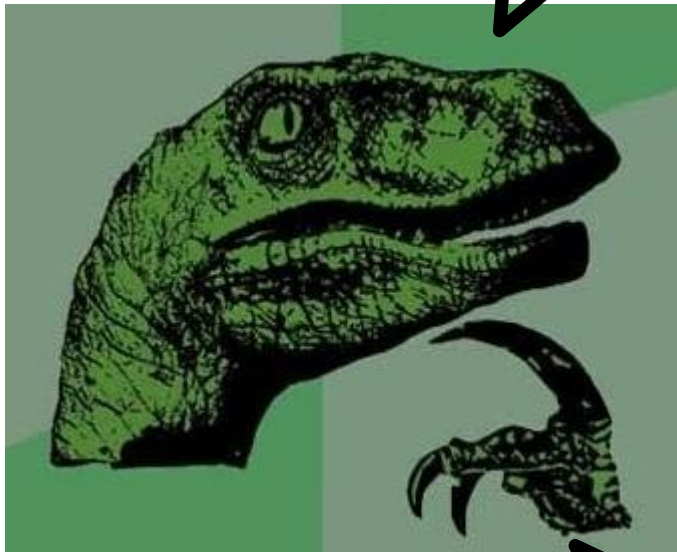


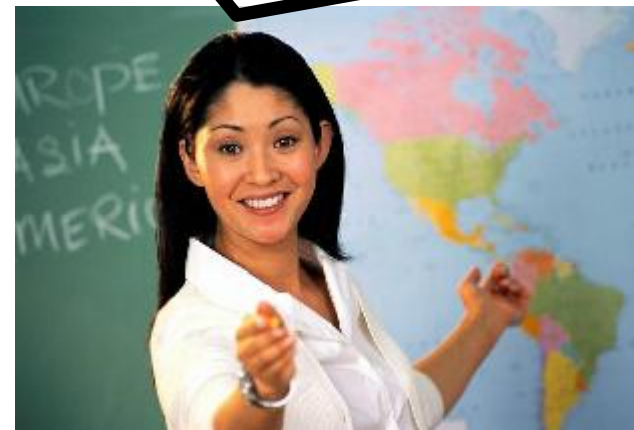
Dynamic Patient Admission

What is it ???

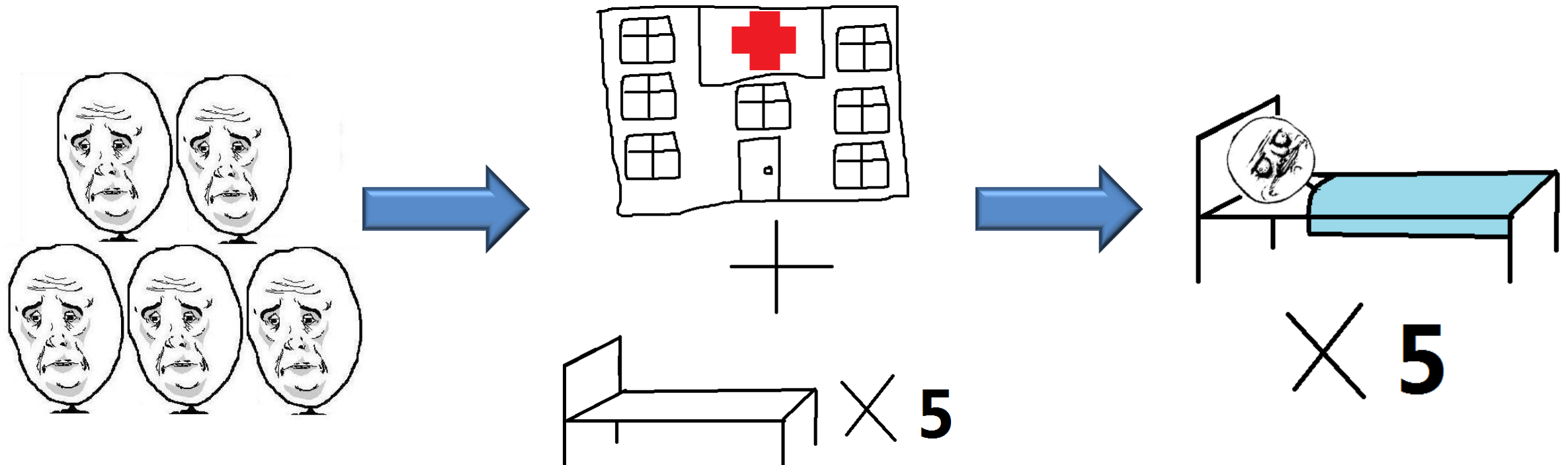


It's a way of dynamically admitting patient in hospital and assign resources to them

Is it really useful?

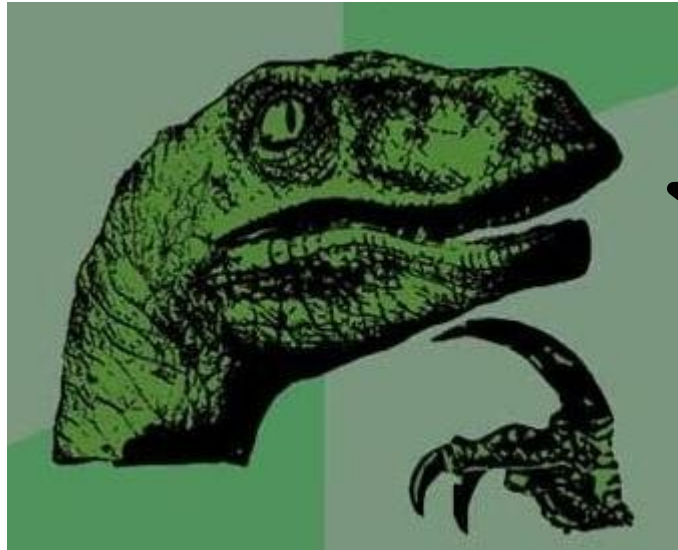


Scheduling Problem



Managing resources is really hard :

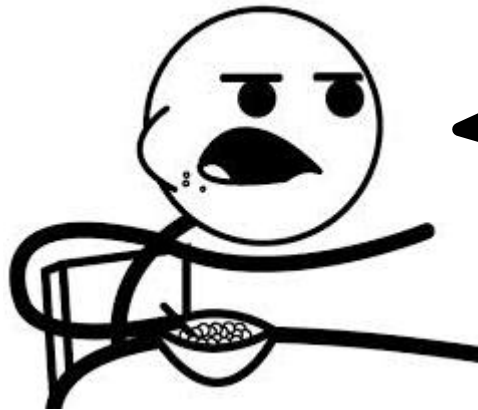
- *Many people*
- *Different needs*
- *Limited resources*
- *Emergency : Time = Saved Lives*



*Nice ! But how
do you do this ?*



- 1. Create many solutions for a particular input file , satisfying the Hard constraints.*
- 2. We do it using a Java program (Validator.jar) that returns as an output the costs of violating 8 soft constraints.*
- 3. Take all these 8 sets of data and run the TABU search algorithm.*



Can you give an example?

```
C:\Program Files (x86)\Java\jdk1.7.0_17\bin>java -jar Validator.jar testdatafirs  
t.txt out1.txt
```

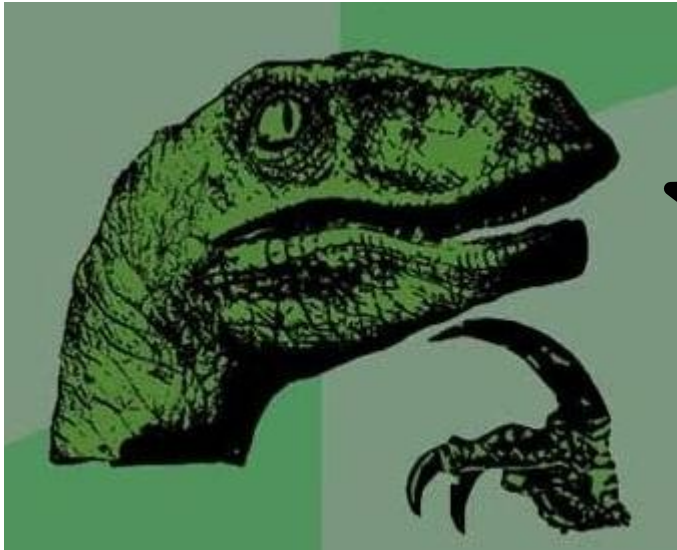
Jar files

Input file

Output file

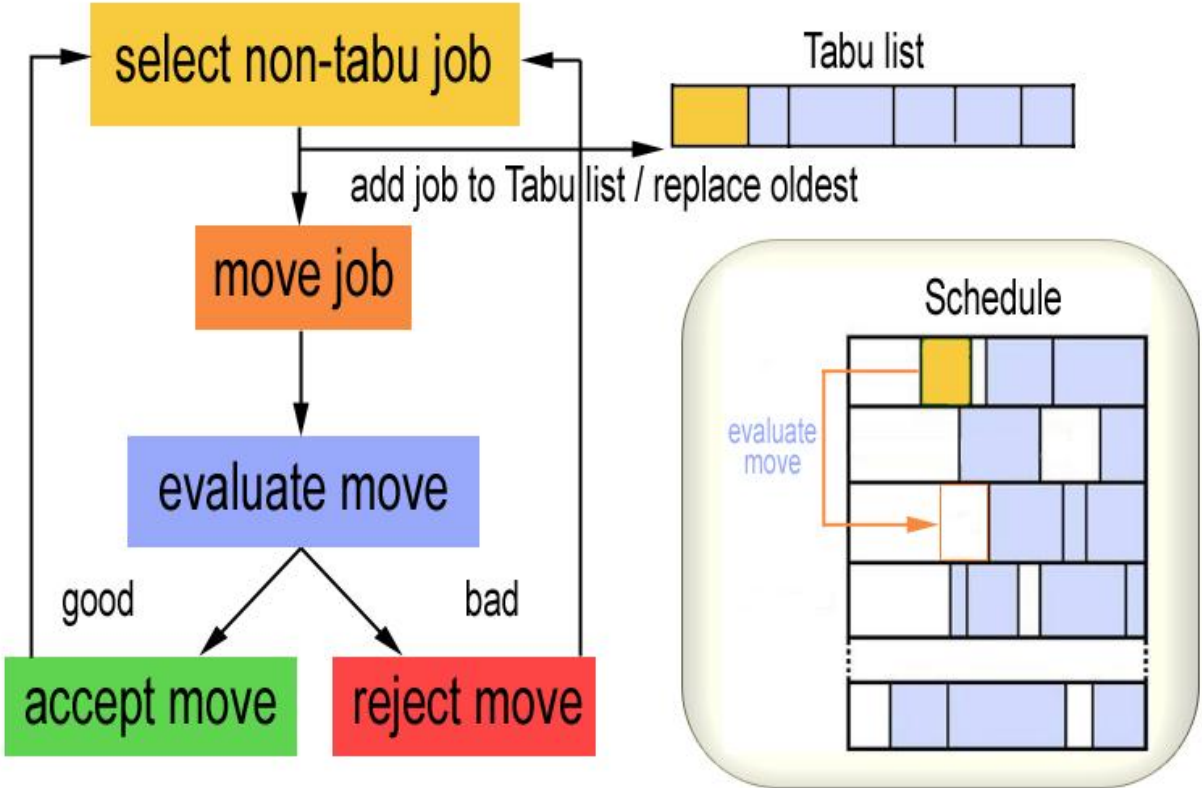
```
C:\Windows\system32\cmd.exe  
  
Violations on the room preference of the patients => 844.0  
Violations on unnecessary transfers => 11.0  
Violations on patient not being assigned to single room on medical reasons => 0.  
0  
Violations on room not having needed and preferred room properties => 22.0  
Violations on patient not being assigned to room of the correct specialism => 24  
.0  
Violations on the age policy => 0.0  
Violations on the gender policy => 0.0  
Violations on patient not being assigned to a department with the right speciali  
sm => 0.0  
Total cost is 901.0  
  
C:\Program Files (x86)\Java\jdk1.7.0_17\bin>
```

Output file



And after what did you do?

The TABU search algorithm !



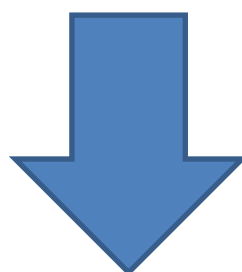
Taken from :
<http://www.fi.muni.cz/~xklusac/index.php?page=en-grid>

Before TABU

| | | | | | | | |
|-----|----|---|----|----|---|---|---|
| 841 | 11 | 0 | 3 | 22 | 0 | 0 | 0 |
| 845 | 11 | 0 | 22 | 24 | 0 | 5 | 0 |
| 845 | 11 | 0 | 22 | 28 | 0 | 0 | 0 |
| 845 | 11 | 0 | 22 | 24 | 0 | 5 | 0 |
| 846 | 11 | 0 | 22 | 26 | 0 | 5 | 0 |
| 845 | 11 | 0 | 12 | 26 | 0 | 0 | 0 |
| 844 | 11 | 0 | 14 | 26 | 0 | 0 | 0 |
| 844 | 11 | 0 | 21 | 27 | 0 | 5 | 0 |
| 844 | 11 | 0 | 16 | 24 | 0 | 5 | 0 |
| 832 | 11 | 5 | 4 | 48 | 2 | 3 | 2 |
| 820 | 11 | 5 | 32 | 24 | 0 | 5 | 0 |
| 829 | 11 | 5 | 22 | 12 | 0 | 5 | 0 |
| 829 | 11 | 5 | 22 | 12 | 0 | 5 | 0 |
| 834 | 11 | 0 | 22 | 13 | 0 | 5 | 0 |
| 846 | 11 | 0 | 13 | 14 | 0 | 5 | 0 |
| 897 | 11 | 0 | 22 | 15 | 0 | 5 | 0 |
| 823 | 11 | 0 | 34 | 16 | 0 | 5 | 0 |
| 834 | 11 | 0 | 22 | 17 | 0 | 5 | 0 |
| 723 | 11 | 0 | 22 | 14 | 0 | 5 | 0 |
| 822 | 11 | 0 | 22 | 15 | 0 | 5 | 0 |
| 822 | 11 | 0 | 22 | 16 | 0 | 5 | 0 |



*55 is the highest!
So it's the best
allocation*



SolutList =

| | | | | | | | | | | | | | | |
|-----------------------|----|---|---|---|---|---|---|---|----|----|---|---|---|---|
| Columns 1 through 15 | | | | | | | | | | | | | | |
| 2 | 11 | 8 | 7 | 8 | 8 | 7 | 5 | 6 | 5 | 11 | 9 | 7 | 9 | 1 |
| Columns 16 through 30 | | | | | | | | | | | | | | |
| 8 | 7 | 5 | 5 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 2 | 9 | 5 | 7 |
| Columns 31 through 45 | | | | | | | | | | | | | | |
| 5 | 5 | 2 | 2 | 2 | 8 | 2 | 8 | 2 | 2 | 5 | 7 | 5 | 9 | 9 |
| Columns 46 through 58 | | | | | | | | | | | | | | |
| 8 | 2 | 7 | 9 | 9 | 8 | 7 | 5 | 2 | 55 | 5 | 2 | 2 | | |

After TABU



*Where do you find
the dataset?*

*13 data input files from the
net ! And 50 output that we
have created manually!*



*What can you do
in the future ?*

*Possibility to produce outputs files
automatically that satisfies the
hard constraints when a new
patient arrive.*

References

- <http://www.sciencedirect.com/science/article/pii/S0933365712001169>
- <http://satt.diegm.uniud.it/uploads/Papers/CeSc11.pdf>
- <http://satt.diegm.uniud.it/uploads/Papers/CeSc11.pdf>
- <http://allserv.kahosl.be/~peter/pas/>
- Images : <http://knowyourmeme.com/memes/popular>



*Go to read this,
it's interesting !*