrangements

Yue Jia, visitor liaison

EPSRC, HP, British Council, funding

Attendees and speakers

Thanks

Jian Ren, COW Programme manager

Lena Hierl, Administrative arrangements

Yue Jia, visitor liaison

EPSRC, HP, British Council, funding

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Lena Hierl, Administrative arrangements

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Attendees and speakers

Domestics

Fire or other alarm

Toilets

Discussions

Domestics

Fire or other alarm

Toilets

Discussions

Mary Augusta Ward

- British novelist (Mrs Humphry Ward)
- 11 June 1851 - 24 March 1920
- one of the founders of the Women's National Anti-Suffrage League
- helped establish an organization for working and teaching among the poor
- The house acted as center of training and community meeting and socialising point



Introductions ...