



GPU-ACCELERATED APPLICATIONS



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Accelerated computing has revolutionized a broad range of industries with over three hundred applications optimized for GPUs to help you accelerate your work.

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Computational Finance

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Aaon Benfield Pathwise™	Specialized platform for real-time hedging, valuation, pricing and risk management	Spreadsheet-like modeling interfaces, Python-based scripting environment and Grid middleware	Yes
Altimesh's Hybridizer C#	Multi-target C# framework for data parallel computing.	C# with translation to GPU or Multi-Core Xeon	Yes
Elsen Accelerated Computing Engine (TM)	Secure, accessible, and accelerated back-testing, scenario analysis, risk analytics and real-time trading designed for easy integration and rapid development.	Web-like API with Native bindings for Python, R, Scala, C. Custom models and data streams are easy to add.	Yes
Global Valuation Esther	In-memory risk analytics system for OTC portfolios with a particular focus on XVA metrics and balance sheet simulations.	High quality models not admitting closed form solutions, efficient solvers based on full matrix linear algebra powered by GPUs and Monte Carlo algorithms.	Yes
Hanweck Associates	Real-time options analytical engine (Volera)	Real-time options analytics engine	Yes
MiAccLib 2.0.1	Accelerated libraries which encompasses high speed multi-algorithm search engines, data security engine and also video analytics engines for text processing, encryption/decryption and video surveillance respectively.	Text Processing : Exact Match, Approximate\Similarity Text, Wild Card, MultiKeyword and MultiColumnMultiKeyword, etc Data Security: Accelerated Encryption/Description for AES-128 Vide Analytics: Accelerated Intrusion Detection Algorithm	Yes
MISYS Global Risk	Regulatory compliance and enterprise wide risk transparency package	Risk analytics	Yes
Murex MACS Analytics Library	Analytics library for modeling valuation and risk for derivatives across multiple asset classes.	Market standard models for all asset classes paired with the most efficient resolution methods (Monte Carlo simulations and Partial Differential Equations)	Yes
Numerical Algorithms Group (NAG)	Random number generators, Brownian bridges, and PDE solvers	Monte Carlo and PDE solvers	Single only
QuantAlea's Alea.cuBase F#	F# package enabling a growing set of F# capability to run on a GPU.	F# for GPU accelerators	Yes
RMS	Catastrophic risk modeling for FSI (earthquakes, hurricanes, terrorism, infectious diseases)	Risk analytics	Yes
SciComp, Inc	Derivative pricing (SciFinance)	Monte Carlo and PDE pricing models	Single only
SunGard- Adaptiv Analytics	A flexible and extensible engine for fast calculations of a wide variety of pricing and risk measures on a broad range of asset classes and derivatives	Existing models code in C# supported transparently, with minimal code changes, Supports multiple backends including CUDA and OpenCL, Switches transparently between multiple GPUs and CPUS depending on the deal support and load factors	Yes
Synerscope- Synerscope Data Visualization	Visual big data exploration and insight tools	Graphical exploration of large network datasets including geo-spatial and temporal components	Single only
Tanay ZX Lib (Fuzzy Logic)	Financial analytics and data mining library	Monte Carlo simulations, pricing of vanilla and exotic options, fixed income analytics, data mining	Yes
Xcelerit SDK	Software Development Kit (SDK) to boost the performance of Financial applications (e.g. Monte-Carlo, Finite-difference) with minimum changes to existing code	C++ programming language, cross-platform (back-end generates CUDA and optimized CPU code), supports Windows and Linux operating systems.	Yes

Data Science & Analytics

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
BIDMach - UC Berkeley	Fastest Big Data tools on the web. Holds the records for many common machine learning problems, on single nodes or clusters. Interactive environment for easily building and deploying machine learning models.	Scala interface. Supports: Linear regression Logistic regression SVM LDA K-Means ...and other operations.	Yes
GPUdb	A distributed database for many core devices. GPUdb is a scalable, distributed database with SQL-style query capability for Big Data. Full suite of geospatial calculation capability.	Query against Big Data in real time. No pre-indexing allows for complex, ad-hoc query chains. Interactively explore large, streaming data sets.	Yes
Systap - MapGraph HPC	GPU Accelerated Gather-Apply-Scatter API for high-performance graph mining and traversal operations. The GAS abstraction is Graph-parallel and provides orders of magnitude speedups over Data-parallel frameworks like map/reduce. Runs on clusters of GPUs to process the largest graphs in near real time. Can traverse a scale-free graph with 32 GTEPS of performance.	Vertex-centric, Java API Supports: Breadth-First Search (BFS) Single-Source Shortest Path (SSSP) Page Rank ... and other operations.	Yes

Defense and Intelligence

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Comprimato JPEG2000 Codec	A high performing, GPU powered, JPEG2000 encoder and decoder SDK which can be integrated into almost any application.	Very large image processing, specific area decoding, multi resolution/quality decoding supporting all GEOSPATIAL image formats. (eg NITF, BIIF). Mobile and embedded platform friendly.	Yes
DigitalGlobe - Advanced Ortho Series	Geospatial Visualization	Image orthorectification	Yes
Elcomsoft	High-performance distributed password recovery software with NVIDIA GPU acceleration and scalability to over 10,000 workstations.	GPU acceleration for password recovery, 10-100x speedup for password recovery	Yes
Eternix - Blaze Terra	Geospatial Visualization	3D visualization of geospatial data	Yes
Exelis (ITT) ENVI	Geospatial Visualization	Image orthorectification, Image transformation, atmospheric correction	Yes
GeoWeb3d Desktop	Geospatial Visualization	3D visualization of geospatial data	Yes
GPUdb	Multi-GPU, Multi-Machine distributed object store providing SQL style query capability, advanced geospatial query capability, heatmap generation, and distributed rasterization services	Query against Big Data in real time. No pre-indexing allows for complex, ad-hoc query chains. Interactively explore large, streaming data sets.	Yes
Intergraph Motion Video Analyst	Video filters and mosaic'ing - Geo-fuses FMV analytics with intelligence data	Full motion video ortho mosaic processing, de-hazing algorithms	Single only
Intuvision Panoptes 3.0	Video Analytics	Object recognition and change detection	Yes
LuciadLightspeed	Geospatial Visualization and Analysis	Geospatial Situational Awareness	Single only
Manifold Systems	Full-featured GIS, vector/raster processing & analysis	Manifold Surface Tools	Yes
MotionDSP - Ikena ISR	Real-time Full Motion Video and WAMI enhancement and analytics	Real-time super-resolution-based video enhancement, filtering, mosaicing, video analytics, and transcoding	Yes
NerVve Visual Search Solution (NVSS)	Video/Image Live and Forensic Search	Video and Image content search	Yes

OpCoast SNEAK	Electromagnetic signals propagation modeling for complex urban and terrain environments	Ray tracing, DTED and remote sensing inputs	Yes
PCI Geomatics GXL	Image Processing	Image orthorectification and additional image processing	Yes
Skyline Software - Terrabuilder PhotoMesh	PhotoMesh integrates a GPU-based, fast algorithm, able to automatically build 3D models from simple photographs. PhotoMesh revolutionizes the use of geospatial data by fully automating the generation of high-resolution, textured, 3D mesh models from standard 2D images	3D model building from imagery; building texture generation	Yes
SocetGXP – BAE Systems	The Automatic Spatial Modeler (ASM) is designed to generate 3-D point clouds with accuracy similar to LiDAR, which can extract 3-D objects from stereo images. ASM can extract dense 3-D point clouds from stereo images, and extract accurate building edges and corners from stereo images with high resolution, large overlaps, and high dynamic range.	Automated 3D feature extraction	Yes
SynerScope	Big data visualization and data discovery, for combining Analytics on Analytics with IoT compute-at-the-edge smart sensors	Real-time Interaction with data	No

Deep Learning

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Caffe	The Caffe deep learning framework makes implementing state-of-the-art deep learning easy.	Process over 40M images per day with a single NVIDIA K40 or Titan GPU	Single only
Theano	Theano is a symbolic expression compiler that powers large-scale computationally intensive scientific investigations.	Abstract expression graphs for transparent GPU acceleration	Single only
Torch7	Torch7 is an interactive development environment for machine learning and computer vision.	Computational back-ends for multicore GPUs	Single only
Trakomatic OSense, Otrack	Video Analytics Solution for Retail, Supermarkets, Shopping Mall and Banking 5-25x Speed up on GPU	<ul style="list-style-type: none"> • People Detection & Tracking • Crowd Density Estimation • Gender Classification and Age Estimation • Person Re-identification 	Yes

Manufacturing: CAD and CAE

COMPUTATIONAL FLUID DYNAMICS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Altair AcuSolve	General purpose CFD software	Linear equation solver	Yes
ANSYS - Fluent	General purpose CFD software	Radiation heat transfer model, linear equation solver	Yes
Autodesk - Moldflow	Plastic mold injection software	Linear equation solver	Single only
CPFD Barracuda-VR and Barracuda	Fluidized bed modeling software	Linear equation solver, particle calculations	Single only
DHI - MIKE 21	2D hydrological modelling of coast and sea	Hydrodynamics; Advection-dispersion; Sand and mud transport; coupled modelling; particle tracking; oil spill; ecological modelling; agent based modelling; various wave models	Yes
DHI - MIKE FLOOD	1D & 2D urban, coastal, and riverine flood modelling	Hydrodynamics	Yes
Fluidyna aeroFluidX	Incompressible single-phase CFD software	Finite volume solver	Yes

FluiDyna - Culises for OpenFOAM	Solver library for general purpose CFD software	Linear equation solvers	Yes
FluiDyna nanoFluidX	General purpose CFD software	SPH solver	Yes
FluiDyna ultraFluidX	General purpose CFD software	Lattice-Boltzmann solver	Yes
midas NFX(CFD)	General purpose CFD software based on FEM	Linear equation solver(Iterative Solver and AMG Preconditioner)	Single only
Promotech - Particleworks	Particle-based CFD software	Implicit and explicit solvers	Yes
Turbostream Ltd.	CFD software for turbomachinery flows	Explicit solver	Yes
Vratis Speed IT FLOW	Incompressible single-phase CFD software	Finite volume solver	Single only
Vratis SpeedIT for OpenFOAM	Solver library for general purpose CFD software	Linear equation solvers	Yes

Research CFD Developments

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
DualSPHysics	SPH-based CFD software	SPH model	Yes
FEFLO (GMU-Lohner)	General purpose CFD software for compressible and incompressible flows	Implicit and explicit solver	Yes
GIN3D (Senocak - Boise St)	General purpose CFD software for incompressible flows.	Implicit solver	Yes
HiFiLES (Stanford-Jameson)	General purpose CFD software for compressible flows.	Explicit solver	Yes
HiPSTAR (Sandberg - University of Southampton)	CFD software for compressible reacting flows.	Explicit solver	Yes
JENRE, Propel (NRL)	CFD software for compressible flows.	Explicit solver	Yes
NASA FUN3D	General purpose CFD software	Linear equation solver	Single only
PyFR (Vincent - Imperial College)	General purpose CFD software for compressible flows.	High-order FR solver	Yes
S3D (Sandia and Oak Ridge NL)	Direct numerical solver (DNS) for turbulent combustion	Chemistry model	Yes

COMPUTATIONAL STRUCTURAL MECHANICS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Altair OptiStruct	Industry proven, modern structural analysis solver and solution for structural design and optimization	Direct and iterative solvers	Yes
Altair RADIOSS Implicit	Simulation and analysis tool for structural mechanics	Direct and iterative solvers	Yes
ANSYS - Mechanical	Simulation and analysis tool for structural mechanics	Direct and iterative solvers	Yes
Dassault Systèmes SIMULIA Abaqus/Standard	Simulation and analysis tool for structural mechanics	Direct sparse solver	Yes
Dassault Systèmes SIMULIA 3DEXPERIENCE	Realistic simulation solution (Uses Abaqus Standard for GPU computing)	Direct sparse solver	Single only
Impetus Afea	Predicts large deformations of structures and components exposed to extreme loading conditions	Linear equation solver	Yes
LS-DYNA Implicit	Simulation and analysis tool for structural mechanics	Linear equation solver	Yes
midas GTS NX	Simulation tool for geo-technical analysis	Linear equation solver(Multi Frontal Solver)	Single only
midas NFX(Structural)	Simulation and analysis tool for structural mechanics	Linear equation solver(Multi Frontal Solver)	Single only
MSC - Marc	Simulation and analysis tool for structural mechanics	Direct sparse solver	Yes

MSC Nastran	Simulation and analysis tool for structural mechanics	Direct sparse solver	Yes
Rocky DEM	Discrete Element Modeling (DEM)-based particle simulation software	Explicit DEM solver (dry/sticky contact rheologies), 1-way & 2-way coupling with ANSYS Fluent and ANSYS Mechanical	Single only
Siemens NX Nastran	Simulation and analysis tool for structural mechanics	Linear equation solver	Single only

DESIGN AND VISUALIZATION

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Autodesk - AutoCAD	2D and 3D CAD design, drafting, modeling, architectural drawing, and engineering software. Supports Open GL. Native DWG™ support.	Surface, mesh, and solid modeling tools, model documentation tools, parametric drawing capabilities. Native DWG™ support.	Single only
Autodesk - AutoCAD Design Suite	AutoCAD 2014 software, plus tools to create, capture, connect, and showcase designs	2D/3D display of designs, interactive 3D presentation with realistic materials, rendering-ray tracing	Single only
Autodesk - 3ds Max	3D animation creative toolset for modeling, animation, simulation, and rendering for games, film, and motion graphics	3D modeling, mesh and surface modeling, improved Nitrous viewport performance, iray rendering	Yes
Autodesk - Inventor	3D mechanical design, documentation, and product simulation	Uses BIM for intelligent building components to improve design accuracy	Single only
Autodesk - Revit	Building Information Modeling (BIM) for structural engineering, and construction	Modeling (BIM) to design, build, and maintain higher-quality, more energy-efficient buildings	Single only
Dassault Systèmes - CATIA	Accelerated UI rendering	Full OpenGL implementation including menus and dialog box	Single only
Dassault Systèmes - CATIA Live Rendering	Realistic 3D Rendering on full CATIA 3D CAD model	Physically Based Rendering with no data preparation thanks to native NVIDIA Iray Photoreal integration and interactive realistic rendering using NVIDIA Iray IRT	Yes + NVIDIA Quadro VCA
Dassault Systèmes - 3DEXCITE Bunkspeed Suite	Easy to use photorealistic rendering software	Iray-based ray-tracing. Animation support. Network rendering	Yes + NVIDIA Quadro VCA
Dassault Systèmes - 3DEXCITE DeltaGen	Redefines high-end 3D visualization and realtime interaction. This latest version gives users a broad suite of robust new features to truly revolutionize processes and help increase visual quality, speed, and flexibility.	Interactive ray tracing and global illumination. Integration with Siemens TeamCenter. Cluster support Realtime & Offline Production Process Integration and scene building. Scene Analysis, Xplore DeltaGen, SDK for DeltaGen	Yes
Dassault Systèmes - SOLIDWORKS	Covers all aspects of product development process with a seamless, integrated workflow—design, verification, sustainable design, communication and data management	High performance in Shaded, Shaded w/ Edges, and RealView modes, FSAA for sharp edges, Order Independent Transparency Real time photorealistic renderings	Single only
NVIDIA Iray	A ready-to-integrate, physically-based, photorealistic rendering solution	Iray Interactive; Iray Photoreal; Iray Cluster. Fast interactive ray tracing; Physically-based, global-illumination rendering; Distributed cluster rendering	Yes
PTC Creo Parametric	Parametric design solution suite	Anti-aliasing, better lighting and enhanced shaded-with-edges mode. Immersive design environment with realistic materials. GRID Support	Single only
Siemens PLM NX and Teamcenter Lifecycle Visualization	Product lifecycle management solutions from design to simulation to production to service	Design software, NX, and PLM viewer applications, TcVis and Active Workspace.	Single only

ELECTRONIC DESIGN AUTOMATION

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Altair FEKO	3D EM modeling and simulation	FDTD solver MoM solver	Yes
ANSYS - HFSS	Simulation tool for modeling 3-D full-wave electromagnetic fields in high-frequency and high-speed electronic components.	Transient solver	Yes
ANSYS - Nexxim	Circuit simulation engine for RF/analog/mixed-signal IC design; IBIS-AMI analysis speedup with GPU computing.	AMI analysis	Single only
CST STUDIO SUITE	3D Electromagnetic modeling and simulation	Several different solvers	Yes
D2S TrueMask	GPGPU-based computational lithography acceleration technology	Simulation and data preparation for Mask Writing -Geometric manipulation of large semiconductor design & manufacturing data -eBeam, Mask Process, and lithography aerial image Simulation -image processing	Yes
Delcross- Savant	Simulation tool for installed antenna performance and antenna-to-antenna coupling	High-frequency solver	Yes
JMAG	FEA software for electromechanical design. Fast solver / High quality mesh / Advanced modeling technologies	EM transient solver EM time harmonic solver EM static solver	Yes
KeySight - ADS	Simulation tool for design of RF, microwave and high speed digital circuits	Transient Convolution simulation with BSIM4 models	Single only
KeySight - EMPro	Modeling and simulation environment for analyzing 3D EM effects of high speed and RF/Microwave components	FDTD solver	Yes
Remcom - XFDTD	3D EM modeling and simulation	FDTD solver	Yes
Rocketick - RocketSim	Verilog simulation	Verilog simulation	Yes
SPEAG - SEMCAD-X	3D EM modeling and simulation	FDTD solver	Yes

Media and Entertainment

ANIMATION, MODELING AND RENDERING

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
3DAliens - Glu3d	SPH fluid simulation	Faster simulation	Single only
AAA Studio - FurryBall	GPU renderer	CUDA and DirectX GPU rendering	Single only
Autodesk - 3ds Max + NVIDIA Iray	3D modeling, animation, and rendering	iray interactive, photorealistic and physically correct rendering	Yes
Autodesk - Maya	3D modeling, animation, and rendering	Increased model complexity, larger scenes	Yes
Autodesk - Motion Builder	Character animation and motion capture	Increased model complexity at interactive rates	Single only
Autodesk - Mudbox	3D sculpting	Increased model complexity at interactive rates	Single only
Blastcode - Kilton/Megaton	Physics-based simulation plug in	Faster simulation	Single only
Cebas - mosquitoRender	GPU renderer	CUDA-based GPU rendering	Yes
Chaos Group - V-Ray RT	GPU renderer	CUDA interactive GPU rendering	Yes
Jawset - TurbulenceFD	Physics-based simulation plug-in	Maximus supported GPU simulation using CUDA	Single only
Maxon - Cinema 4D	3D modeling, animation, and rendering	Increased model complexity at interactive rates	Single only
NewTek - Lightwave	3D modeling, animation, and rendering	Increased model complexity at interactive rates	Single only

Otoy - Octane Render	GPU renderer	GPU rendering	Yes
Pixologic - Sculpttris	3D sculpting	Increased model complexity at interactive rates	Single only
Redshift - Renderer	GPU-accelerated, biased renderer	CUDA-based GPU final-frame rendering	Yes
Side Effects - Houdini	3D modeling, animation, and rendering	Maximus supported GPU simulation using OpenCL	Single only
The Foundry - Mari	3D paint	Increased model complexity at interactive rates	Single only
The Foundry - Modo	3D modeling, animation, and rendering	Increased model complexity, larger scenes	Single only

COLOR CORRECTION AND GRAIN MANAGEMENT

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Adobe - SpeedGrade CC	Color grading	Real-time grading and finishing with Lumetri Deep Color Engine.	Single only
ARRI - RAW Converter	RAW de-Bayering and primary grading	CUDA-accelerated de-bayering and grading	Single only
Assimilate - Scratch	Color grading and finishing	Accelerated debayering for real-time digital finishing.	Single only
Blackmagic Design - DaVinci Resolve	Color grading	Real-time color correction and de-noising	Yes
Canon - Cinema RAW SDK	RAW de-bayering	GPU-accelerated de-Bayering	Single only
Cinnafilm - Dark Energy	Application and plug-in for image enhancement	Image de-noising and restoration	Yes
Digital Vision - Nucoda	Color grading	Real-time color correction	Single only
Fastvideo - Debayer	High performance GPU debayer	High performance debayer on CUDA	Yes
Filmlight - Baselight	Color grading	Real-time color correction	Yes
Marquise Technologies - Rain	Color grading	CUDA-based real-time color correction	Single only
Quantel - Pablo Rio	Color grading and finishing	Real time color correction	Yes
Red Digital Cinema - REDCINE-X PRO	Primary Color grading	CUDA-accelerated de-bayering and grading	Single only
Red Giant - Magic Bullet Looks	Color and finishing tools	Faster effects	Single only
SGO - Mistika	Color grading and finishing	Real-time color correction and finishing	Single only
The Foundry - COLORWAY	Color grading	Accelerated color grading	Single only
The Pixel Farm PFClean	Image restoration and remastering	CUDA-based image processing acceleration	Single only
Wavelet Beam - Grain and Noise Reducer	Video noise reduction	CUDA-accelerated grain and noise reduction	Yes

COMPOSITING, FINISHING AND EFFECTS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Adobe - After Effects CC	Motion graphics and effects	3D ray tracing engine based on NVIDIA OptiX	Yes
Autodesk - Flame Premium	Finishing and color grading	Integrated toolset for 3D VFX, editorial, and color grading	Single Only
Boris FX - Continuum Complete	Visual effects plug-in	Faster effects	Single only
CoreMelt - Complete	Visual effects plug-in	Faster effects	Single only
eyeon - Fusion	Effects and compositing	Faster effects	Single only
GenArts - Monsters GT	Visual effects plug-in	Faster effects	Single only
GenArts - Sapphire	Visual effects plug-in	Faster effects	Single only

Neat Video - Open FX	Video noise reduction plug-in	Faster effects	Single only
NewBlueFX - Video Essentials	Video effects plug-in	Faster effects	Single only
Pixelan - FilmTouch	Video effects plug-in	Faster effects	Single only
Re:Vision Effects - Twixtor	Visual effects plug-in	Faster effects	Single only
Red Giant - Effects Suite	Visual effects plug-in	Faster effects	Single only
ROBUSKEY	Chroma keyer plug-in	Faster effects	Single only
SGO - Mamba FX	High-end compositing	Faster keying, tracking, painting and restoration	Single only
The Foundry - HIERO	Shot management, conform and review timeline	Better interactivity	Single only
The Foundry - NUKE, NUKEX and NUKE Studio	Compositing tools with 3D tracker	Faster effects	Single only
Video Copilot - Element 3D	3D object based particle system	Faster effects	Yes
Video Copilot - Twitch	Video effects plug-in for After Effects	Faster effects	Single only

EDITING

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Adobe - Photoshop CC	Image editing	Over 30 effects for smoother image manipulation in Mercury Graphics Engine	Single only
Adobe - Premiere Pro CC	Video editing	Mercury Playback Engine for real-time video editing & accelerated rendering	Yes
Apple - Final Cut Pro	Video editing	Faster effects	Single only
Autodesk - Smoke	Finishing and editing	Faster effects	Single only
Avid - Media Composer	Video editing	Faster video effects, unique stereo 3D capabilities	Single only
EditShare - Lightworks	Video editing	Faster effects	Single only
Grass Valley - Edius Pro	Video editing	Faster effects	Single only
Imagine Communications - Velocity	Video editing	Faster effects	Single only
Quantel - Qube	Broadcast video editing	Faster video effects, unique stereo 3D capabilities	Single only
Sony - Vegas Pro	Video editing	Faster video effects and encoding	Single only

ENCODING AND DIGITAL DISTRIBUTION

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
ArcVideo - Core	Video processing and transcoding	Accelerated transcoding and encoding	Yes
ArcVideo - Live	High-density, real-time video processing and encoding	Accelerated broadcast encoding with NVIDIA CUDA and NVENC	Yes
Cinnafilm - Tachyon	Standards conversion	Video processing and frame rate conversion	Yes
Comprimato - JPEG2000 Codec	JPEG2000 encoding and decoding for DCP, IMF, video editing, broadcast contribution, and archiving	Faster than real-time UltraHD / 4K, lossy and mathematically lossless, high bit-depth (HDR), performance scalable, GPU accelerated	Yes
Dalet - Amberfin	Transcoding and video quality analysis	GPU-accelerated video procession and encoding	Single only
Digimetrics - Aurora	Automated video quality measurement	GPU-accelerated video quality assessment	Single only
Elemental - Elemental Live	Live streaming video processing and encoding	Video encoding and video processing	Yes
Elemental - Elemental Server	File-based video processing and encoding	Video encoding and video processing	Yes

ERLAB - Multiplatform Transcoder	Video processing and encoding software	Pre-processing encoding, Decoding, Post-processing and delivery	Single only
Fastvideo - H.264 encoder	H.264 encoding on GPU	NVENC accelerated video encoding	Yes
Fastvideo - Resizer	Batch JPEG resizer	Batch JPEG resize on CUDA	Yes
Fastvideo - SDK	JPEG, JPEG2000, Raw Bayer codecs	Fast JPEG, JPEG2000, Raw Bayer encoding and decoding on CUDA	Yes
Interra - Baton	Video quality analysis	GPU accelerated video quality assessment	Single only
isovideo - Viarte	Video standards conversion	CUDA-accelerated video procession and encoding	Yes
METUS - Ingest	Video Recording, Transcoding, and Streaming Software	CUDA Accelerated video recording, encoding and broadcast transcoding.	Single only
Quantel/Snell - Alchemist on Demand	Video standards conversion	GPU-accelerated video procession and encoding	Yes
Root6 - Content Agent	Automated transcoding and workflow management	GPU-accelerated video procession and encoding	Yes
Sorenson Media - Squeeze	Video transcoding application and plug-In	Video encoding and video processing	Yes
Telestream - Vantage	Video transcoding and processing	Video encoding and video processing	Yes
Wowza - Transcoder	H.264 video encoding	NVENC accelerated video encoding	Single only

ON-AIR GRAPHICS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Avid - On-air Graphics	On-air Graphics	Real-time rendering	Single only
Brainstorm - eStudio	Virtual sets and motion graphics	Real-time rendering	Single only
ChyronHego - GS2 Graphics Engine	On-air graphics	Real-time rendering	Single only
ChyronHego - Mosaic	On-air graphics	Real-time rendering	Single only
Cinegy - Type	On-air Graphics	Real-time rendering	Single only
Dalet - Cube	On-air Graphics	Real-time rendering	Single only
Grass Valley - Miranda Vertigo	On-air Graphics	Real-time rendering	Single only
Imagine Communications - Nexio Channelbrand	On-air graphics	Real-time rendering	Yes
Imagine Communications - Nexio G8	On-air graphics	Real-time rendering	Single only
Imagine Communications - Nexio TitleOne	On-air graphics	Real-time rendering	Single only
Monarch - Brodcaast Dscript 3D	3D on-air graphics	Real-time rendering	Single only
Monarch - Virtuoso	Virtual sets and motion graphics	Real-time rendering	Single only
Pixel Power - Clarity	On-air graphics	Real-time rendering	Single only
RT Software - tOG	On-air graphics	Real-time rendering	Single only
Vizrt - Viz Engine	On-air graphics and virtual sets	Real-time rendering	Single only
Wasp3D - CG	On-air graphics and virtual sets	Real-time rendering	Single only

ON-SET, REVIEW AND STEREO TOOLS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
3ality Technica - Intellicam	3D stereo camera adjustment	CUDA-based 3D imaging	Single only
Binocle3D - Disparity Killer	3D stereoscopic workflow	CUDA-based 3D imaging	Single only
BlueFish - Fluid 4K Review	Review and approval of 4K content	Real-time video review	Single only

Colorfront - On-Set Dailies	Review, color grading and transcoding on set	Real-time	Yes
eyeon - Dimension	3D stereoscopic workflow	Real-time	Single only
Fastvideo - SDK	Full image processing pipeline on CUDA	Full image processing pipeline for real time machine vision and camera applications. Data unpacking, Shading correction, Color correction, Debayer, LUT, Resize, Sharp, JPEG, JPEG2000, Raw Bayer, H.264 encoding	Yes
Lightcraft - Previzion	On-set virtual production	Real-time, virtual set production	Single only
MTI Film - Cortex Dailies	Review, color grading and transcoding on set	CUDA accelerated grading and transcoding	Single only
The Pixel Farm - PFTrack	3D scene creation and tracking	CUDA-accelerated tracking	Yes
Tweak Software - RV	Review and approval of 4K content	Real-time	Single only

WEATHER GRAPHICS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Accuweather - Cinemative HD	Weather graphics	Real-time	Single only
Accuweather - Storyteller	Weather graphics	Real-time	Single only
MeteoGraphics - MeteoEarth	Weather graphics	Real-time	Single only
WSI - Max Weather	Weather graphics	Real-time	Single only

Oil and Gas

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Acceleware AxRTM AxKTM	Seismic processing	RTM, Kirchhoff, control source, electromagnetism, forward modeling	Yes
BRS Labs AISight for SCADA	Proactive integrity management and real-time precursor alerts for enhanced SCADA operations in oil and gas.	24/7 real-time analysis and alerting scaling to thousands of sensors across remote and geographically dispersed locations including historical analysis and trend reports	Yes
CGG- GeoVation	Seismic processing	Multiple algorithms (RTM, etc)	Yes
CGG- Inside Earth	Seismic interpretation	Horizon orientation attributes; automated fault extraction, Curvature Attributes	Yes
Echelon Stoneridge Technology	Reservoir Simulator	Fully GPU-accelerated reservoir model, including dual-perm, dual porosity, pressure varying perm and porosity. Eclipse compatible input deck	Yes
ffa Geoteric	Seismic interpretation	Attributes calculations, geobodies extraction	Yes
ffa SEA3D Pro	Seismic interpretation	Attributes calculations, geobodies extraction	Yes
ffa SVI Pro	Seismic interpretation	Attributes calculations, geobodies extraction	Yes
GeoMage Multifocusing	Seismic processing	Advanced seismic imaging technologies and services, as well as interpretation, geological modeling, and reservoir characterization	Yes
HUE Headwave Suite	Seismic interpretation	Attributes calculations, Volume Rendering	Yes
HUE HUESpace	Seismic interpretation	Interpretation development platform	Yes
OpenGeo Solutions OpenSeis	Seismic processing	Spectral Decomposition	Yes
Panorama Tech	Seismic processing, Modeling	Multiple algorithms (RTM, etc)	Yes

Paradigm Echos RTM	Seismic processing	RTM algorithm	Yes
Paradigm Geophysical VoxelGeo	Seismic interpretation	Volume Rendering, Horizon Flattening	Yes
Paradigm SKUA	Reservoir modeling	Faults, Horizons and Flow Simulation Grid	Yes
PumaFlow IFP	Reservoir Simulation	GPU-accelerated linear solver	Yes
Ridgeway Kite Simulator	Reservoir Simulation	Fully GPU-accelerated reservoir model, including surface facilities and multiple realization history matching	Yes
Roxar RMS	Reservoir modeling	Multi GPU capabilities via HUEspace	Yes
Schlumberger Omega2 RTM	Seismic processing	Multiple algorithms (RTM, etc)	Yes
Seismic City Prestack Interpretation	Seismic processing	Multiple algorithms (RTM, etc)	Yes
SpectraSeis	Seismic processing	Full elastic wave-equation imaging and analysis of microseismic fracture data	Yes
Stoneridge Technologies GAMPACK	Reservoir simulation	GPU Algebraic MultiGrid Package	Yes
Tsunami A2011	Seismic processing/Imaging package	RTM processing	Yes
Tsunami RTM	Seismic processing	RTM algorithm	Yes

Research: Higher Education and Supercomputing

COMPUTATIONAL CHEMISTRY AND BIOLOGY

Bioinformatics

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
BarraCUDA	Sequence mapping software	Alignment of short sequencing reads, alignment of indels with gap openings and extensions	Yes
BEAGLE-lib	BEAGLE is a high-performance library that can perform the core calculations at the heart of most Bayesian and Maximum Likelihood phylogenetics packages. It can make use of highly-parallel processors such as those in graphics cards (GPUs) found in many PCs.	Evaluation of likelihood for sequence evolution on trees and Arbitrary models (e.g. nucleotide, amino acid, codon) Speed-ups (over CPU only version): nucleotide model = up to 25x, codon model = up to 50x	Yes
Campaign	An open-source library of GPU-accelerated data clustering algorithms and tools	K-means (and Kps-means, a K-means variant for GPUs with parallel sorting for improved performance), K-medoids, K-centers (a K-medoids variant in which medoids are placed only once according to a heuristic), Hierarchical clustering and Self-organizing map	Single only
CUDASW++	Open source software for Smith-Waterman protein database searches on GPUs	Parallel search of Smith-Waterman database	Yes
CUSHAW	Parallelized short read aligner	Parallel, accurate long read aligner for large genomes	Yes
G-BLASTN	GPU-accelerated nucleotide alignment tool based on the widely used NCBI-BLAST	Blastn and megablast modes of NCBI-BLAST	Single only
GPU-BLAST	Local search with fast k-tuple heuristic	Protein alignment according to BLASTP	Single only
mCUDA-MEME	Ultrafast scalable motif discovery algorithm based on MEME	Scalable motif discovery algorithm based on MEME	Yes
MUMmer GPU	High-throughput local sequence alignment program	Aligns multiple query sequences against reference sequence in parallel	TBD
NVBIO	NVBIO is an open source C++ library of reusable components designed to accelerate bioinformatics applications using CUDA.	Data structures, algorithms, and utility routines useful for building complex computational genomics applications on CPU-GPU systems	Yes

NVBowtie	A largely complete implementation of the Bowtie2 aligner on top of NVBIO	Good coverage of Bowtie2 features and comparable quality results	Yes
PEANUT	Read mapper for DNA or RNA sequence reads to a known reference genome.	Achieves supreme sensitivity and speed compared to current state of the art read mappers like BWA MEM, Bowtie2 and RazerS3. PEANUT reports both only the best hits or all hits.	Single only
REACTA	A modified version of GCTA with improved computational performance, support for Graphics Processing Units (GPUs), and additional features. The purpose of REACTA is to quantify the contribution of genetic variation to phenotypic variation for complex traits.	GRM creation, REML analysis, Regional Heritability (including multi-GPU)	Yes
SeqNFind	SeqNFind® is a powerful tool suite that addresses the need for complete and accurate alignments of many small sequences against entire genomes utilizing a unique hardware/software cluster system for facilitating bioinformatics research in Next Generation sequencing and genomic comparisons.	Hardware and software for reference assembly, blast, SW, HMM, de novo assembly	Yes
SOAP3	GPU-based software for aligning short reads with a reference sequence. It can find all alignments with k mismatches, where k is chosen from 0 to 3	Short read alignment tool that is not heuristic based; reports all answers	Yes
SOAP3-dp	SOAP3-dp: Ultra-fast GPU-based tool for short read alignment via index-assisted dynamic programming	Borrows-Wheeler Transformation, Dynamic Programming	Yes
UGENE	Opensource Smith-Waterman for SSE/CUDA, Suffix array based repeats finder and dotplot	Fast short read alignment	Yes
WideLM	Fits numerous linear models to a fixed design and response	Parallel linear regression on multiple similarly-shaped models	Yes

Materials Science

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
gWL-LSMS	Materials code for investigating the effects of temperature on magnetism	Generalized Wang-Landau method	Yes
PEtot	First principles materials code that computes the behavior of the electron structures of materials	Density functional theory (DFT) plane wave pseudopotential calculations	Yes
QMCPACK	Solves the many-body Schrodinger equation for electronic structures using a quantum Monte Carlo method	Main features	Yes
Quantum Espresso/ PWscf	An integrated suite of computer codes for electronic structure calculations and materials modeling at the nanoscale	PWscf package: linear algebra (matrix multiply), explicit computational kernels, 3D FFTs	Yes
VASP	First principles materials code that computes the behavior of electronic structures based on quantum theory	Blocked Davidson and RMM-DIIS iterative solvers (ALGO=NORMAL, FAST, & VERYFAST), as well as hybrid Hartree-Fock DFT functionals including exact exchange	Yes

Molecular Dynamics

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Abalone	Molecular modeling program focused on molecular dynamics of biopolymers. In addition, it can interact with external quantum chemical programs	Molecular graphics, Molecular model building, Geometry optimization, Molecular dynamics simulations, Hybrid Monte Carlo, Adaptive Temperature Hybrid Monte Carlo, Replica exchange, Implicit and explicit water models, Interaction with quantum programs, GPU acceleration	Single only

ACEMD	GPU simulation of molecular mechanics force fields, implicit and explicit solvent	Written for use only on GPUs	Yes
AMBER	Suite of programs to simulate molecular dynamics on biomolecule	PMEMD Explicit Solvent and GB Implicit Solvent	Yes
CHARMM	MD package to simulate molecular dynamics on biomolecule	Implicit (5x), Explicit (2x) Solvent via OpenMM, now ported natively to GPUs	Yes
DESMOND	High-speed molecular dynamics simulations of biological systems	The code uses novel parallel algorithms and numerical techniques to achieve high performance and accuracy	Yes
ESPreSo	Highly versatile software package for performing and analyzing scientific Molecular Dynamics many-particle simulations of coarse-grained atomistic or bead-spring models as they are used in soft-matter research in physics, chemistry and molecular biology.	Hydrodynamic / Electrokinetic forces P3M electrostatics	Yes
Folding@Home	A distributed computing project that studies protein folding, misfolding, aggregation, and related diseases	Powerful distributed computing molecular dynamics system; implicit solvent and folding	Yes
GPUgrid.net	A distributed computing project that uses GPUs for molecular simulations	High-performance all-atom biomolecular simulations; explicit solvent and binding	Yes
GROMACS	Simulation of biochemical molecules with complicated bond interactions	Implicit (5x), Explicit (2x) Solvent	Yes
HALMD	Large-scale simulations of simple and complex liquids	Simple fluids and binary mixtures (pair potentials, high-precision NVE and NVT, dynamic correlations)	Single only
HOOMD-Blue	Particle dynamics package written grounds up for GPUs	Written for use only on GPUs	Yes
LAMMPS	Classical molecular dynamics package	Lennard-Jones, Gay-Berne, Tersoff, and dozens more potentials	Yes
NAMD	Designed for high-performance simulation of large molecular systems	Full electrostatics with PME and most simulation features; 100M atom capable	Yes
OpenMM	Library and application for molecular dynamics for HPC with GPUs	Implicit and explicit solvent, custom forces	Yes
SOP-GPU	SOP-GPU package, where SOP stands for the Self Organized Polymer Model fully implemented on a GPU, is a scientific software package designed to perform Langevin Dynamics Simulations of the mechanical or thermal unfolding, and mechanical indentation of large biomolecular systems in the experimental subsecond (millisecond-to-second) timescale.	Langevin dynamics simulations using the coarse-grained Self Organized Polymer (SOP) model, Multiple simulation trajectories can be performed simultaneously on a single GPU, Calpha and Calpha-Cbeta models are supported, Simulations of protein forced unfolding, Novel simulations of nanoindentation in silico, Support for hydrodynamic interactions, Up to ~100 ms of simulation time per day, Systems of up to 1,000,000 amino-acids (on GPUs with 6GB or great memory)	Single only

Quantum Chemistry

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Abinit	Allows to find total energy, charge density and electronic structure of systems made of electrons and nuclei within DFT	Local Hamiltonian, non-local Hamiltonian, LOBPCG algorithm, diagonalization/orthogonalization	Yes
ACES III	Takes best features of parallel implementations of quantum chemistry methods for electronic structure	Integrating scheduling GPU into SIAL programming language and SIP runtime environment	Yes
ADF	Density Functional Theory (DFT) software package that enables first-principles electronic structure calculations	Geometry optimizations and frequency calculations with GGA functionals	Yes
BigDFT	Implements density functional theory by solving the Kohn-Sham equations describing the electrons in a material	DFT; Daubechies wavelets, part of Abinit	Yes

CASTEP [In development]	CASTEP is a leading code for calculating the properties of materials from first principles. Using density functional theory, it can simulate a wide range of properties of materials proprieties including energetics, structure at the atomic level, vibrational properties, electronic response properties etc.	TBD	Yes
CP2K	Program to perform atomistic and molecular simulations of solid state, liquid, molecular and biological systems	DBC SR (space matrix multiply library)	Yes
GAMESS-UK	The general purpose ab initio molecular electronic structure program for performing SCF-, DFT- and MCSCF-gradient calculations	(ss/ss) type integrals within calculations using Hartree-Fock ab initio methods and density functional theory. Supports organics and inorganics.	Yes
GAMESS-US	Computational chemistry suite used to simulate atomic and molecular electronic structure	Libqc with Rys Quadrature Algorithm, Hartree-Fock, MP2 and CCSD	Yes
Gaussian [In development]	Predicts energies, molecular structures, and vibrational frequencies of molecular systems	Joint NVIDIA, PGI and Gaussian collaboration	Yes
GPAW	Real-space grid DFT code written in C and Python	Electrostatic poisson equation, orthonormalizing of vectors, residual minimization method (rmm-diis)	Yes
LATTE	Density matrix computations	CU_BLAS, SP2 Algorithm	Yes
MOLCAS	Methods for calculating general electronic structures in molecular systems in both ground and excited states	CU_BLAS	Single only Additional GPU support coming in Version 8
MOPAC2012	Semiempirical Quantum Chemistry	Pseudodiagonalization, full diagonalization, and density matrix assembling via Magma libraries	Single only
NWChem	Calculations	Triples part of Reg-CCSD(T), CCSD and EOMCCSD task schedulers	Yes
Octopus	Used for ab initio virtual experimentation and quantum chemistry calculations	Full GPU support for ground-state, real-time calculations; Kohn-Sham Hamiltonian, orthogonalization, subspace diagonalization, poisson solver, time propagation	TBD
ONETEP [In Development]	ONETEP (Order-N Electronic Total Energy Package) is a linear-scaling code for quantum-mechanical calculations based on density-functional theory	TBD	Yes
Q-CHEM	Computational chemistry package designed for HPC clusters	Various features including RI-MP2	Single Only
QUICK	QUICK is a GPU-enabled ab initio quantum chemistry software package	Running Hartree-Fock and DFT energy on GPU, Supports s, p, d, f orbitals on energy calculation, HF gradient with s,p,d orbital support, GPU-based ERI generator	Yes
TeraChem	Quantum chemistry software designed to run on NVIDIA GPU	Full GPU-based solution; Performance compared to GAMESS CPU version	Yes

Visualization and Docking

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Amira®	A multifaceted software platform for visualizing, manipulating, and understanding Life Science and bio-medical data	3D visualization of volumetric data and surfaces	Single only
BINDSURF	A virtual screening methodology that uses GPUs to determine protein binding sites	Allows fast processing of large ligand databases	Single only
BUDE	Molecular docking program	Empirical Free Energy Force field	Single only

FastROCS	Molecule shape comparison application	Real-time shape similarity searching/ comparison	Yes
Molegro Virtual Docker 6	Method for performing high accuracy flexible molecular docking	Energy grid computation, pose evaluation and guided differential evolution	Single only
PaPaRa 2.0	A Vectorized Algorithm for Probabilistic Phylogeny-Aware Alignment Extension	Up to 15-fold run time improvements by deploying SIMD vector intrinsics to accelerate the alignment kernel	Single only
PIPER Protein Docking	Protein-protein docking program	Molecule docking	TBD
PyMol	User-sponsored molecular visualization system on an open-source foundation	Lines: 460% increase Cartoons: 1246% increase Surface: 1746% increase Spheres: 753% increase Ribbon: 426% increase	Single only
VEGA ZZ	Molecular Modeling Toolkit	Virtual logP, molecular surface values	Single only
VMD	Visualization and analyzing large bio-molecular systems in 3-D graphics	High quality rendering, large structures (100M atoms), analysis and visualization tasks, multiple GPU support for display of molecular orbitals	Yes

NUMERICAL ANALYTICS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Accelereyes- ArrayFire	Comprehensive GPU function library	Hundreds of functions for math, signal/ image processing, statistics, and more.	Yes
HiPLAR	3High Performance Linear Algebra in R	Supports GPU and multi-core platforms, compatible with legacy R code, no new data types or operators, auto-tuning, support for R Matrix package	Yes (for algebra functions via Magma 1.5 or later)
Mathematica Wolfram	A symbolic technical computing language and development environment	Development environment for CUDA and OpenCL. GPU acceleration for Wolfram Finance Platform	Yes
MATLAB - Mathworks	GPU acceleration for MATLAB (high-level technical computing language)	Support for 200+ of most used MATLAB functions (incl. Signal Processing, Image Processing, Communications Systems, etc)	Yes
NMath Premium	GPU-accelerated math and statistics for .NET, automatically detects the presence of a CUDA-enabled GPU at runtime and seamlessly redirects appropriate computations to it.	Automatically offloads computations to the GPU	Single only

PHYSICS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
BQCD	Lattice quantum chromodynamics application, used for nuclear ad high energy physics calculations.	Wilson-clover fermion linear solver	yes
Chemora	Chemora is a system for performing simulations of systems described by differential equations running on accelerated computational clusters	Chemora embeds the equations' computational kernels into dynamically compiled loop nests shaped for input size and GPU structure	Yes
Chroma	Lattice Quantum Chromodynamics (LQCD)	Wilson-clover fermions, Krylov solvers, Domain-decomposition	Yes
CPS	Lattice quantum chromodynamics application, used for nuclear ad high energy physics calculations.	Wilson, domain-wall and Möbius fermion linear solvers	Yes
ENZO	3D block-structured AMR code for cosmological structure formation	Accelerated magneto hydrodynamics solvers	Yes
GTC	Simulates microturbulence and transport in magnetically confined fusion plasma	Electron push and shift (accounting for >80% of run time)	Yes

GTC-P	A development code for optimization of plasma physics. Full science and data sets are included, but in a simplified form to allow performance testing and tuning	Optimized with CUDA. OpenACC development underway	Yes
GTS	Simulates microturbulence and the motion of charged particles and interactions in fusion plasma	Push and shift for both electron and ion dynamics	Yes
HACC	Simulates N-Body Astrophysics	This code has been optimized with CUDA runs in full production mode	Yes
MILC	Lattice Quantum Chromodynamics (LQCD) codes simulate how elemental particles are formed and bound by the "strong force" to create larger particles like protons and neutrons	Staggered fermions, Krylov solvers, Gauge-link fattening	Yes
OSIRIS	Simulates Plasma Physics including Laser interaction	2 dimensions of the particle push have been optimized with CUDA. Additional optimization is being planned with OpenACC	Yes
PIConGPU	A relativistic Particle-in-Cell code that describes the dynamics of a plasma by computing the motion of electrons and ions subject to the Maxwell-Vlasov equation.	Simulation of laser-wakefield acceleration of electrons	Yes
QUDA	Library for Lattice QCD calculations using GPUs	CUDA supports the following fermion formulations: Wilson, Wilson-clover, Twisted mass, Improved staggered (asqtad or HISQ) and Domain wall	Yes
RAMSES	Simulates astrophysical problems on different scales (e.g. star formation, galaxy dynamics, cosmological structure formation)	CUDA acceleration is applied for radiative transfer for reionization, and the hydrodynamic solver using AMR	Yes
XGC	Simulates edge effects for MHD plasma physics	The particle push portion has been optimized with CUDA and is being fully optimized with OpenACC and CUDA	Yes

Safety & Security

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	MULTI-GPU SUPPORT
Herta Security - BioSurveillance NEXT, BioFinder	Real time facial recognition and forensic alerts against multiple watchlists	Supports crowded scenes, difficult lighting, faster than real-time analysis, partial face concealment	Yes
Intuvision	Video Analytics	Object recognition and change detection	Yes
Mi-Acclib 2.0.1	Accelerated libraries which encompasses high speed multi-algorithm search engines, data security engine and also video analytics engines for text processing, encryption/ decryption and video surveillance respectively.	Text Processing : Exact Match, Approximate\Similarity Text, Wild Card, MultiKeyword and MultiColumnMultiKeyword, etc Data Security: Accelerated Encryption/ Description for AES-128 Vide Analytics: Accelerated Intrusion Detection Algorithm	Yes
MotionDSP - Ikena Forensic Pro, Ikena ISR, Ikena WAMI	Real-time Image Processing and Computer Vision software for Full Motion Video and Wide Area Imagery exploitation	Real-time super-resolution-based video fidelity improvement, geospatial image processing, and CV detection and tracking	Yes
NEC NeoFace® Watch	Face recognition for real-time video surveillance and offline search compared against multiple watch-lists.	Detects & recognizes multiple faces simultaneously in crowds and variable lighting, scales to more cameras, larger face databases	Yes
NerVve - Visual Search Solution (NVSS)	Video / Image Search and Analysis	Video and Image content search	Yes

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