GPU Technology Conference 2010 Sessions on Finance (subject to change)

IMPORTANT: Visit www.nvidia.com/gtc for the most up-to-date schedule and to enroll into sessions to ensure your spot in the most popular courses.

2063 - Banking on Monte Carlo… and Beyond

Last year NAG presented spectacular results for Monte Carlo techniques on GPUs using NAG's GPU library. This year we will talk about new projects in the areas of Monte Carlo and PDE techniques, delivering additional benefits to the finance industry for real-world problems, including credit modeling.

Speaker: Ian Reid, NAG

Topic: Finance

Time: Thursday, September, 23rd, 15:30 - 15:50

2077 - Catastrophic Risk Management: Fast and Flexible with GPU Analytics

RMS will describe our experience leveraging GPUs and simple software architectural principles to deliver both spectacular performance gains and enhanced flexibility in next generation portfolio risk management applications.

Speaker: Philippe Stephan, RMS

Topic: Finance

Time: Wednesday, September, 22nd, 17:00 - 17:50

2064 - Correlated Paths for Monte Carlo Simulations

Learn how the GPU can be deployed to generated correlated paths for Monte Carlo simulation. Using Asian Basket options as an example, the session shows the generation of correlated paths with a local volatility model for each of the underlying assets. Once the paths have been computed, the payoff in each scenario is computed and reduced to determine the expected value, all on the GPU.

Speaker: Thomas Bradley, NVIDIA

Topic: Finance

Time: Thursday, September, 23rd, 15:00 - 15:20

2040 - Derivatives & Bond Portfolio Valuation in a Hybrid CPU/GPU Environment

Learn how to compute traditional end of day computations in real time through the use of a hybrid GPU/CPU computing environment. We will detail how computing intensive tasks are delegated to the GPU while interface issues are dealt with by the CPU. We will discuss our methodology consisting of the following three components: (1) valuations; (2) by tenor risk measures; and (3) full distributions allowing for more complex analytics such as exotic options products valuation and counterparty value adjustments calculation.

Speaker: Peter Decrem, Quantifi

Topics: Finance, Algorithms & Numerical Techniques, High Performance Computing

Time: Thursday, September, 23rd, 14:00 - 14:50

2297 - Developing CUDA Accelerated .NET Plugins for Microsoft Excel

Quantifi will demo its xLDevelopment environment, which provide developers with an easy to use development environment which allows cuda functionality to be in Microsoft Excel. With as little as four lines, one will also select the position of the function in the menu bar, xml markup language will display in the excel help functionality, and objects can be easily added to the object cache. These objects can then be inspected by the end user or developer. Performance information can also be displayed in the object cache. The environment provides the developer an environment where he can focus on developing high performance functionality, and all intermediate layers of interface are taking care of by the environment.

Speaker: Peter Decrem, Quantifi

Topics: Tools & Libraries, Finance

Time: Tuesday, September, 21st, 17:00 - 17:50

4009 - Emerging Companies Summit Panel: The "New Normal" For Building Emerging Companies Based On Disruptive Technologies

Featuring Morgenthaler Ventures and Silicon Valley Bank Venture Capital Group.

Speakers: Jeff Herbst, NVIDIA, Gerald Brady, Silicon Valley Bank, Bill Frauenhofer, Citigroup Global Markets, Andrew T. Sheehan, Sutter Hill Ventures, Garrett Herbert, Deloitte & Touche LLP, Eric Jensen, Cooley LLP

Topic: Finance

Time: Thursday, September, 23rd, 14:00 - 14:50

4007 - Emerging Companies: CEO on Stage featuring Aqumin, RTT, and Scalable Display

See the hottest new technologies from startups that could transform computing.

In a lively and fast-paced exchange, the “Emerging Companies Summit - CEO on Stage” sessions will feature CEOs from three startups who will have 8 minutes to introduce their companies and 8 minutes to interact with a panel of industry analysts, investors and technology leaders.

This CEO on Stage session will feature Aqumin, RTT, and Scalable Display - covering the fields of finance, computer graphics, and imaging.

Panelists will include Norman Winarsky (SRI), Savitha Srinivasan (IBM), and Rob Enderle (Enderle Group).

Speakers: Norman Winarsky, SRI, Andrew Jamison, Scalable Display Technologies, Savitha Srinivasan, IBM, Rob Enderle, Enderle Group, Jeroen Snepvangers, Michael Zeitlin, Aqumin

Topics: General Interest, Finance, Imaging, Computer Graphics

Time: Thursday, September, 23rd, 10:00 - 10:50

2098 - Enabling On Demand Value-At-Risk for Financial Markets

Learn how financial market risk managers can increase their ability to preempt exposure limit breaching and tighten risk control to increase investor confidence. Gain insight into the techniques for obtaining high performance Monte-Carlo based market value-at-risk (VaR)

estimates over a hierarchy of risk aggregation levels. This session will focus on how the new Fermi platform can be used by financial institutions to enable on-demand estimates of the market VaR, and discuss important software architecture decisions, the benefits of the new GigaThread Engine and Parallel DataCache, as well as the guiding principles for constructing efficient algorithms on GPUs.

Speakers: Matthew Dixon, UC Davis, Jike Chong, Parasians, LLC

Topics: Finance, Algorithms & Numerical Techniques

Time: Thursday, September, 23rd, 11:00 - 11:50

2069 - GPU-Accelerated Business Intelligence Analytics

Join us and learn why GPU computing is a game changer for business intelligence (BI). We will discuss how GPUs can be used to accelerate BI analytics at much lower cost, higher performance, and better power efficiency than other alternatives.

Speaker: Ren Wu, HP Labs

Topics: Databases & Data Mining, Finance, High Performance Computing

Time: Wednesday, September, 22nd, 16:00 - 16:50

2120 - High Performance Complex Event Processing on GPGPU

Complex Event processing (CEP),a crucial component in enterprise-scale applications, is the key element in that it allows applications to process the incoming event streams and apply relevant techniques in real-time for quicker decisions, making it easy to identify complex patterns in the events. Much of the time, this system is consumed by the event matching algorithms. Our work utilizes the highly parallel GPU for event matching algorithm wherein every incoming event is worked upon by this algorithm and results in high throughput.

Speakers: Murali Krishna, Infosys Technologies Limited, Dr. Sudeep, Infosys

Topics: Databases & Data Mining, Finance

Time: Wednesday, September, 22nd, 14:00 - 14:50

2033 - Integrating GPGPU Accelerated Pricing Models into an Existing Financial Services Infrastructure

Join Citadel Investment Group to explore our three year undertaking on the feasibility of GPGPU computing for option pricing. We will discuss our 140X performance boost and the hurdles we had to overcome to integrate GPUs into our existing infrastructure. Please note that our talk will not get into the details of the model (that's proprietary information), but we will share our innovative solution to drive a grid of GPUs.

Speaker: Scott Donovan, Citadel Investment Group

Topics: Finance, High Performance Computing

Time: Thursday, September, 23rd, 09:00 - 9:50

2032 - Practical Methods Beyond Monte Carlo in Finance

Murex will share its practical experience using GPUs to accelerate high-performance analytics based on GPU-enabled Monte Carlo and PDE methods. We will also briefly describe Murex's experience developing a high-level payoff scripting language that allows user-definable payoffs for single and cross-asset instruments.

Speaker: Pierre Spatz, Murex SAS

Topics: Finance, Algorithms & Numerical Techniques

Time: Thursday, September, 23rd, 10:00 - 10:50

2101 - Pricing American Options Using GPUs

This presentation focuses on the challenging problem of Pricing High-Dimensional American Options (PHAO) and how GPUs can be involved in this task. On the one hand, we present a method based on Malliavin calculus which is effective for parallel architecture. On the other hand, we
compare this method with Longstaff & Schwartz method which is more dedicated to sequential architecture. We will conclude with some ideas about the parallelization of the former method on a cluster of machines and finally we will discuss this method considering it as a reformulation of a non-linear parabolic problem using BSDEs.

Speaker: Lokman A. Abbas-Turki, Paris-Est University

Topics: Finance, Physics Simulation

Time: Thursday, September, 23rd, 16:30 - 16:50

2136 - Pseudo Random Number Generators for Massively Parallel Apps

Learn how to select the best and fastest pseudo random number generator for your massively parallel Monte Carlo simulation. Pseudo random numbers generators (PRNG) are a fundamental building block of these simulations and it is thus required to select suitable PRNGs with regard to the specific problem at hand while considering the parallel hardware architecture.

Recent developments in random number generations provide a wide variety of choices, each with different properties and trade-offs. We provide a comprehensive survey of the current state of the art for massively parallel PRNG and show a broad range of applications.

Speaker: Holger Dammertz, Ulm University

Topics: Algorithms & Numerical Techniques, Finance

Time: Thursday, September, 23rd, 16:00 - 16:20

2111 - Using R for High-Performance Data Analysis

Data analysis is the art and the science of getting the correct quantitative models and their numerical parameters from the observed data. In this talk, we report on a project to integrate CUDA into the open source data analysis environment R. The combined use of the CPU and GPU resources can efficiently exploit the significant amount of data parallelism inherent in most data analysis problems and methods. This makes interactive analysis possible even for large, compute-intensive problems. The implementation and the achievable performance gains will be demonstrated on a concrete example from quantitative finance.

Speaker: Domokos Vermes, Worcester Polytechnic Insitute

Topics: Tools & Libraries, Databases & Data Mining, Finance, Life Sciences

Time: Tuesday, September, 21st, 16:30 - 16:50