



Centre for Research in  
Evolution, Search &  
Testing

# Welcome to CREST

## CREST Open Workshop COW



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Evolution, Search & Testing



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# Welcome to CREST

## 6th CREST Open Workshop COW



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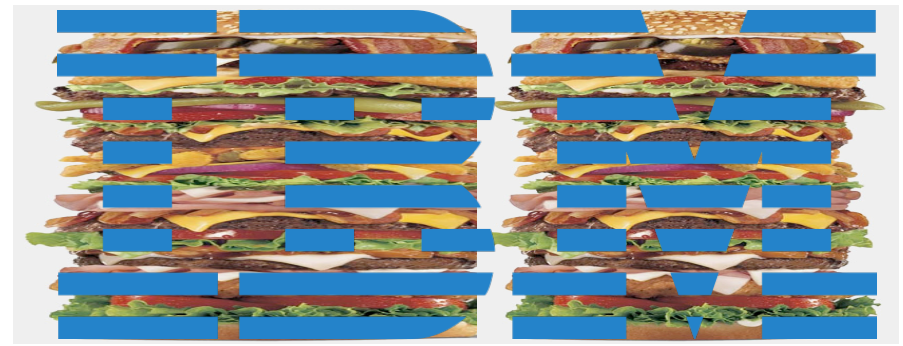
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# CREST Open Workshop

## COW



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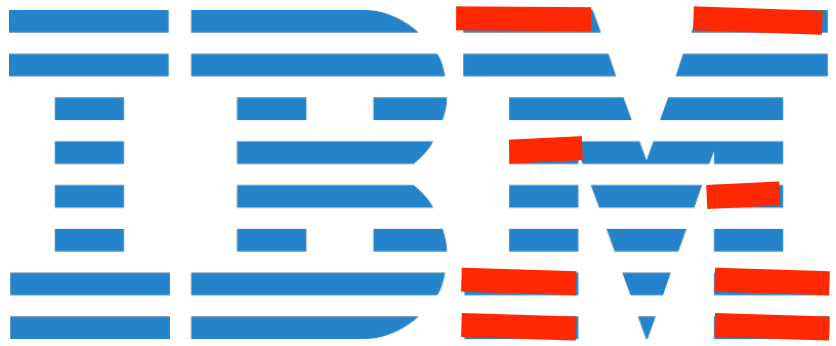
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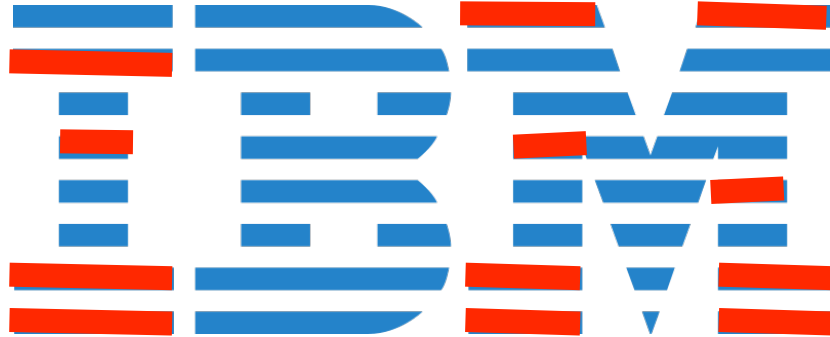
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# CREST Open Workshop

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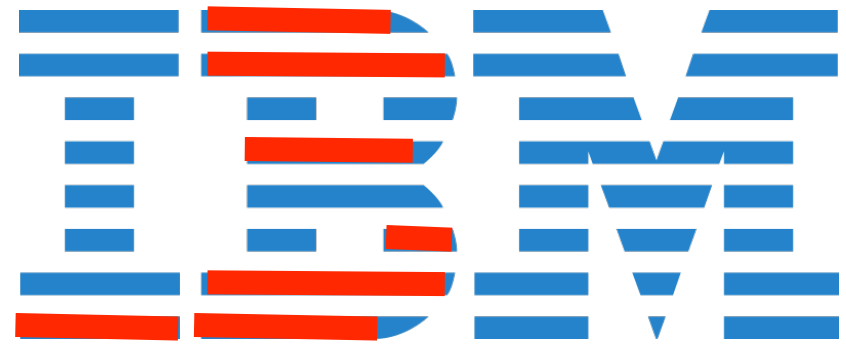
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# CREST Open Workshop COW



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# CREST is home to

4 faculty

1 administrative officer

8 post docs

12 PhD students

1 to 4 long term visitors

# Search Based Software

Apply **search techniques** to Software Engineering

## Multi objective optimisation:

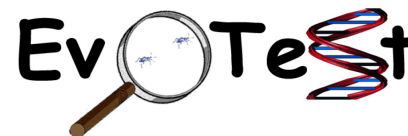
- cost and value
- faults, coverage, time
- metric sets
- risk and reward



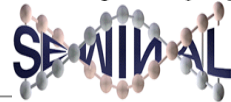
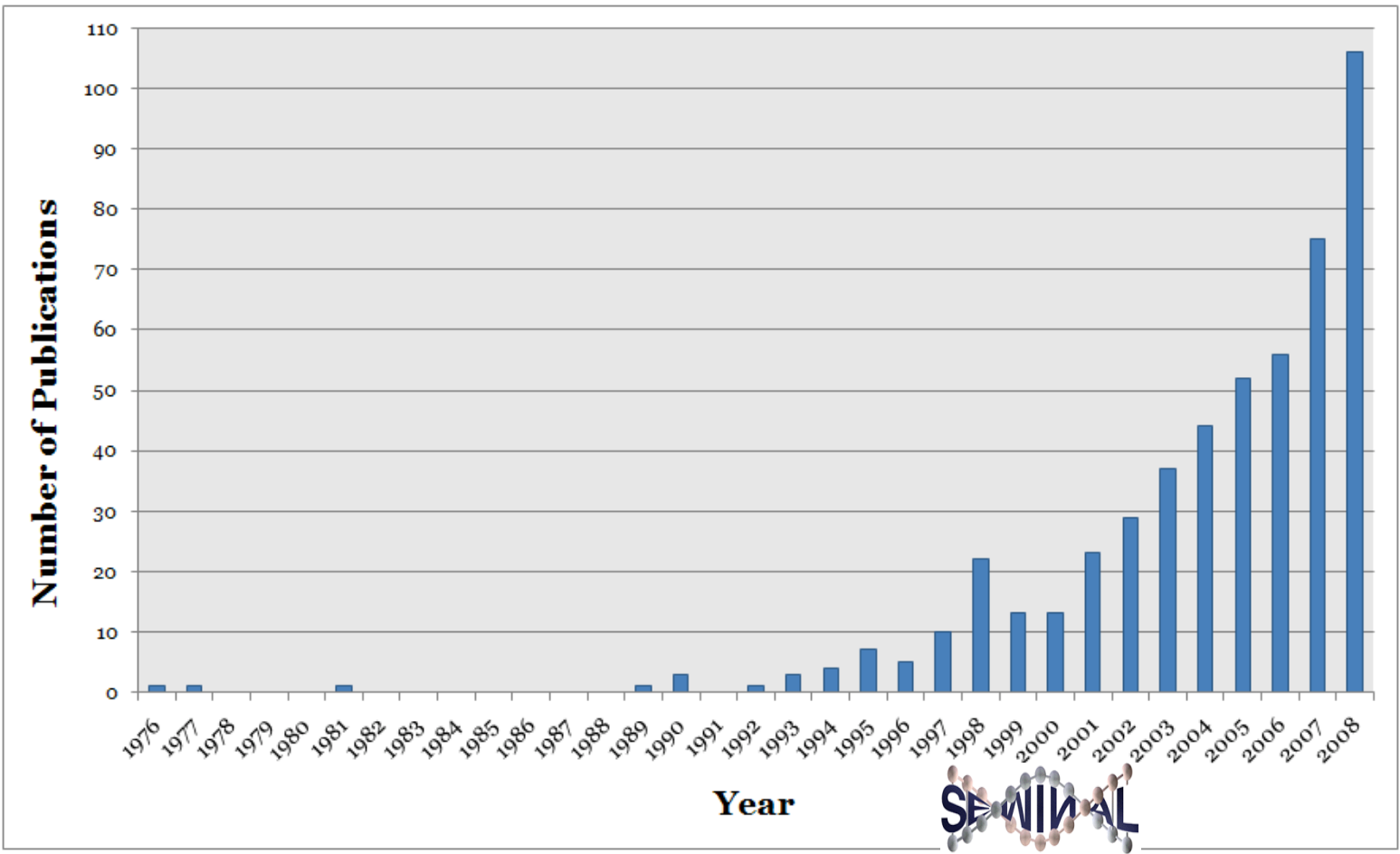
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## Software Engineering Application areas:

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



# Growth in SBSE research



# Testing

All kinds of 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

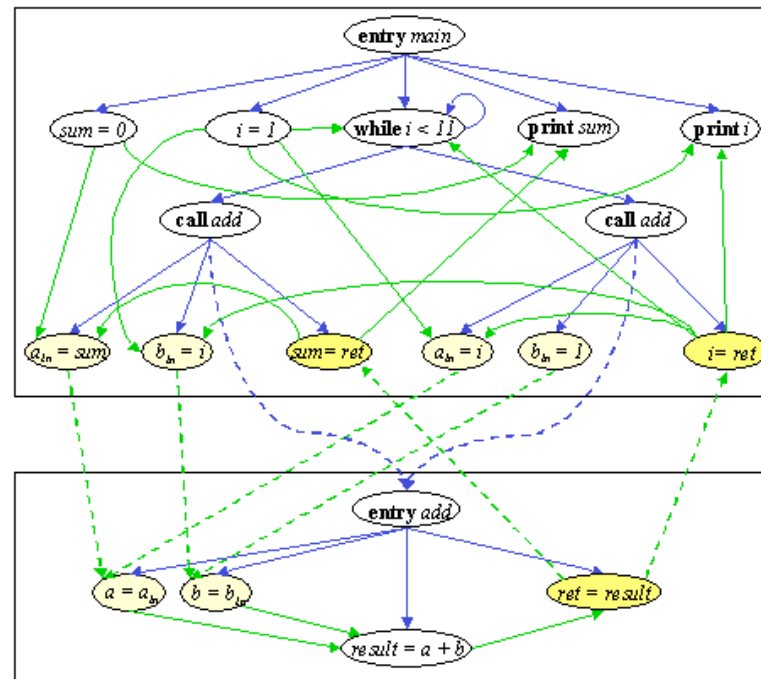
program and model based slicing

assessing third party code

SLIM

SLicing state based Models

ASTReNet





# Quantitative Information Flow

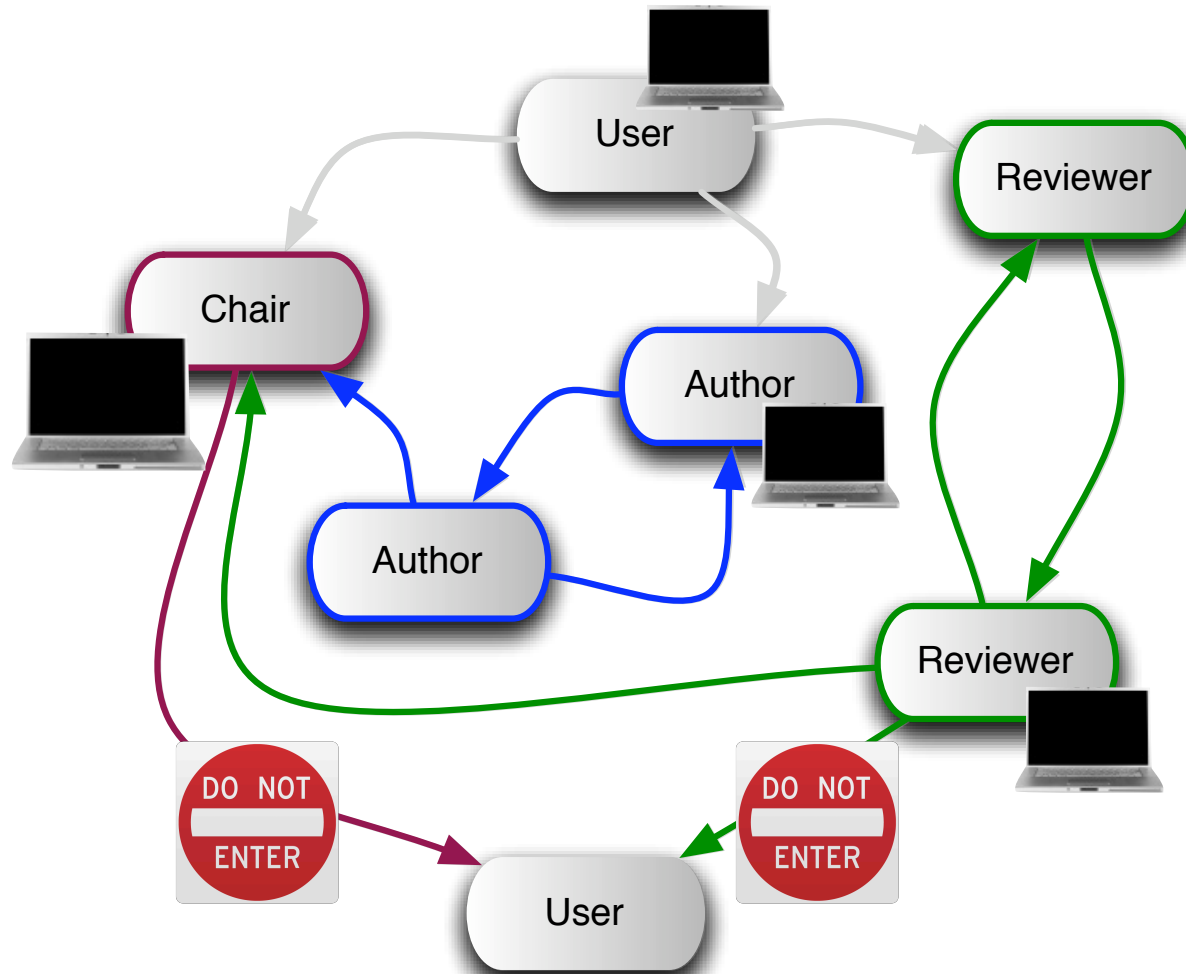
**calculate** amount of information flowing

find security leaks **Quantitative Information Flow**

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



# Information Flow Control



# Service Oriented Computing

Testing services with services

Optimising performance

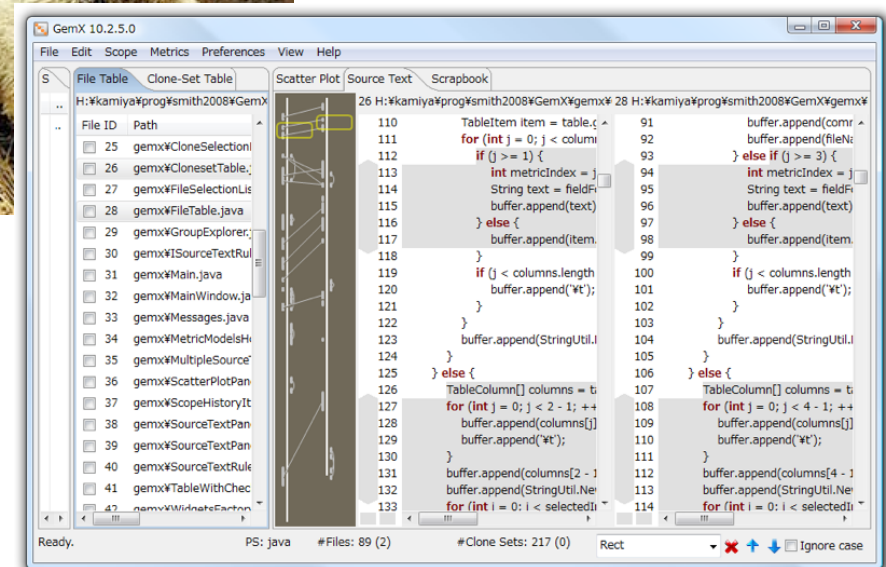
Finding dependence



**SOSoRNet**  
Service-Oriented Software  
Research Network

# 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

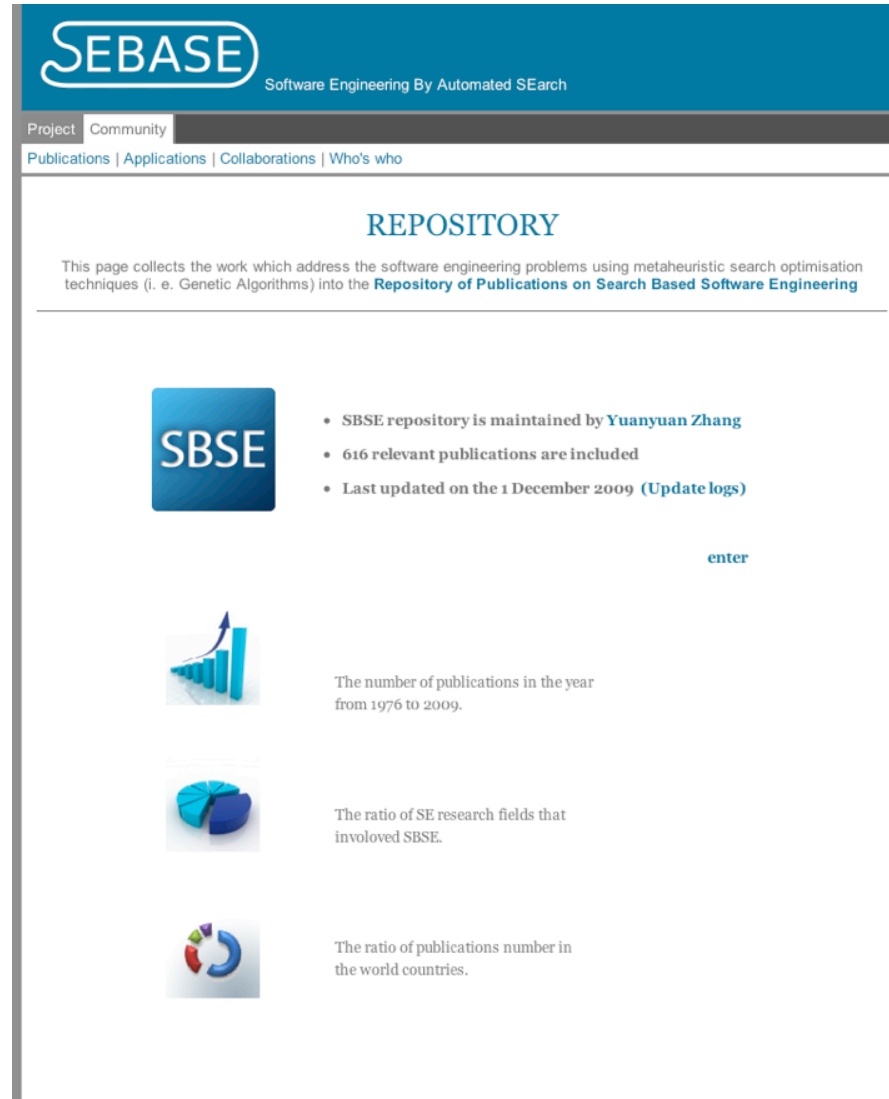
- musicology
- archaeology



**PERSONAL-TOUCH**

# Repositories

# Repositories



The screenshot shows the SEBASE website interface. At the top, the SEBASE logo is displayed with the tagline "Software Engineering By Automated SEArch". Below the logo, there are navigation tabs for "Project" and "Community", with "Community" selected. Underneath, there are links for "Publications", "Applications", "Collaborations", and "Who's who". The main heading is "REPOSITORY". A paragraph explains that the page collects work addressing software engineering problems using metaheuristic search optimization techniques, specifically mentioning Genetic Algorithms and the "Repository of Publications on Search Based Software Engineering". A blue square icon labeled "SBSE" is shown next to a list of three bullet points: "SBSE repository is maintained by Yuanyuan Zhang", "616 relevant publications are included", and "Last updated on the 1 December 2009 (Update logs)". Below this, there is a search input field with the text "enter". Three data visualization icons are shown: a bar chart with an upward arrow, a pie chart, and a circular flow diagram. Each icon is accompanied by a descriptive text block.


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 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 involoved SBSE.



The ratio of publications number in the world countries.

# CREST Open Workshops

## Regular Workshops

Every last Wednesday of the month

Talks and Lots of discussion

Recording of talks NOT discussion

6th CREST Open Workshop

... Today.

<http://crest.dcs.kcl.ac.uk/cow/>



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1st COW: Nov 2009: SBSE

2nd COW: Dec 2009: Testing

3rd COW: Jan 2010: Faults and slicing

4th COW: Feb 2010: OR and SE

5th COW: March 2010: QIF and SBSE

You can still “participate” ...

<http://crest.dcs.kcl.ac.uk/cow/>

# CREST Open Workshops

## Regular Workshops

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Talks and Lots of discussion

Recording of talks NOT discussion

7th COW: May: Information Flow and Information Security

8th COW: June: Source code analysis for malware

July and August: Moving to UCL

9th COW: Sept: Low key (try out new venues)

10th COW: Oct: Mutation testing

11th COW: Nov: Clone detection

December: no COW

<http://crest.dcs.kcl.ac.uk/cow/>

# 3rd CREST Open Workshop

## Thanks

- Jian Ren for organisation
- EPSRC for funding

## Logistics

- fire alarms
- toilets

## Introductions ...

... then I will introduce the first speaker.