

Sports complex planning

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1 Our Approach

1.1 What we tried?

- Initially we tried the following approaches(and their probabilistic variants) for the problem:
 - Random restart.
 - Beam search.
 - Tabu search.

1.2 Constraints

- The problem had $z \geq 50$ & $l < 600$.

1.3 Observation

- We saw that all the methods stated above became very slow because generating neighbors was really costly operation because of the constraints.

1.4 Final choice

- So **greedy random walk** should work best because we are just climbing on the hill with the help of the first best neighbor. We will walk on the hill at a much higher rate because we are not wasting time with all neighbor's generations and finding the best among them.
- So we will climb any hill much faster and we can do random restart whenever we reach the hill.
- This approach is bad in cases where the width of the hill is very large and the height is very low. Any approach other than a random walk would be better in this case.

1.5 Code

- You can check the code on Github