Advanced Optimization Techniques

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Contents

- Modern CPU design
 - pipelines, out-of-order, superscalarity, branch prediction, SIMD
- MSRs and the performance monitoring unit
 - Model specific registers, programming, CPU tweaking, Tools
- A hierarchical top-down method for performance optimization
 - A consistent way of viewing the pipeline
- Micro-architectural issues and workarounds
 - Dependences, aliasing, vectorization, branching
- Advanced Vector Instructions
 - Intrinsics what if the compiler fails you
- Share memory and distributed memory techniques
 - Environment variables, in-code modifications
- Intel Xeon Phi
 - HW and SW architecture, programming

