Goal
To evaluate the approximate distributed algorithms for sensor assignment and monitoring.

Background
- There are six algorithms for sensor assignment, which we are analyzing. These six algorithms are Greedy Algorithm, Simulated Annealing, Better then Greedy Algorithm, Best Local Search, Tabu Search and Multiple Start Best Local Search. Below is a representation of a possible assignment.
- Suppose if $F = (x_1 \lor x_2 \lor x_3) \land (x_4 \lor x_5 \lor x_6)$. One possible assignment is shown in the figure. The six atoms are distributed among three helpers.

Objective
- The assignment problem is solved by using the set cover algorithm. It is NP-Complete. The six algorithms mentioned above try to solve the assignment problem.
- We are evaluating the performance of the six algorithms by computing the cost of monitoring.
- For this, we created a library between the ruby implementation of the six algorithms and the Matlab implementation of the cost computing function.
- We compared the cost for basic condition monitoring and the cost for deamon condition monitoring for evaluating the algorithms.

Method
- Processing output in ruby
- Generation of input variables in ruby
- Conversion of data to appropriate type in Java
- Printing the cost in ruby
- Returning the cost to ruby via java
- Computing the cost of monitoring in Matlab

Results
- Greedy algorithm provides near-constant results in terms of cost of deamon condition monitoring.
- Although the cost of basic condition monitoring are comparable, greedy algorithm provides better results.

References

Conclusion
- Greedy Algorithm provides the best results in term of cost of monitoring.
- Simulated Annealing and Multiple Start Best Local Search algorithms provide the second best results in terms of cost of monitoring.