Multicriteria Data Structures

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Outline

1. Background
2. What is a multicriteria data structure?
3. An example and preliminary results
Background concepts

Data Structures

- How to store and organise data in order to facilitate efficient access and modifications

Machine Learning

- How to capture relationships between the data and the design of data structures

Optimisation

- How to select the best data structure from a set of viable alternatives
An informal definition

A *multicriteria data structure* selects the best data structure within some performance and computational constraints.
A classic problem in computer science

We are given a set of “objects”, and we are asked to store them succinctly and to support efficient retrieval.

SOME APPLICATIONS

DATABASES

SEARCH ENGINES

SOCIAL NETWORKS
A classic problem in computer science

We are given a set of “objects”, and we are asked to store them **succinctly** and to support **efficient** retrieval.

**CONSTRAINTS**

- **SPACE**
- **TIME**
Why space?
Why time?
Why space and time?
The idea behind the proposed solution

Preliminary results (cont.)

VS
Preliminary results (cont.)
Knowledge is like a sphere; the greater its volume, the larger its contact with the unknown.
— Blaise Pascal

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