Tarea 2: Mini-projects

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MiniProject

A project is assigned to each student. Projects have to be done in Pharo, and possible using Moose.

Each project involves searching (e.g., with google), researching (e.g., by reading paper), and implementing (e.g., putting your hand on the keyword and code).

All the projects are relevant both for the Pharo community, the Moose community, and the scientific community.

Random testing

Gonzalo Muñoz

"Random testing is a form of functional testing that is useful when the time needed to write&run directed tests is too long (or the complexity of the problem makes it impossible to test every combination)"

The idea of this project is to implement the idea described in the article:

http://bergel.eu/download/papers/Duca11a-RandomTesting.pdf

Latent Semantic Indexing

Diego Chavez

Program source code essentially fulfills two functions: telling the computer what it should do and telling human readers what the program is supposed to do. Unfortunately, source code knowledge is fragile and highly dependent on human expressive.

Latent semantic indexing (LSI) is commonly employed to recover source code knowledge by clustering source code identifiers based on their frequency in a set of source codes.
LSI is an indexing and retrieval method to identify patterns in the relationships between the terms and concepts contained in an unstructured collection of text. To simplify, the idea is to use a large matrix that contains the occurrence of words in textual descriptions. The clusters are obtained by having a hierarchical clustering algorithm construct a tree structure called a dendrogram. One compelling application of LSI is to give a meaning to the terms employed in source code.

Latent Semantic Indexing

A small implementation of LSI may be found in the class ROExample, accessible in Roassal:

http://squeaksource.com/Roassal.html

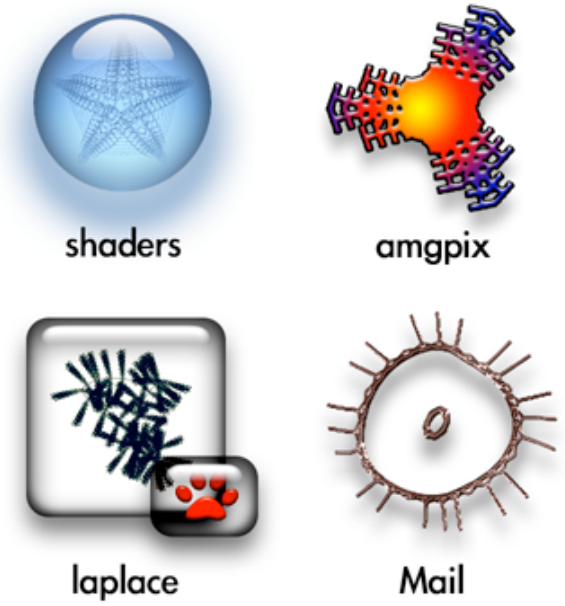
VisualIDs

http://scribblethink.org/Work/VisualIDs/visualids.html

http://scribblethink.org/Work/VisualIDs/visualids.pdf

"VisualIDs are a form of automatically generated persistent scenery applied to individual data objects such as files"

Eduardo Escobar

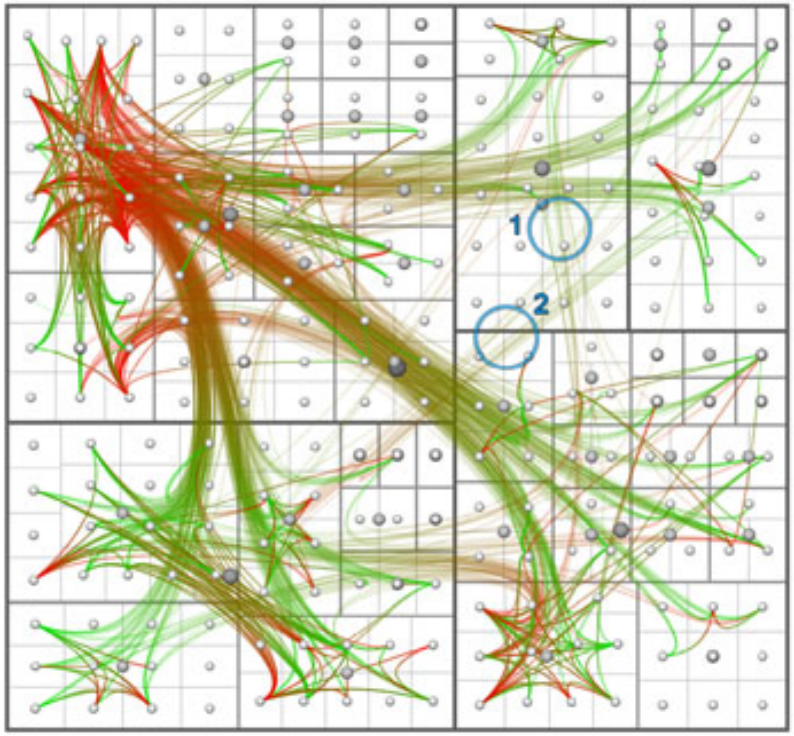


Hierarchical Bundle Edges

http://www.win.tue.nl/~dholten/papers/bundles_infovis.pdf

Implementing HBE in Mondrian

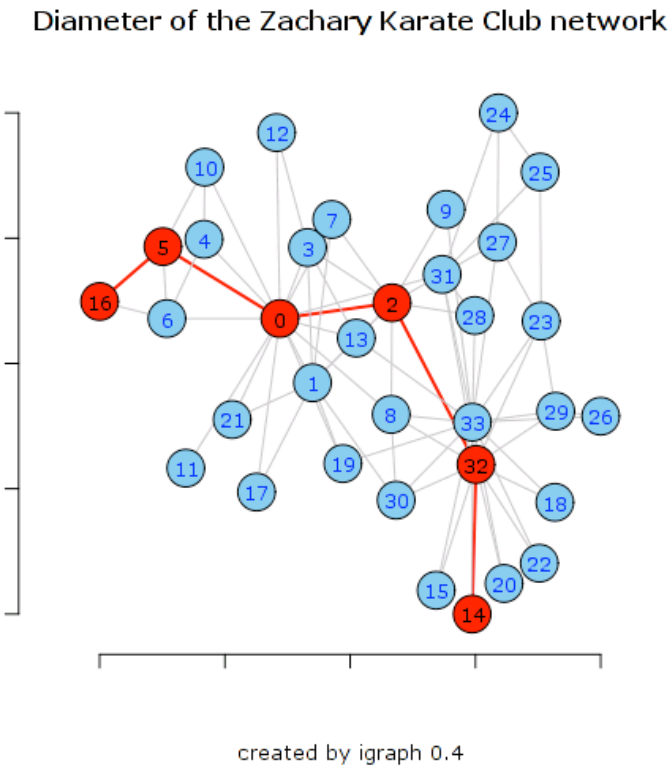
Aldo Gonzales

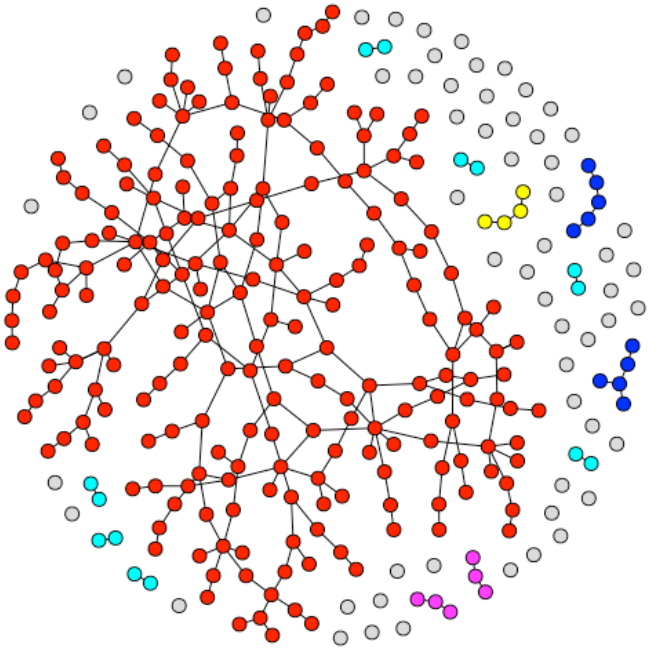


Graph Algorithm in Mondrian

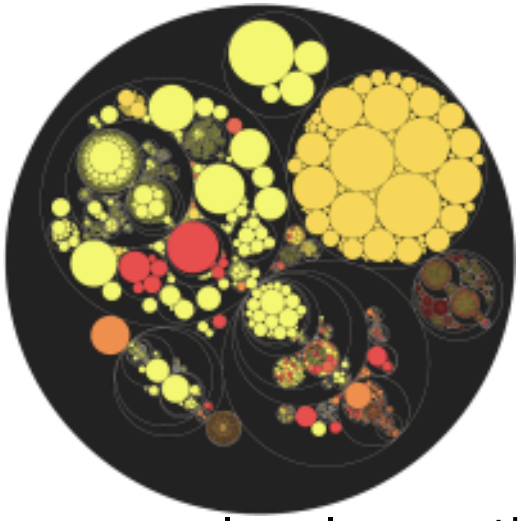
Daniel Ortega

Having a set of graph algorithm accessible within Mondrian





TreeMaps



Implementing TreeMaps layouts in Mondrian

http://www.cs.umd.edu/hcil/treemap-history/

http://www.juiceanalytics.com/writing/10-lessons-treemap-design/

http://en.wikipedia.org/wiki/Treemapping

Nicolas Pinilla

Improvement of Roassal

Roassal is the next generation of visualization engine in Moose. It is intended to replace Mondrian.

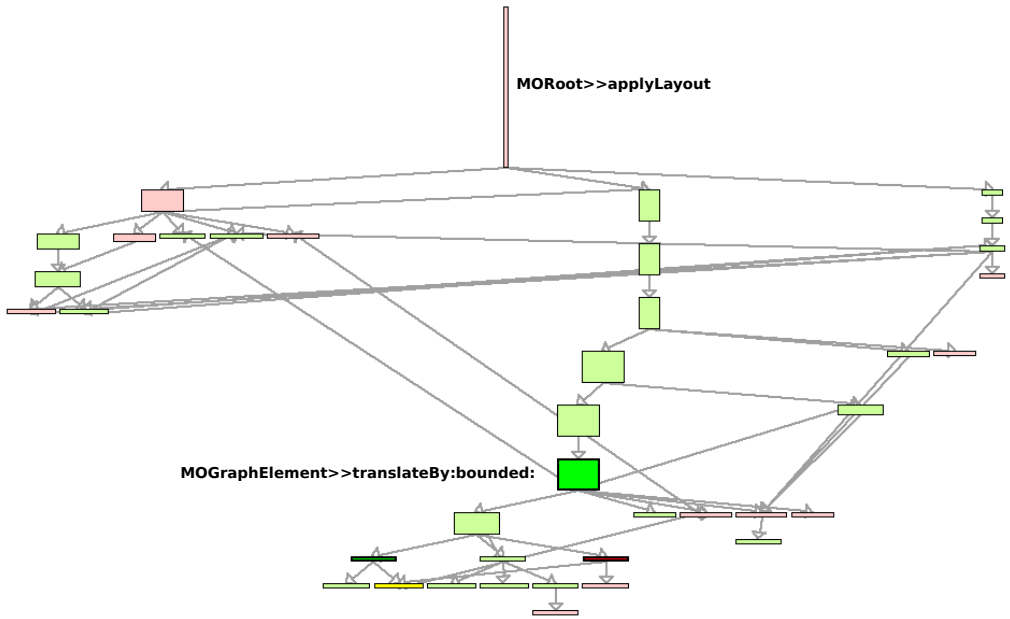
This project consists in providing binding for Glamour and building an easel.

Felipe Gonzales

Behavioral Execution

Juan Pablo Sandoval

This visualization shows the difference between two executions. It clearly indicates which methods is responsible of a slow down in a new software version.



Identifying Test Duplication

Pablo Estefo

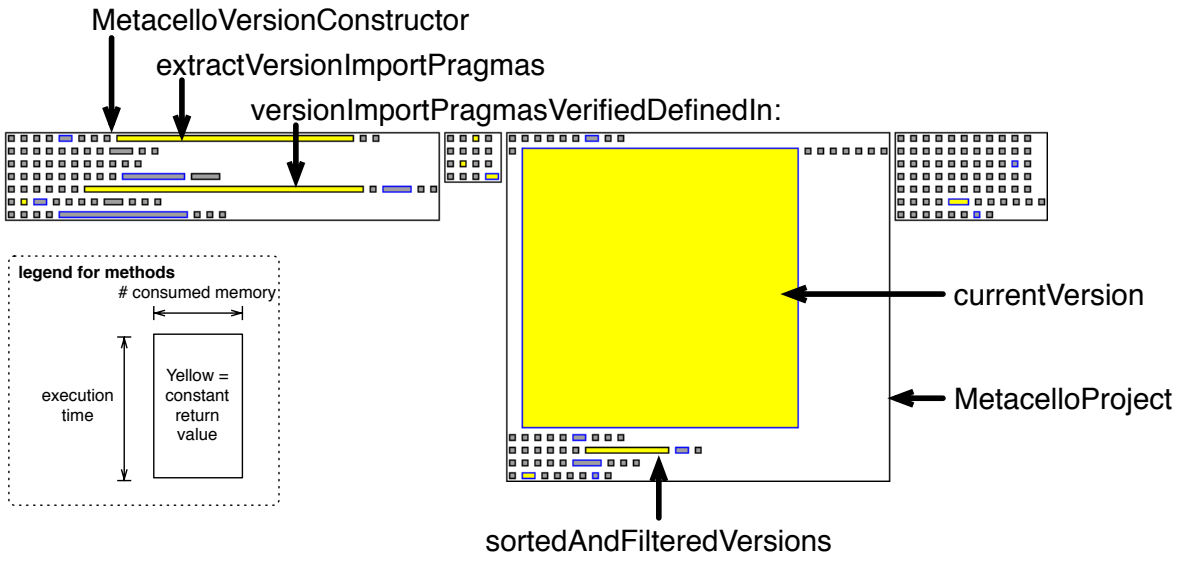
Currently, no approaches have been proposed to reduce the duplication or restructuration of unit tests. People have tendency to add more and more tests, without caring much about duplication.

TestSurgeon is about answering this problem.

Memory Profiling

Nicolas Rosselot

The idea is to develop a profiler to monitor the memory consumption of methods



Starting point:

http://bergel.eu/download/papers/Berg10g-MemoryProfiling.pdf

How to start your project?

Google will probably be your best friend at the beginning. Try to look at some existing research paper and existing implementations where you can inspire yourself from.

Not all the project have to be based on Moose. Actually, this is not really your problem. If your project is good enough, the Moose people will pick it and integrate :-)

How to start your project?

Before tacking any big decision, a good advice is to always ask before. *Exploring* a field is important. *Walking* is difficult. Knowing whether you walk in the right *direction* is also very difficult.

Doing both is almost impossible, especially since you are not experienced and famous researchers (yet! :-)

So, whenever you are unsure, ask if you are going in the right direction!

Good luck!

Alexandre