Great deluge algorithm

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1 Requirements

The program was written and tested in Python2.5.
To visualize solution you need to install `matplotlib` and `numpy` module.

2 Usage

To call a program type:

```
python  main.py [options]
```

Available options:

- –action=

  ```
  python main.py -a=action
  ```

  Select the goal of run:

  - `c` All constructive heuristics.
  - `cgreedy` Greedy constructive heuristic.
  - `cpeckish` Peckish constructive heuristic.
  - `crandom` Random constructive heuristic.
  - `iterative` Iterative local search with random initialisation.
  - `deluge` Great deluge with default initialisation.
  - `delugeall` Run great deluge with peckish, random and greedy initialisation.
  - `delugerandom` Run great deluge with random initialisation.
  - `delugegreedy` Run great deluge with greedy initialisation.
  - `delugepeckish` Run great deluge with peckish initialisation.

- –dataset=

```
python main.py -d=number
```

Select the set from input file to be used. If you type `-d=*`, all sets are used instead.

- –help

  ```
  python main.py -h
  ```

  Print list of commands.

- –input=

  ```
  python main.py -i=path
  ```

  Path to input file. Default path is 'sets/gap1.txt'.

- –solution

  ```
  python main.py -s
  ```

  Print solution as table job:worker.

- –visualize

  ```
  python main.py -v
  ```

  Visualize solution.
  Required modules: numpy, matplotlib

- –time

  ```
  python main.py -t
  ```

  Print time marks (start and end of run).

- –beautyoff

  ```
  python main.py -b
  ```

  Strip some decorative texts.

Examples:

```
python main.py -i="sets/gap9.txt" -s -t -d=* -a=delugerandom
python main.py -i="sets/gap9.txt" -t -v -a=delugerandom
```

3 Structure

- main.py Call other programmes and mark time.
- local_search.py Implement great deluge and iterative search.
- constructive_heuristics.py Implement constructive heuristics.
- visualisation.py Implement generating of 3d image using matplotlib and numpy.
- process_data.py Load and process input.
- img Examples of visualization. Green color means good solution, more red in RGB means worse solution.