

# Range Trees to Efficiently access N-Dimensional Data for Storage and Caching

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## **Abstract**

Many scientific applications are handling multi-dimensional data. Climate and weather applications for example are representing the earth as a timeseries of grid cells, with each cell accounting for several hundred variables such a temperature, humidity, radiation or the CO2 concentration. Computer memory, however, is not organized in this way and requires efficient data structures to browse and manipulate multi-dimensinoal data. For this thesis, your would learn about range-trees and work on implementations that are optimized for 1) caching or 2) permanent storage.