DSJM software toolkit

Compilation and how to run

For using the software for first time run the following commands from root directory of the software.

```
./configure
make
```

You don't have to run these command again unless any changes are done in the source code. If any changes in source code are done then run `make` command to compile.
In DSJM software toolkit several ordering and partitioning algorithms are being implemented. To run the ordering and partitioning algorithms enter in ***examples*** directory. From this directory, you can run different ordering and partitioning algorithms. Examples of commands for the ordering and partitioning algorithms are given below.

- **LFO:** LFO stands for Largest First Ordering. The command is given below:

  ```
  ./gcolor -i /path/to/MatrixMarket/file -m lfo
  ```

  In place of /path/to/MatrixMarket/file give the absolute or relative path of your Matrix market format file (extension .mtx)

- **SLO:** SLO stands for Smallest Last Ordering. The command is given below:

  ```
  ./gcolor -i /path/to/MatrixMarket/file -m slo
  ```

- **IDO:** IDO stands for Incidence Degree Ordering. The command is given below:

  ```
  ./gcolor -i /path/to/MatrixMarket/file -m ido
  ```

- **SDO:** SDO stands for Saturation Degree Ordering. The command is given below:

  ```
  ./gcolor -i /path/to/MatrixMarket/file -m ido
  ```

- **RLF:** RLF stands for Recursive Largest First partitioning. The command is given below:

  ```
  ./gcolor -i /path/to/MatrixMarket/file -m rlf
  ```

- **EXACT:** EXACT is a DSATUR based branch and bound type exact partitioning algorithm. The above-mentioned algorithms are heuristic ordering and partitioning algorithms, but exact algorithm gives optimal partitioning. For small matrices, the exact method gives optimal partitioning in a reasonable amount of time, but for large matrices, it may take a large amount of time. A timer is set in the source code. The exact algorithm runs for maximum 1 hour time. It either terminates successfully or gives the best coloring we get in one-hour duration. The command is given below:

  ```
  ./gcolor -i /path/to/MatrixMarket/file -m exact
  ```

  Four tie-breaking strategies are being implemented in DSJM for selecting next column to color when there are more than one columns in maximum saturation degree list. They are SIMPLE, SEWELL, SEGUNDO, and NEW. By default, SIMPLE tie-breaking is enabled. The commands for the four tie-breaking strategies are given below.

– SIMPLE:
  `./gcolor -i /path/to/MatrixMarket/file -m exact -t 1`
– SEWELL:
  `./gcolor -i /path/to/MatrixMarket/file -m exact -t 2`
– SEGUNDO:
  `./gcolor -i /path/to/MatrixMarket/file -m exact -t 3`
– NEW:
  `./gcolor -i /path/to/MatrixMarket/file -m exact -t 4`