

Building applications for fluid simulation

Multi-core development made simple

Physical simulation is applicable to many industries, including film, gaming and scientific computing. Simulation is extremely computationally intensive, and demands the full performance of the hardware. Often, there is a trade off between visual realism, speed, accuracy, etc. In this application, visual realism is the key objective. The applications must make use of the performance potential of the GPU.

By leveraging the RapidMind Multi-core Development Platform, applications can harness the full potential of the latest multi-core processors from Intel and AMD as well as seamlessly take advantage of the application acceleration available in today's stream processors such as the GPU or the Cell BE.

With RapidMind, software developers focus on the algorithms to best drive innovation in their application and the RapidMind platform provides the cutting edge performance promised by these new processors. The resulting applications is hardware independent and will automatically scale to additional cores and future multi-core processors.

Fluid Simulation

When performing a simulation, whether for games or feature films, the developer needs to deal with both the physics and the rendering of results. In this demonstration, RapidMind makes the fluid modeling computation trivial and produces outstanding performance. As well, RapidMind provides a unified model for both the computation and the rendering, where it was easy to implement different combinations of lighting configurations and ambient occlusion. This is all generated and rendered in real-time on an off-the-shelf GPU.

To achieve visual realism, it is necessary to perform a high density simulation at a high frame rate. By using RapidMind to leverage the GPU's computational power, this application achieves 4 simulations per visual frame at 60 frames per second on a grid of 1024x1024 points. The results are incredibly fast and highly realistic.



About RapidMind

Visit <http://www.rapidmind.com> or email info@rapidmind.com for more information. Copyright © 2007 RapidMind Inc. All rights reserved. RapidMind and the RapidMind logo are trademarks of RapidMind Inc. Printed in Canada. Version 002/09.20.2007