EEP - Engineering Efficient Parallel Algorithms

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Job description: In modern algorithm design and engineering, it is crucial that the algorithms can make a good use of the cache memory hierarchy, multiple processing units, and SIMD instructions. Efficient algorithms have to take into account many aspects of the memory hierarchy: how much memory there is available at each level, how much bandwidth there is available for data transmission between the levels, what is the latency, and which levels are shared between multiple cores or multiple processors. Your task is to implement efficient parallel algorithms for e.g. signal processing tasks so that they make the most out of the computing resources that are available in modern computers, whether you run it on your laptop or on a high-end server with dozens of parallel threads. This job is for hackers who know modern processors well, who enjoy programming in e.g. C or C++, and who are comfortable with the use of multi-threading in high-performance computing. Recommended for the students of ICS-E4020.

Additional information: Research group: http://research.ics.aalto.fi/da/