Programming Contest Problem Types

Hal Burch conducted an analysis over spring break of 1999 and made an amazing discovery: there are only 16 types of programming contest problems! Furthermore, the top several comprise almost 80% of the problems seen at the IOI. Here they are:

- Dynamic Programming
- Greedy
- Complete Search
- Flood Fill
- Shortest Path
- Recursive Search Techniques
- Minimum Spanning Tree
- Knapsack
- Computational Geometry
- Network Flow
- Eulerian Path
- Two-Dimensional Convex Hull
- BigNums
- Heuristic Search
- Approximate Search
- Ad Hoc Problems

The most challenging problems are Combination Problems which involve a loop (combinations, subsets, etc.) around one of the above algorithms - or even a loop of one algorithm with another inside it. These seem extraordinarily tricky to get right, even though conceptually they are ``obvious''.

If you can master solving just 40% of these problem types, you can almost guarantee a silver medal at the IOI. Mastering 80% moves you into the gold range almost for sure. Of course, `mastery' is a tough nut to crack! We'll be supplying a plethora of problems so that you can hone your skills in the quest for international fame.

USACO Gateway | Comment or Question