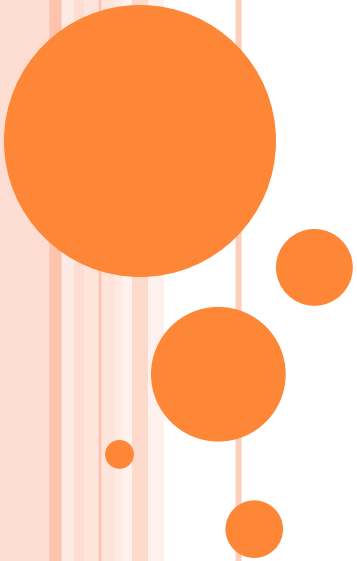


SLS Runtime Visualization

The Problem Domain: Quick Reminder

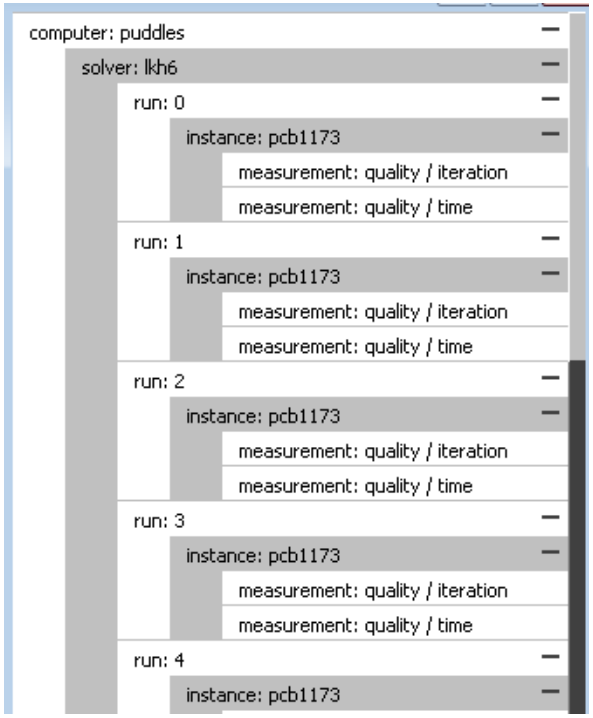
- Stochastic Local Search (SLS)
  - Class of meta-heuristics to solve problem using a sequence of local perturbations of a solution.
- Can be instrumented to generate a time series as the search progresses
  - SLS typically makes very small moves very frequently resulting in large amounts of data being generated.
- Goal is to provide a tool to aid in analyzing the behaviour of a search over time

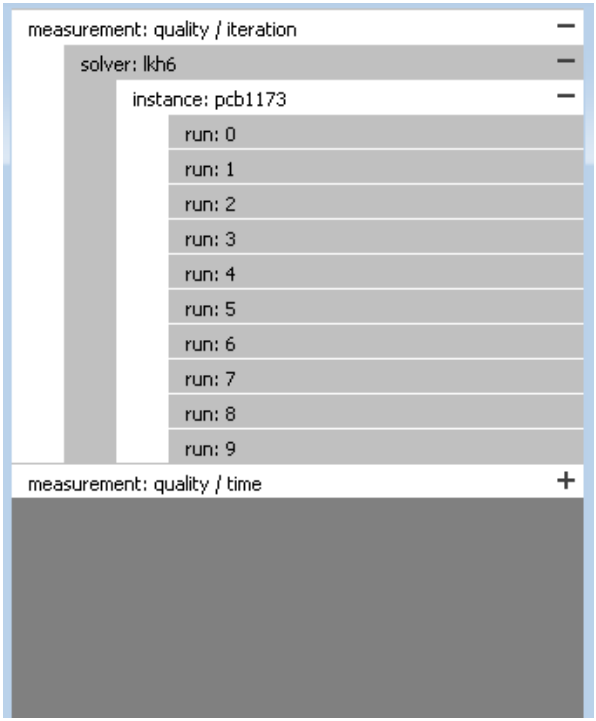
Organizing Data Sets

- Each time series is identified by a set of tags
  - ie.
    - computer: skopelos
    - solver: LKH paramset 4
    - instance: pla7397
    - run: 8
    - measurement: quality / iteration
- There may be several thousand different time series available for a particular task
  - Need a way to organize them so they can be quickly located

Organizing Data Sets

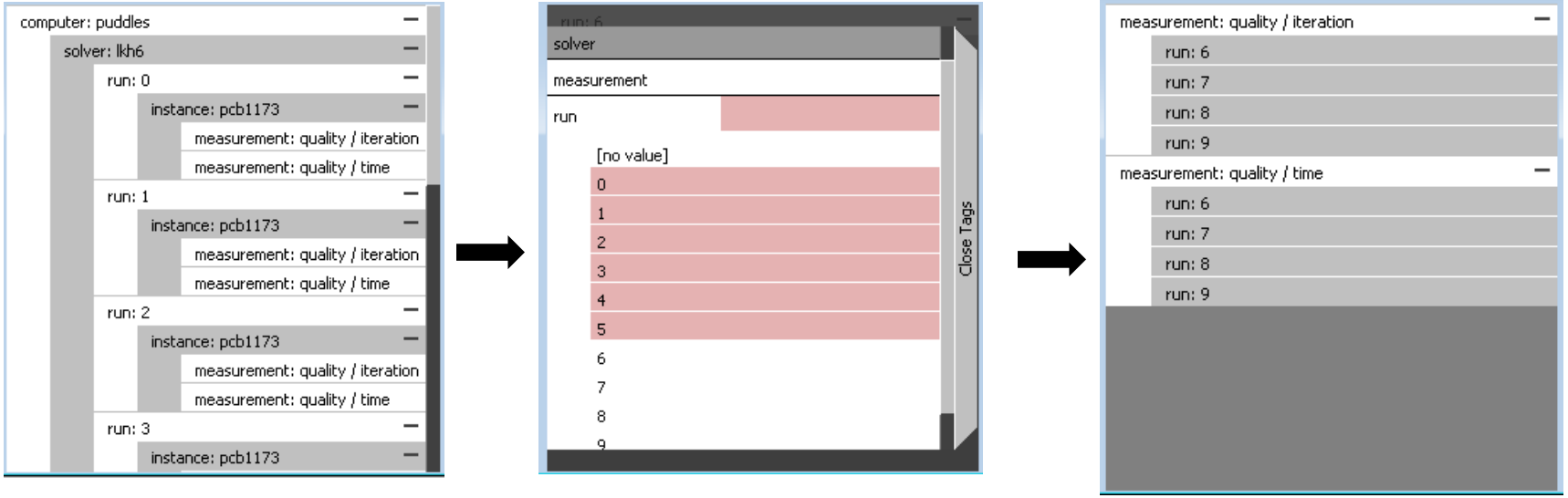
- Construct a tree based on tag values
- An ordering may not be useful for a task
  - Allow the tags to be reordered -> pivot the tree





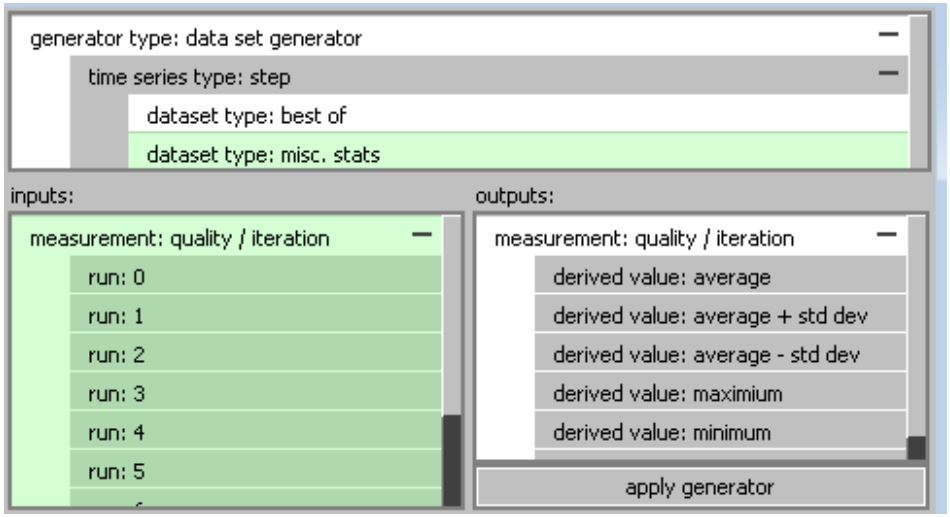
Organizing Data Sets

- Filtering based on tag value



Derived Values

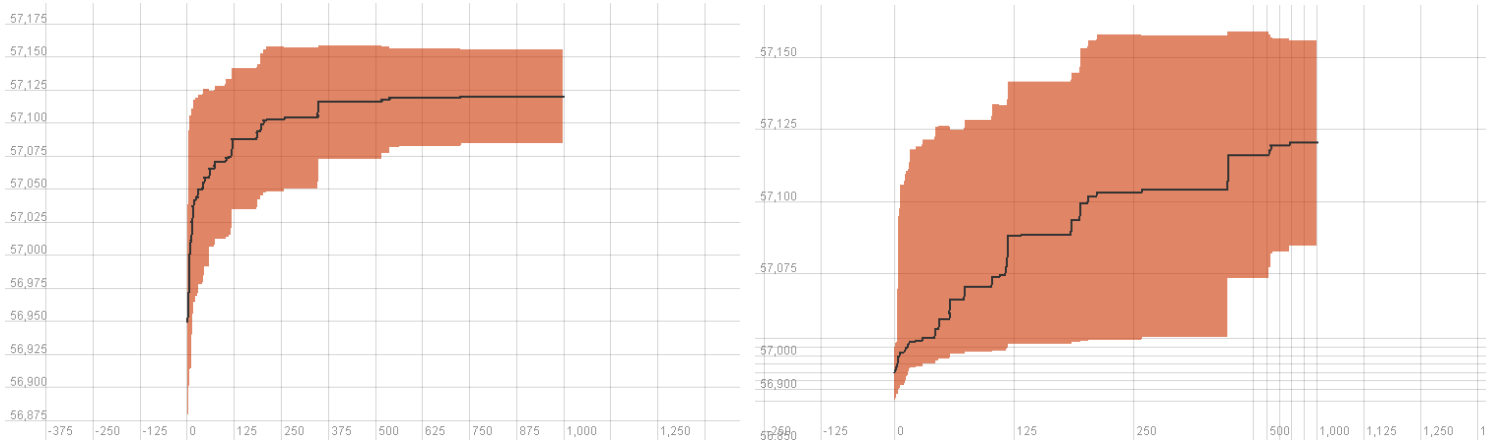
- Often data recorded is either not directly usable or not what's interesting, allow the creation of derived values, ie
  - basic statistics (average, min, max, standard deviation, etc)
  - domain specific
    - quality / iteration => best quality observed / iteration
    - similarity to final solution
- Done using plugins



Displays

- Solution quality time series are typically either exponential decay or logarithmic growth (minimization vs maximization)
  - Large portions of the time series are uninteresting

- Allow the user to distort axis to exaggerate interesting regions



Demo

- demo

Future Work

- Additional types of displays
  - Displaying solutions over time
- Additional types of derived values