IAP.S096 (class for credit)

Performance Computing in a High-Level Language

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Massachusetts Institute of Technology

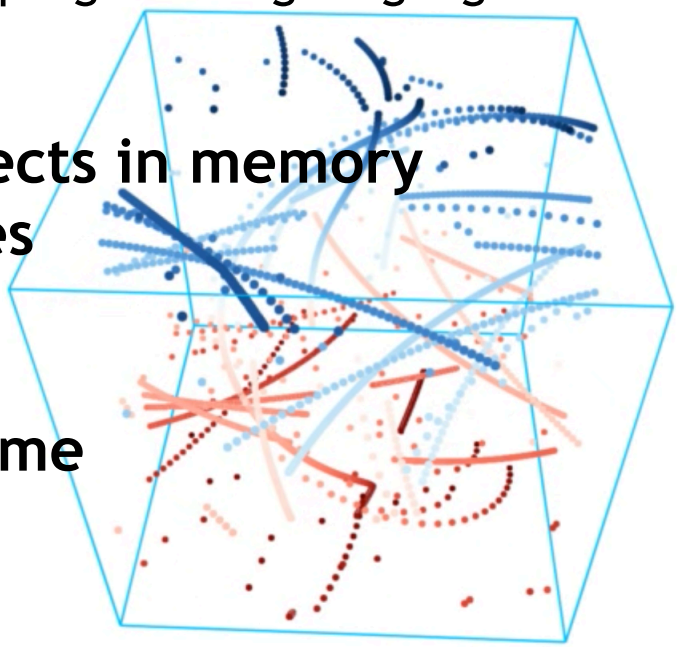
This course bridges the gap between traditional high-level computer languages, such as Python and Matlab, and what is really happening at a low level in the computer.

Using the julia language, we show how one can simultaneously write high-level, generic, interactive programs that are nonetheless optimized for performance, and which implement their own "inner loops", without relying on external libraries.

Prerequisite: Knowledge of a programming language

Topics include:

- **Representation of objects in memory**
- **Processor architectures**
- **Memory locality**
- **Metaprogramming**
- **Run time vs compile time**
- **Parallel computing**
- **Machine learning**



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