

ALGORITHM AND SOFTWARE TOOL FOR CHOOSING A COMPLEX OF INFORMATIVE SIGNS IN THE CLASSIFICATION OF CIRCULATORY DISEASES

Aktamov Shohrubbek Ulug'bek o'g'li

Base doctarant

Mohamed al Khwarazmi TUIT

ANNOTATION

Research objective. Development of an algorithmic and software complex for early detection of diseases of the patient's circulatory system based on in-depth training of data using assembled metadata.

Key words: circulatory system, symptoms, clusterization for the classification

Assignments:

Drying of diseases of the circulatory system and metadata in the cross section of their symptoms;

Solving the question of clusterization for the classification of diseases of the circulatory system into classes using metadata;

Processing a combinatorics-based algorithm for early detection of diseases of the patient's circulatory system

Development of criteria, algorithms and software complex for the selection of simtacomplexes, which clearly demonstrate the difference between the study sample classes.

The simplest case of a selection algorithm is to track the minimum - to - date minimum - (or maximum) metrics that work to find the minimum (or maximum) item by repeating it across a list, and can be seen as related to selection sorting. On the contrary, the most difficult case of the selection algorithm is to find the media. In fact, as in the median of medians, a specialized median-choice algorithm can be used to construct a general selection algorithm. The most well-known algorithm for selection is Quickselect, which is related to Quicksort; Like Quicksort, it has an average

(asymptotic) acceptable average, but it can be modified to give even the worst performance.


QUICKSORT

- Agar array 2 elementdan iborat bo'lsa, tartiblash oson:
 - Birinchi elementni 2-element bilan solishtiramiz va kerak bo'lsa o'rnini almashtiramiz: [12, 10] → [10, 12]

Tab 1 Quicksort

QUICKSORT

- Agar array 3 ta elementdan iborat bo'lsachi?
- Quicksort quyidagicha ishlaydi:
 1. Ixtiyoriy elementni tayanch nuqtasi (pivot) qilib olamiz
 2. Tayanch nuqtasidan kichkina elementlarni nuqtadan chapga, katta elementlarni nuqtadan o'ngga ajratamiz
 3. Toki to'xtash shartiga yetgunga qadar chapdagi va o'ngdagi elementlar uchun yuqoridagi qadamlarni takrorlaysiz (rekursiya)



25	20	5
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25	20	5
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20	5	+	25
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20	5
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Tab 2 Quicksort 3 elements

QUICKSORT

- Quicksort algoritmi tez ishlashi uchun tayanch elementini tasodifiy olgan afzal (aks holda Big O qiymati $O(n^2)$ bo'lishi mumkin)
- Umuman olganda esa quicksort uchun Big O: $O(n \log n)$

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from random import randrange
def qsort(array):
    if len(array)<2:
        return array
    else:
        pivot = array.pop(randrange(len(array)))
        kichik = [i for i in array if i<=pivot]
        katta = [i for i in array if i>pivot]
        return qsort(kichik) + [pivot] + qsort(katta)

```

Tab 3 Quicksort in code

A simple example of choice by partial sorting is the use of partial selection sorting.

The exact linear time algorithm for finding the minimum (maximum maximum) - iteration by list and so far tracking the minimum (maximum maximum) element - can be seen as a partial choice sorting that selects 1 smallest element. At the same time, many other partial varieties, as well as, reduces this algorithm for the case $k = 1$, e.g. partial sum ordering.

In general partial selection sorting gives a simple selection algorithm that takes $O(kn)$ time. It is asymptotically inefficient, but can be effective enough if the K is small and easy to perform. Strictly speaking, we find the minimum value and transfer it to the beginning, repeat the remaining elements until the k elements are assembled, and then return the k element. Partial selection-based sorting algorithm:

- function select(list[1..n], k)
- for i from 1 to k
- minIndex = i
- minValue = list[i]
- for j from i+1 to n do

- if list[j] < minValue then
- minIndex = j
- minValue = list[j]
- swap list[i] and list[minIndex]
- return list[k]

The criterion of the phisher of the moment. English statistician Fisher developed a method for using the logarithmic function to test the reliability of correlation and regression analyses:

the distribution is close to the normal distribution in the small sample. F.Mills (- correlation coefficient in the Prime set) and passes the distribution graph.

Using the Fisher criterion, it is possible to verify that the complete model corresponds to the adequacy of the moment, that is, to the real economic process.

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