

Samara Technology Group Services

Executive Summary

Samara Technology Group consultants provide the know-how to make systems run faster. Samara offers services that span the entire range of the performance optimization process: from machine or micro-architecture designs through many-core and communications fabric strategies; from critical numerical kernels to grid computing at exascale.

Our complementary vectors of expertise allow us to address a very wide variety of problems and benefit from broad inter-disciplinary cross-fertilization.

Samara consultants give you the fastest possible performance at the desired accuracy for numerical kernels from element functions to quantum chromodynamics and wring all available performance out of critical SIMD kernels from cryptography to FFTs. And we're leading experts at exploiting parallelism at all levels: from on-core data parallelism to multi- and many-core using techniques like OpenMP to MPI on the worlds largest HPC systems. Our toolsmiths develop, deploy and train in the use of custom analysis packages on a wide range of platforms.

With over 100 years of cumulative services experience between our senior staff, Samara is uniquely positioned to offer the best optimization available across the full breadth of today's Linux computing world: from small mobile platforms like MIPS, Atom and ARM to the worlds largest cluster platforms like Nehalem, Power, PPC, IA64.

Selected Projects:

- *Improve performance on ray tracing and solver code.*
- *Retrofit legacy vector platform global ocean model for MPI and RISC processors.*
- *Performance improvements on the SpechPC benchmark suite.*
- *Accelerate a wide variety of numerical applications while minimizing porting requirements.*
- *Accelerate applications with significant data movement or string manipulation.*
- *Custom coded Image Processing primitives with portable SIMD extensions.*
- *Demonstrate peak theoretical efficiency on physical science kernels.*
- *Optimize FFT packages.*
- *Create massively parallel distributed time and event based simulation framework, scalable from dozens to hundreds of machines.*
- *Leverage compiler technologies in order to provide better performance.*
- *Understand performance trade offs for key subroutines in complex ocean dynamics model.*
- *Improve application base performance for novel RISC processor based MPI platform.*

Clients Include:

Cray Inc.	National Oceanic and Atmospheric Administration
Microsoft Corp.	Lawrence Berkeley National Laboratory
Texas Instruments	Total
National Renewable Energy Laboratory	EADS



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