

FY2008

THE ERA OF
VISUAL COMPUTING
LETTER TO NVIDIA STOCKHOLDERS



THE ERA OF VISUAL COMPUTING

A Letter from Jen-Hsun Huang, President, CEO, and Co-Founder

TO OUR STOCKHOLDERS

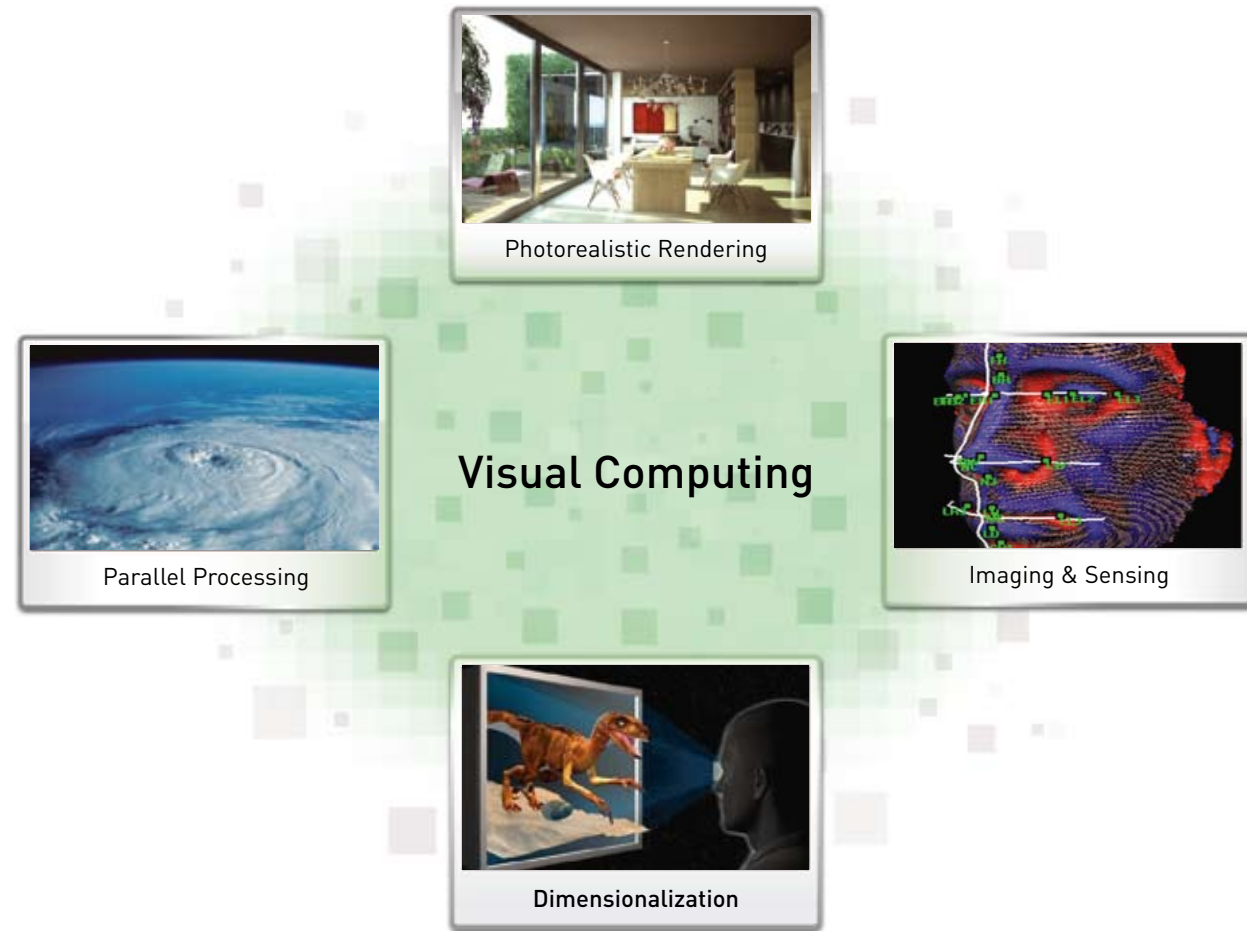
Why is a picture worth a thousand words?

The answer lies in the immense power of the visual cortex, the amazing part of your brain that enables sight, enhances understanding, and ignites emotion—a superhighway between you and the world.

Have you noticed that nearly everything from cars to phones to TVs to PCs have better and better high-resolution displays? Technology is enabling our world to become more visual than ever. Pixels flash vibrant colors at the speed of light. Interactive experiences are moving to 3D. The Internet, with social networking and content sharing, is creating a world that communicates visually as much as verbally.

Color spirals
by NVArt entrant
Václav Pajkrt

Digital fractal structures
burst to life in the hands
of a creative 3D artist



Consumers are hungry for all things visual—photos, video, games, online maps, rich user interfaces—and they have high expectations for wonderful and surprising visual experiences.

As the world leader in visual computing technologies, these are exciting times for NVIDIA. And we're just getting started.

Welcome to the Era of Visual Computing.

The GPU – The Visual Computing Processor

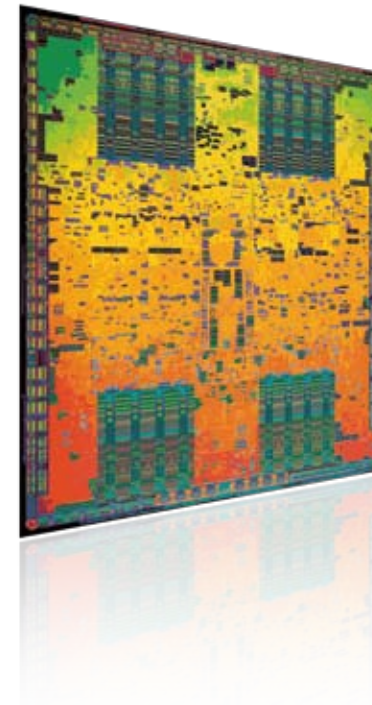
The GPU, which was invented by NVIDIA, is at the center of this new era. It is a very powerful parallel-computing processor that translates complex computer programs into beautiful images. NVIDIA GPUs are some of the most complex processors ever built, with up to 128 cores and soon reaching over a billion transistors. Each new generation of GPUs is the result of several thousand man-years of engineering and hundreds of millions of dollars.

The GPU needs to be immensely powerful because humans have a highly-acute visual system. And, unlike spreadsheet, word processing, and file management tasks that the CPU performs “as soon as possible,” the GPU must deliver visual experiences that are “instantaneous and real-time.”

The GPU needs to be immensely powerful because humans have a highly-acute visual system.

The GPU is responsible for the amazing visual experiences that are possible on NVIDIA-powered PCs, notebooks, workstations, and game consoles. In the near future, this level of visual excellence will expand into an even wider array of devices—including next-generation phones and navigational systems.

Recently, we invented CUDA, a technology that makes the GPU even more impressive, capable of general-purpose parallel-computing tasks. How would you like to edit a video as quickly as you play a video game? Or prepare a high-definition movie for your iPod in minutes rather than hours? Now you can.



A modern GeForce GPU has approximately 1.2 billion transistors and is the most complex parallel processor in the world

The CUDA Revolution Begins

CUDA is a software and GPU architectural breakthrough. The invention of CUDA makes it possible to use the many processor cores (and eventually thousands of cores) in a GPU to perform general-purpose mathematical calculations—in essence, to use a GPU for more than graphics.

CUDA is accessible to all programmers as it is based on the industry-standard C programming language.

This general-purpose programming architecture opens up CUDA GPUs to accelerate all types of applications—from transcoding a high-definition movie in minutes, to performing image processing of seismic data some two hundred times faster than before, to helping you see a breathtaking 3D ultrasound image of your unborn child.

Since its launch, tens of thousands of software developers, scientists, students, game developers, and researchers across the world have started programming with CUDA, realizing it holds the potential to accelerate applications many times faster than a CPU alone.

The solution is faster processors, not more of them. And so it's very fortuitous that GPUs and CUDA have come along right about the time where we're hitting this tipping point.

John Michalakes
The National Center for Atmospheric Research

With CUDA, we have made our GPUs dramatically more flexible and valuable. And because CUDA is embedded in GeForce GPUs, which will ship in hundreds of millions of new PCs in just a few years, the CUDA parallel computing platform will have a massive installed base.

For a computing platform, a large installed base attracts software developers. And with lots of interesting software, our GeForce GPUs will become even more desirable to consumers.

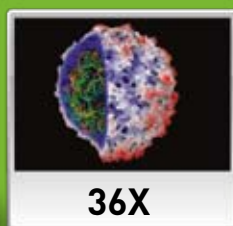
CUDA is one of our proudest achievements. It is one of the most significant inventions in our company's history and one that I believe will not only propel the field of visual computing forward, but also the computer industry as a whole.

CUDA EVERYWHERE



146X

Interactive visualization of volumetric white matter connectivity¹



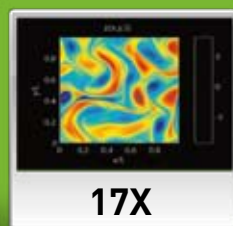
36X

Ionic placement for molecular dynamics simulation on GPU²



19X

Transcoding HD video stream to H.264 for portable video³



17X

Simulation in Matlab using .mex file CUDA function⁴



100X

Astrophysics N-body simulation⁵



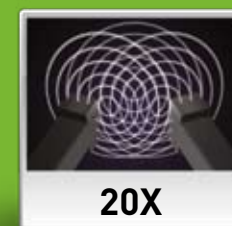
149X

Financial simulation of LIBOR model with swaptions⁶



47X

GLAME@lab: An M-script API for linear algebra operations on GPU⁷



20X

Ultrasound medical imaging for cancer diagnostics⁸



24X

Highly optimized object oriented molecular dynamics⁹



30X

Cmatch exact string matching to find similar proteins and gene sequences¹⁰

Here are some examples of speedup results using CUDA compared to previous approaches.

¹ "Interactive Visualization of Volumetric White Matter Connectivity in DT-MRI Using a Parallel-Hardware Hamilton-Jacobi Solver" by Won-Ki Jeong, P. Thomas Fletcher, Ran Tao, and Ross T. Whitaker

² "GPU Acceleration of Molecular Modeling Applications"

³ Video encoding test uses iTunes on CPU and Elemental on GPU running under Windows XP. CPUs tested were Intel Core 2 Duo 1.66GHz and Intel Core 2 Quad Extreme 3GHz. GPUs tested were GeForce 8800M on Gateway P-Series FX notebook, and GeForce 8800 GTS 512MB. CPUs and GeForce 8800 GTS 512 were run on Asus P5K-V motherboard (Intel G33-based) with 2GB DDR2 system memory. Based on an extrapolation of 1 min 50 sec 1280x720 HD movie clip

⁴ See http://developer.nvidia.com/object/matlab_cuda.html

⁵ "High-Performance Direct Gravitational N-body Simulations on Graphics Processing Units" by E.P.J. van den Heuvel (presentation)

⁶ LIBOR paper by Mike Giles and Su Xiaoke

⁷ "FLAG@lab: An M-script API for Linear Algebra Operations on Graphics Processors"

⁸ See <http://www.techniscanmedicalsystems.com>

⁹ "General Purpose Molecular Dynamics Simulations Fully Implemented on Graphics Processing Units" by Joshua A. Anderson, Chris D. Lorenz, and A. Traveset

¹⁰ "Fast Exact String Matching on the GPU" by Michael C. Schatz and Cole Trapnell (presentation)

The Optimized PC Design Movement

Consumers are demanding PCs that deliver richer graphics and beautiful visuals. To respond, PC manufacturers all over the world are no longer designing PCs based simply on the “speeds and feeds” of the CPU, but with the total user experience in mind.

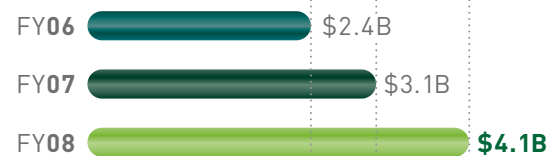
A PC should be designed and optimized for how the user intends to use it. The more visual the experience, the more important the investment in the GPU

becomes. And for large segments of the marketplace like workstations, gaming PCs, video/photo editing PCs, media centers, and lifestyle PCs, the visual experience is front-and-center and cannot be compromised. The GPU is no longer a luxury or merely a “nice-to-have.”

All over the world, we see the movement toward usage-optimized PC design taking hold and increasing in momentum. We call this the “Optimized PC” design movement. This trend, combined with growing numbers of visually-rich applications and receptive consumers with high expectations, is driving consumption of GPUs upward and contributed to our record year in fiscal 2008.

Annual revenue increased in fiscal 2008 to a record \$4.1 billion, an increase of 34 percent compared to \$3.07 billion in fiscal 2007. We also achieved back-to-back \$1 billion+ quarters for the first time ever. Our continued focus on improving business and operational processes drove our annual gross margin to a record 45.6 percent, a year-over-year increase of 320 basis points. Net income in fiscal 2008 increased to a record \$797.6 million, an increase of 78 percent compared to \$448.8 million in fiscal 2007.

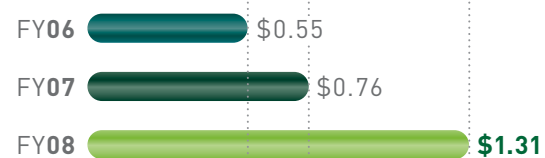
REVENUE



GROSS MARGIN



DILUTED EPS



A COMMITMENT TO HELPING PEOPLE AND THE PLANET

NVIDIA Gets Involved

Building Handicap Ramps

Reaching Out in India

Building an Outdoor Classroom

Employees Partner for a Cure

At our core, we believe that making a difference in the world is our most important purpose. We apply this philosophy to our work—creating amazing things that move people and enrich their lives. We also apply this philosophy in the communities around the world where we have offices. Whether it’s adopting a school in India or China, donating to a food bank in Europe, or revitalizing a school in Silicon Valley, our employees raise the bar each year with their level of commitment to giving back.



VISUALIZE GREEN

We are strengthening our commitment to the planet through initiatives to conserve natural resources. We are active members of the Electronics Industry Citizenship Coalition, the EPA Climate Leaders program, and the Carbon Disclosure Project. These initiatives give us better insight into our carbon footprint and help us minimize our impact on the planet.

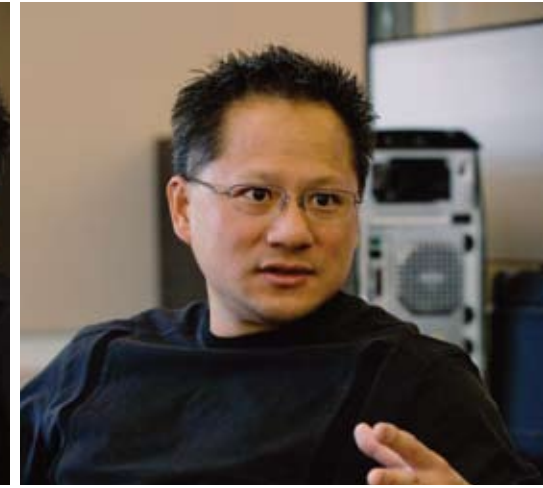
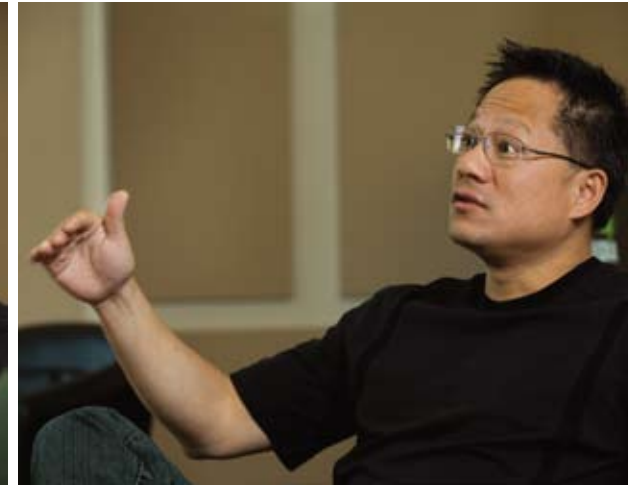
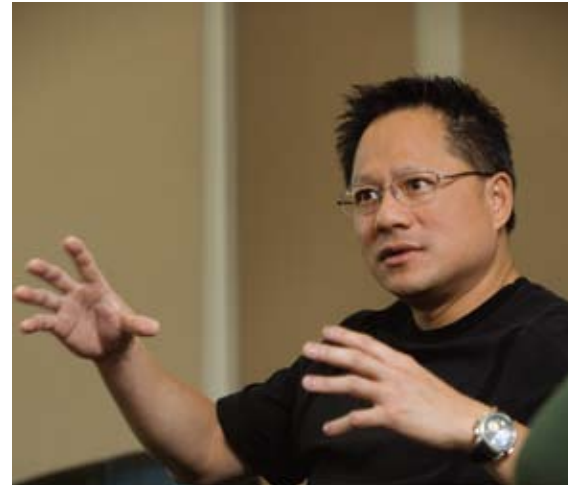
One of our most ambitious initiatives is to create innovative technologies that will allow computing centers to dramatically reduce the amount of power they consume. With Tesla, our CUDA supercomputing solution, we hope to increase computing efficiency by tens to hundreds of times. We are excited about the prospect of Tesla saving tons of carbon emission each year as we help move the world towards more environmentally-friendly computing.



Torn

by NVArt entrant
Monsit Jangariyawong

Unleashing his imagination,
a Thai artist grows these
experimental digital forms
inside his PC



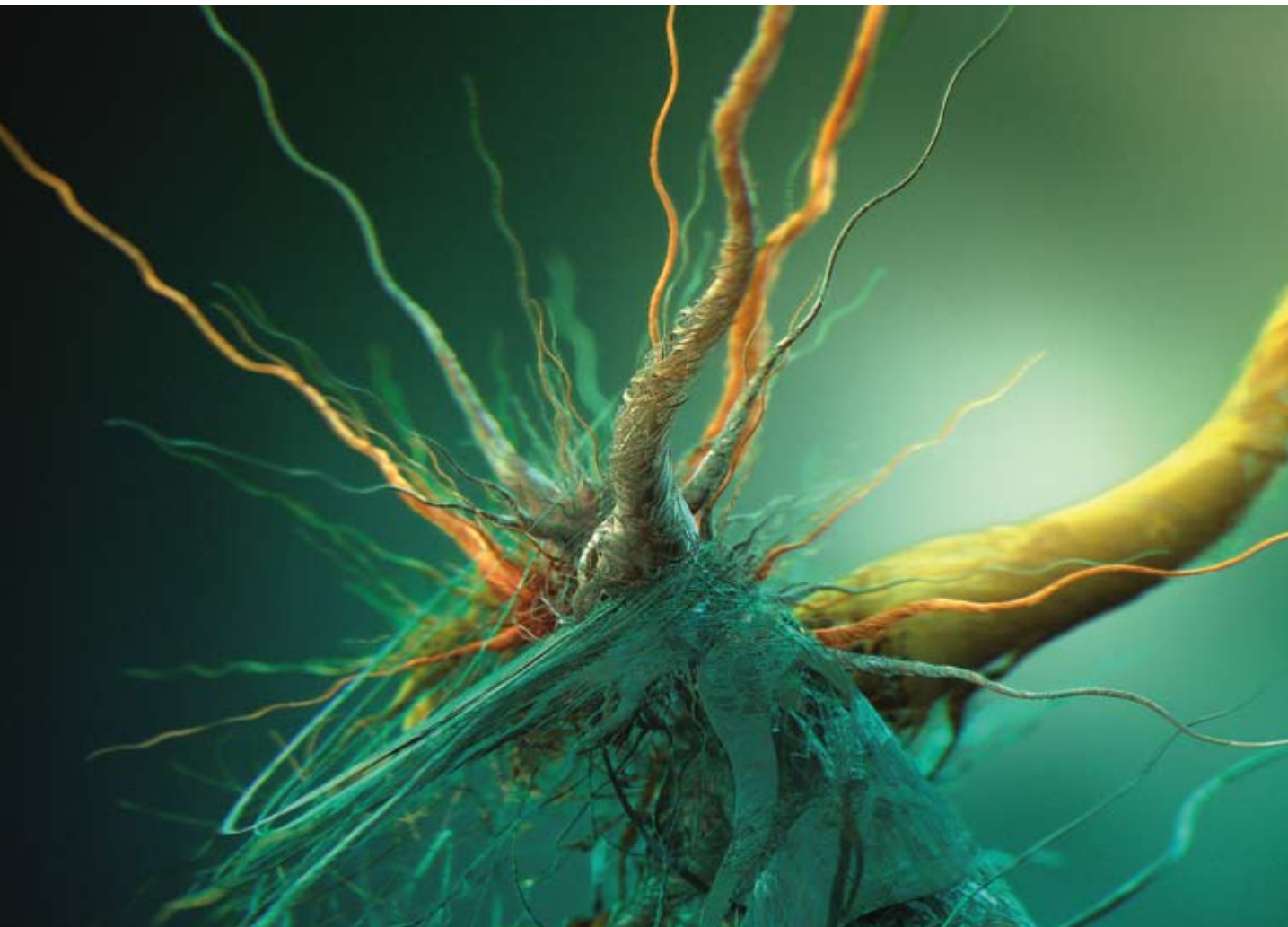
15 Years of Innovation

NVIDIA is celebrating its 15th anniversary this year. As I reflect on this milestone and look to the future, I could not be more proud of our passionate employees and their achievements. I thank them and their families for their dedication and ongoing contribution to the growth of our company.

I would also like to thank NVIDIA's ecosystem of customers, partners, and stockholders for their continued support and confidence.

The years ahead will be extraordinarily exciting. As the world leader in visual computing technologies, our company is more relevant than ever. We are passionate about the work we do and remain committed to continuing to create amazing, groundbreaking ideas and products that will surprise and delight you. And along the way, change the world.

Jen-Hsun Huang
NVIDIA Corporation
May 2008



(facing page) **1st place:**
Growth of Cubic Bacteria,
Václav Pajkrt, Czech
Republic

(bottom) **2nd place:**
Corner Fire, Brett Keyes,
Canada

(right) **3rd place:**
Leopardo, Najeeb El-Faith,
Saudi Arabia



NVArt contest winners

1st: Growth of Cubic Bacteria by Václav Pajkrt, Czech Republic

2nd: Corner Fire by Brett Keyes, Canada

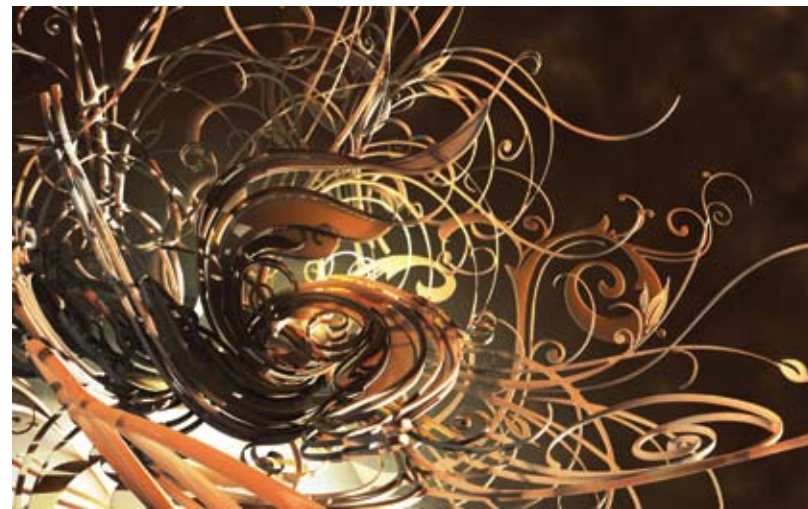
3rd: Leopardo by Najeeb El-Faith, Saudi Arabia

NVArt | NVIDIA & CGSociety

Amazing Creations

NVIDIA and CGSociety recently launched NVArt, a series of worldwide digital art competitions. The theme of the inaugural challenge was "Amazing Creations." Artists were invited to submit computer-generated imagery that could exist only in a virtual, imaginary world. The winning art was unveiled at a reception at the San Jose Museum of Art in February 2008.





(This page, clockwise from top)

Rest of Sinews, Václav Pajkrt

Torn, Monsit Jangariyawong

The birth of Crystal—The begin II, Alvin Tea

Many Ways, Ramiro Amilcar Fernandez

Honorable Mention

Fractalissimo by François Coulon, France

Many Ways by Ramiro Amilcar Fernandez, Argentina

The Birth of Crystal - The Begin II by Alvin Tea, New Zealand

Alien Biomechanical Shapes 00.2 - Alien Core by Maciej Frolow, Poland

Torn by Monsit Jangariyawong, Thailand

Coral Sim by Brett Keyes, Canada

Rest of Sinews by Václav Pajkrt, Czech Republic

Judges

Pascal Blanche, Ubisoft

Francisco Cortina, 3D Artist

Lorne Lanning, Oddworld Inhabitants

Stephan Martinere, Midway Games

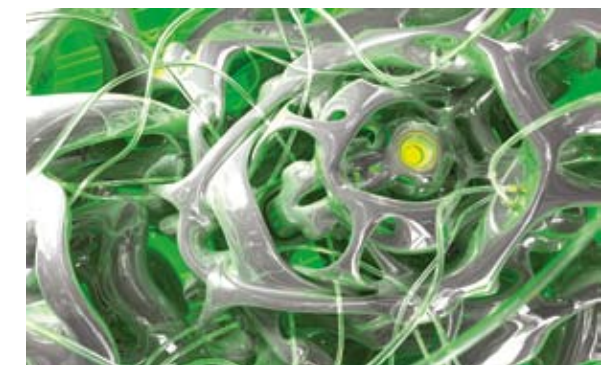
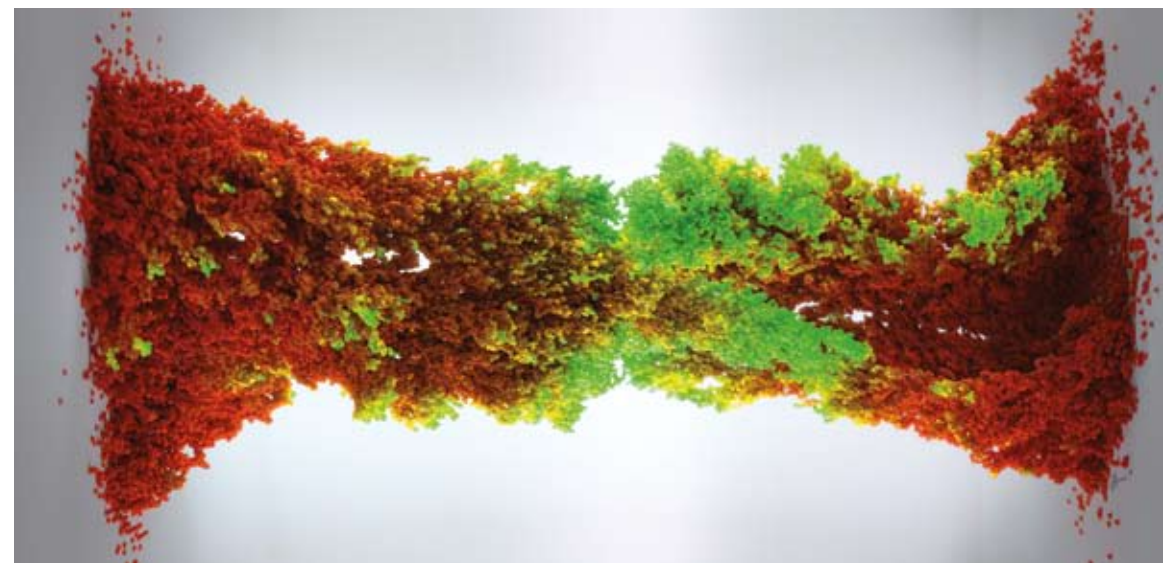
JoAnne Northrup, San Jose Museum of Art

Shelley Page, Dreamworks

Mark Snoswell, CGSociety

Steven Stahlberg, Androidblues

David Wright, NVIDIA



(top) **Fractalissimo**, François Coulon

(bottom left) **Coral Sim**, Brett Keyes

(bottom right) **Alien biomechanical shapes 00.2 - Alien Core**, Maciej Frolow

NVIDIA Corporation

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