Combinatorial Optimization

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1. Review of greedy algorithms.

2. Greedy choice, optimal substructure.

3. Independence axioms.

4. Linear matroid, graphic matroid (Cormen).

5. Uniform matroids. Direct sum matroid.

6. Independence systems and vertex packing on a star.

7. Extensions of an independent subset.

8. Maximality of an independent subset.

9. All maximal independent subsets in a matroid have the same size, e.g. spanning trees in a graphic matroid.

10. The weighted matroid problem.

11. The Greedy algorithm for the weighted matroid problem.