Algorithm-Toolbox

University of California, San Diego, Coursera

#About this Course

The course covers basic algorithmic techniques and ideas for computational problems arising frequently in practical applications: sorting and searching, divide and conquer, greedy algorithms, dynamic programming. We will learn a lot of theory: how to sort data and how it helps for searching; how to break a large problem into pieces and solve them recursively; when it makes sense to proceed greedily; how dynamic programming is used in genomic studies. You will practice solving computational problems, designing new algorithms, and implementing solutions efficiently (so that they run in less than a second).

#Algorithmic Toolbox is course 1 of 6 in the Data Structures and Algorithms Specialization.

The Specialization covers algorithmic techniques for solving problems arising in computer science applications. It is a mix of theory and practice: you will not only design algorithms and estimate their complexity, but you will get a deeper understanding of algorithms by implementing them in the programming language of your choice. This Specialization is unique, because you will have a choice between two Capstone Projects, developed in partnership with industry leaders. In the Shortest Paths Capstone, you'll deal with road network analysis and social network analysis. You'll learn how to compute the fastest route between New York and Mountain View thousands of times faster than classic algorithms and close to those used in Google Maps. In the Bioinformatics Capstone, you'll learn how to assemble genomes from millions of short pieces and how algorithms fuel recent developments in personalized medicine.