



Parallel Browsers: SIMTasks and FTL

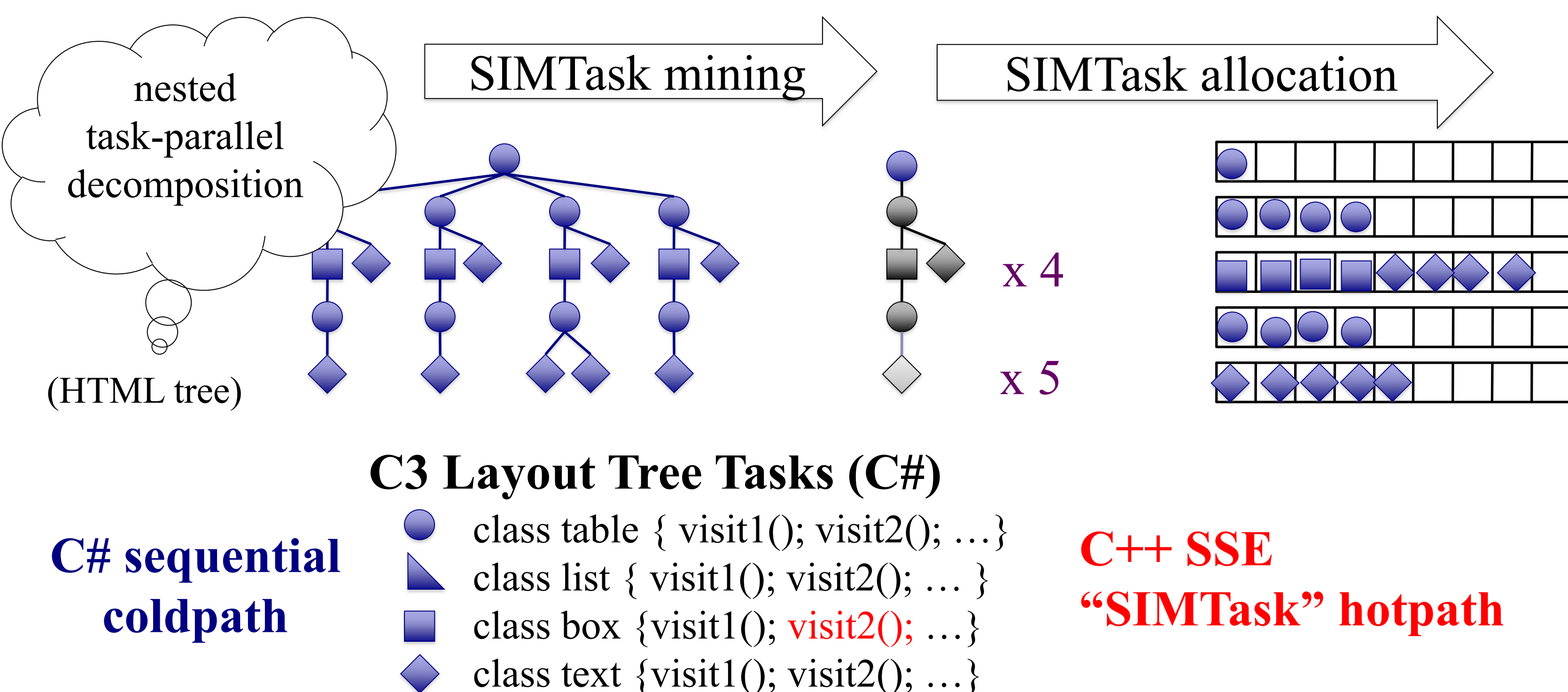
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Source: <http://www.mathworks.com/help/toolbox/stats/kmeans.html>

SIMTasks: Task Parallelism goes SSE

Case Study: C3 HTML5 Platform's Layout Engine



C3 Layout Tree Tasks (C#)

C# sequential coldpath

- class table { visit1(); visit2(); ... }
- class list { visit1(); visit2(); ... }
- class box { visit1(); visit2(); ... }
- class text { visit1(); visit2(); ... }

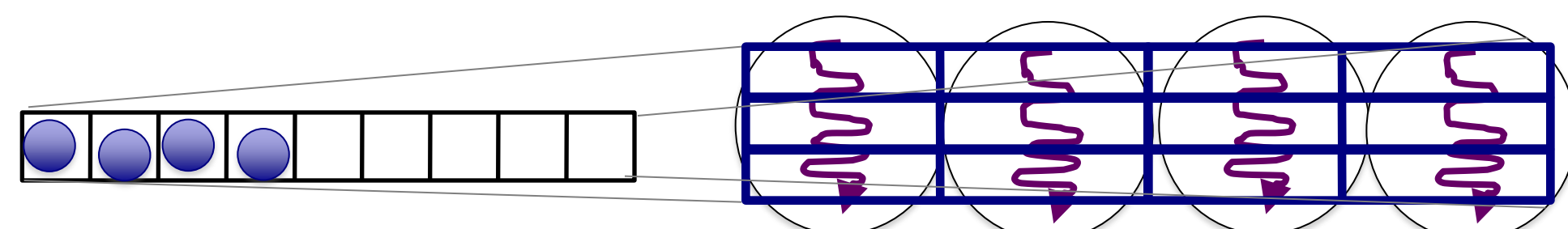
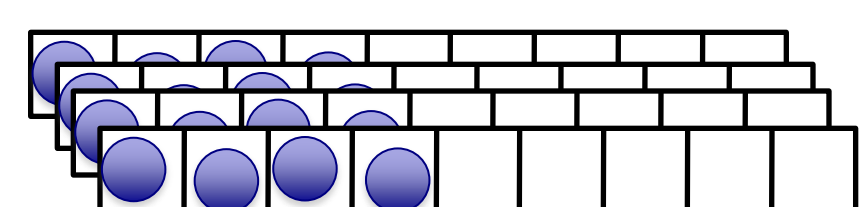
C++ SSE "SIMTask" hotpath

Running Tasks in Synchrony

Memory: structure conversion

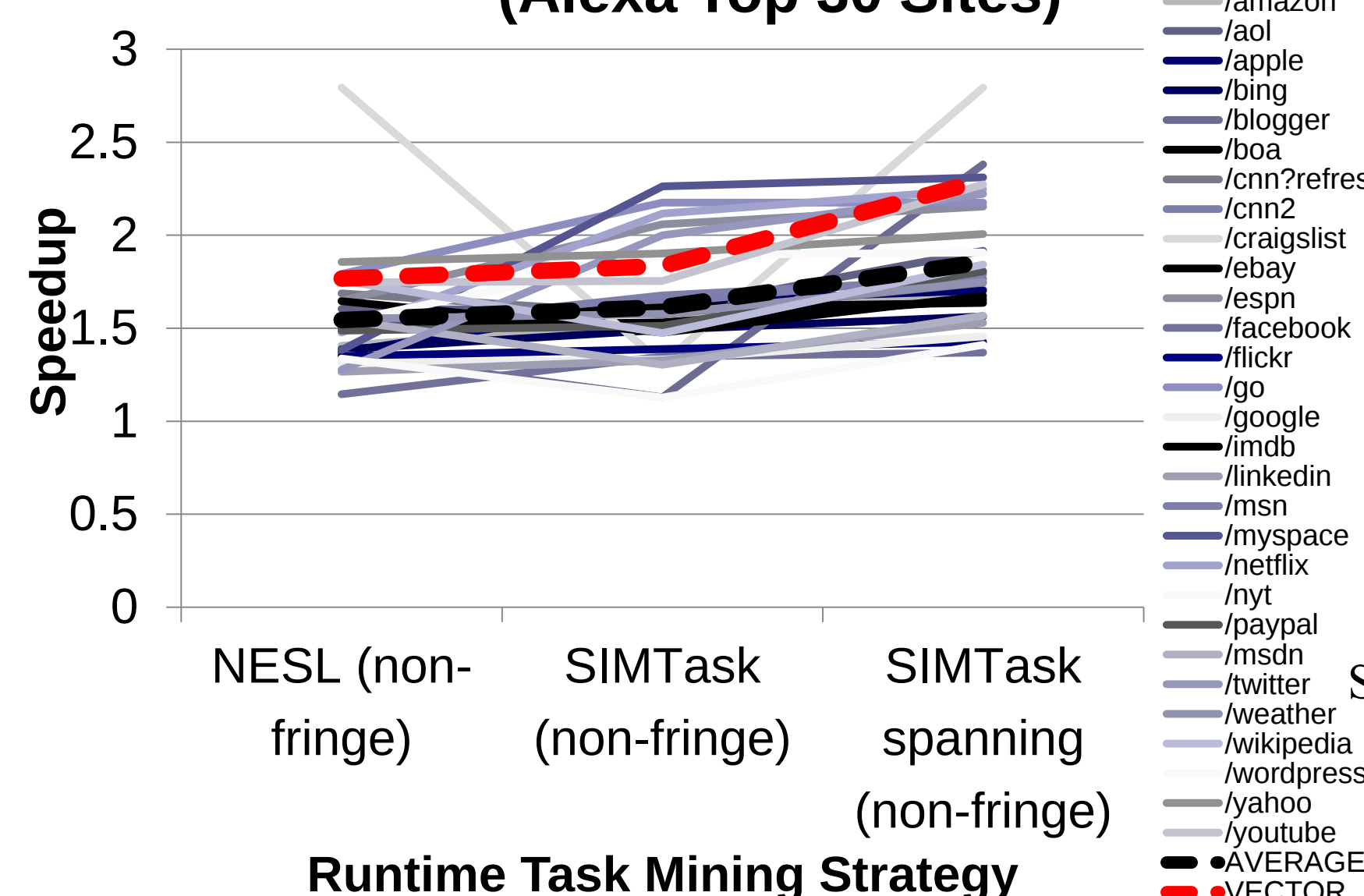
Evaluation: pointwise

Vectorization: pointwise + unrolling

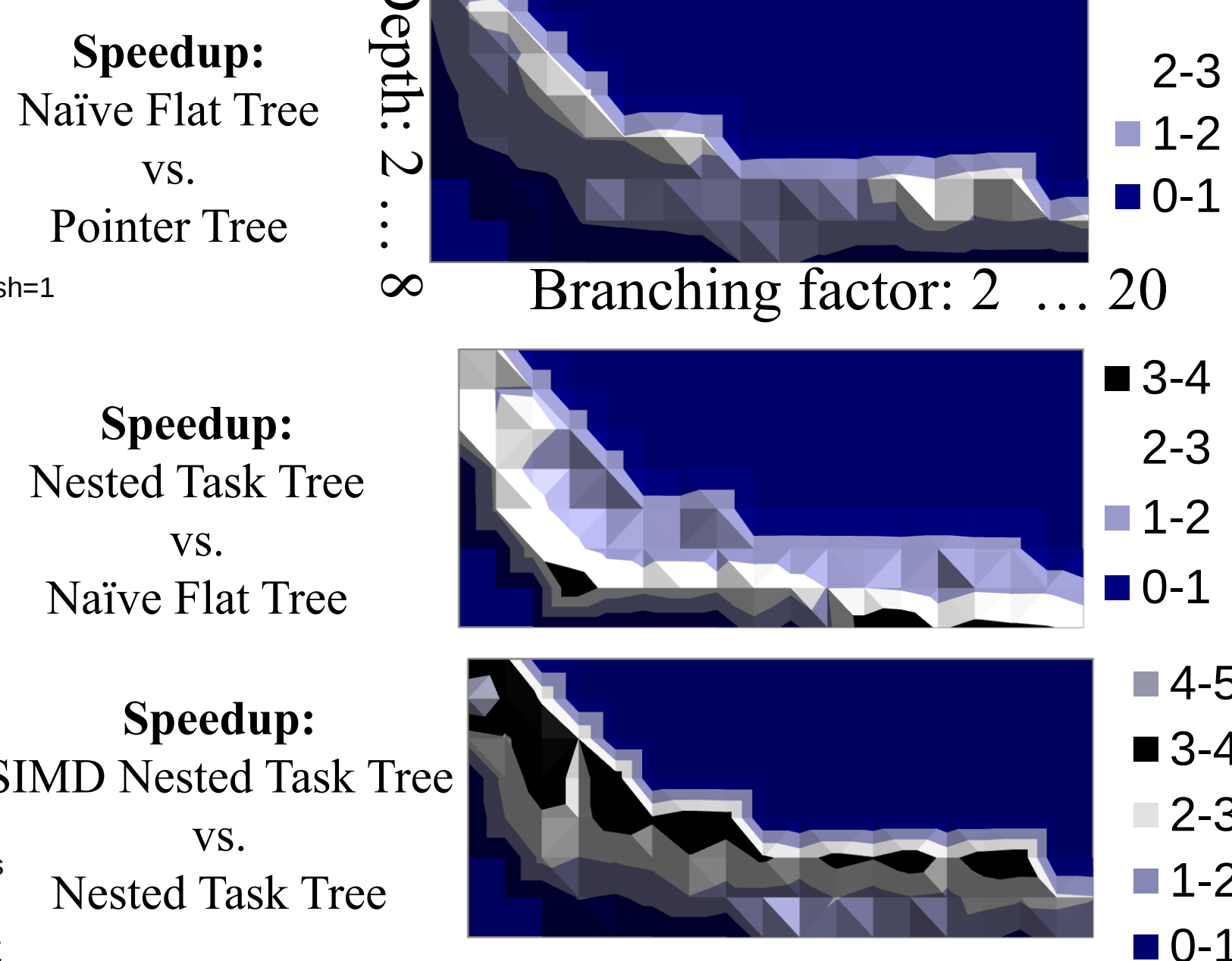


Simulation

Ideal SIMD Speedup on Box Layout (Alexa Top 30 Sites)

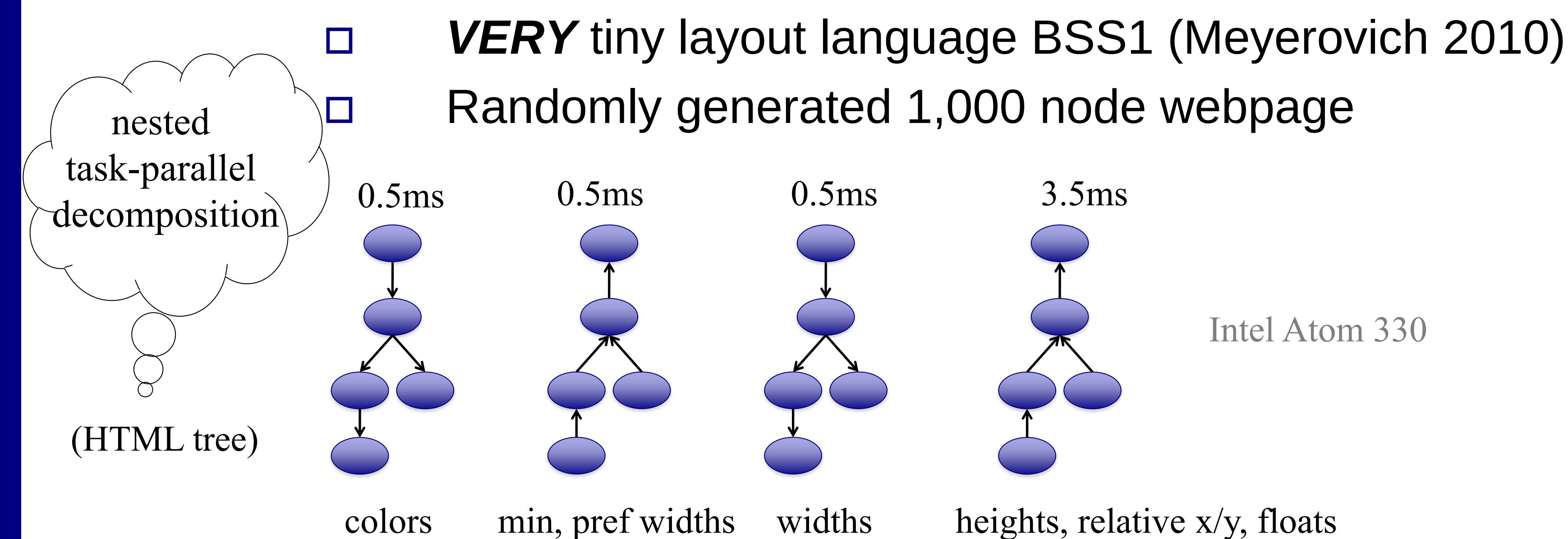


Microbenchmarks

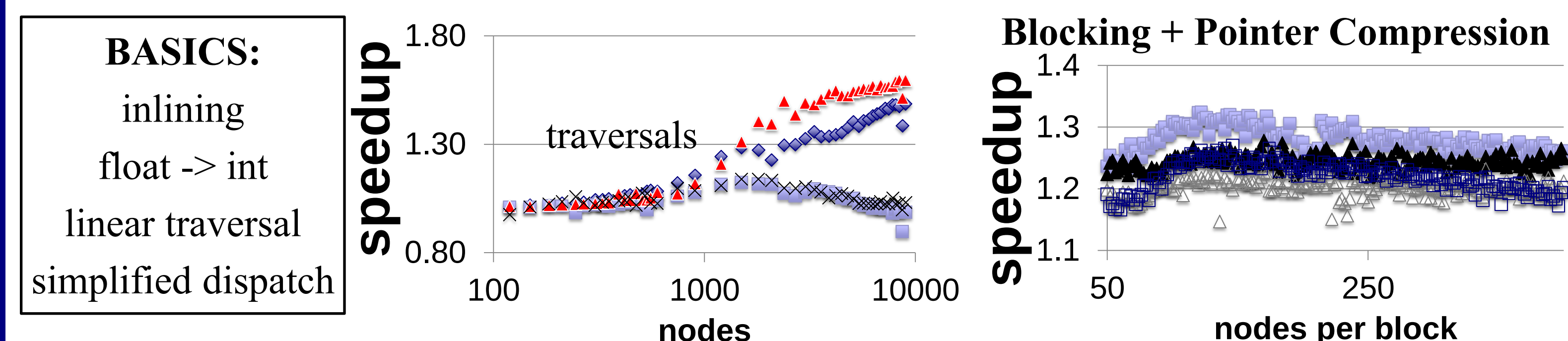


FTL Engine: Algorithms for a Fast Tree Library

Case Study: CSS C++ evaluator microbenchmark



Sequential Optimization



Semi-Static Work Stealing

Off-the-shelf task parallelism fails Solution: Semi-static work stealing

