

En**VISION**ing Parallel Computing Solutions



SAGIV**TECH**

10 January 2011

# What is the GTC ?

- NVIDIA's GPU Technology Conference brought together participants from 50 countries to hear technical sessions on a wide range of high-performance computing and scientific research subjects.
- Number of attendants: several thousand.

# GPU AS AN ENABLING TECHNOLOGY

# Emerging Companies Summit

- Five of the 60 startups participating in NVIDIA's Emerging Companies Summit (ECS) received a "One To Watch"
- Empulse GmbH – GPU-based database technology which analyzes billions of records in fractions of a second.
- Scalable Display - high-quality multi-projector display systems.

# Emerging Companies Summit

- Scaleform - 3D stereoscopic graphic user interface for Tegra-based mobile devices.
- Universal Robotics - self-learning robots that handle boxes in a near-limitless variety of shapes and sizes.
- VisiSonics - audio tools that accurately identify the source of sound in 3D space.

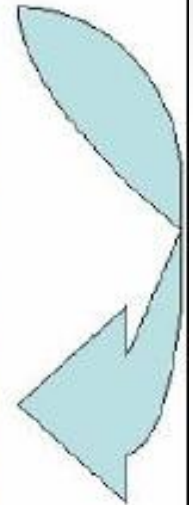
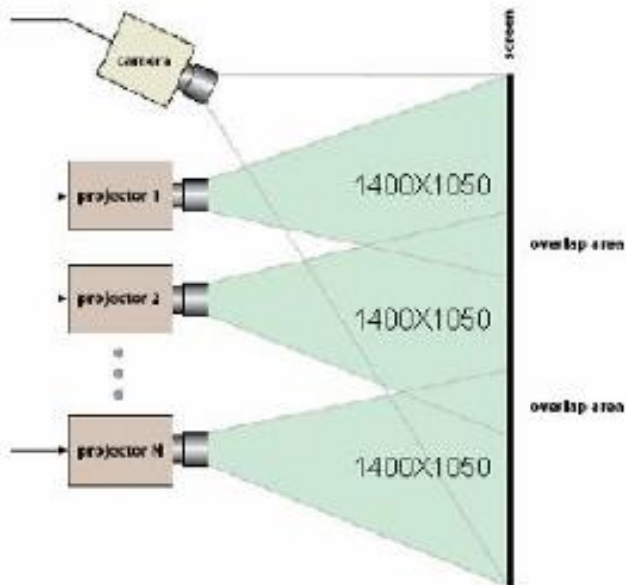
# Scalable Display

- Merging together a number of displays in to a single surface
- Create a single large display by using multiple projectors
- The problem: calibrating projectors is a time-consuming process
  - image-aligned
  - same color output from each projector

# The Scalable Solution

- With a camera in place, their software can see a multi-projector setup and immediately begin to calibrate the projectors by adjusting the image sent to each projector, rather than trying to adjust each projector.
- Benefit: a perfect single surface, corrected in the span of 6 seconds versus minutes and hours for adjusting the projectors themselves.

# The Scalable Solution



# Micoy's inflatable tent



# Operating on a beating heart !



**GPU IS EVERYWHERE !**

# GPU on Amazon

- Access NVIDIA® Tesla™ GPUs through an Amazon Elastic Compute Cloud (EC2) offering
- The cost of GPU systems is limiting their usage
- Applications ready for the Amazon Cluster
  - mental images' RealityServer®
  - Mathworks' MATLAB

# Announcing CUDA-Accelerated Parallel Computing Toolbox



*Daily Digital Digest:*  
[www.3Dnews.ru](http://www.3Dnews.ru)

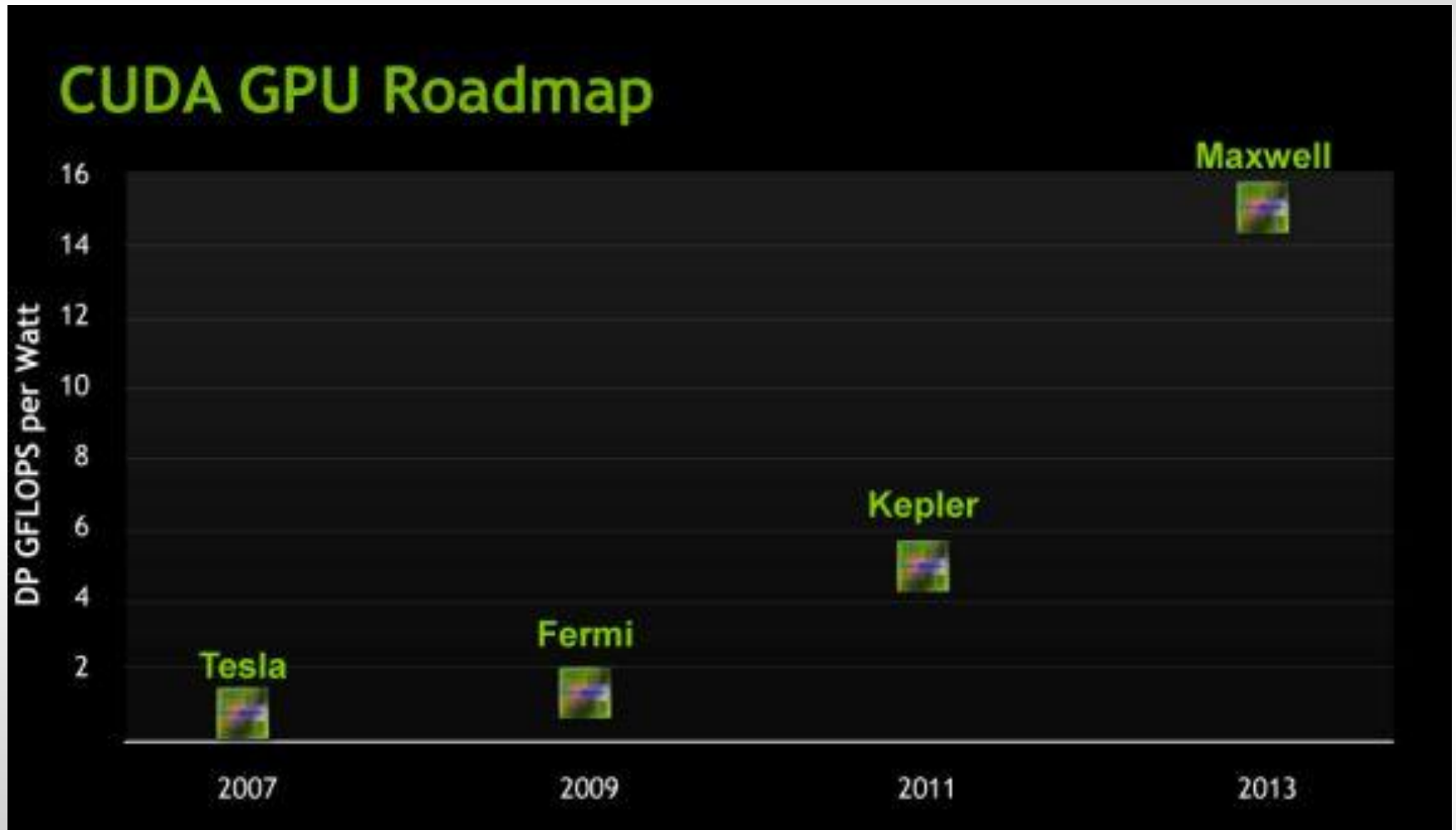
MATLAB®

# Supporting OpenCV

- "Computational power in Computer Vision has been a limiting factor not only for the use of recent powerful algorithms , but also has limited the creativity of algorithms people are willing to invent," Gary Bradski, founder of OpenCV. "
- With CUDA GPU acceleration, OpenCV algorithms will run 5-10 times faster
- When? Spring 2011.

**BELIEVE IN THE FUTURE ☺**

# Next Gen Architectures



# Kepler & Maxwell

- **Kepler** in 2<sup>nd</sup> half of 2011.
  - Should offer 3-4 times the amount of double precision floating point performance per watt of Fermi.
  - 28 nm process
- **Maxwell** in 2013.
  - Compared to Fermi it should offer 10-12 times the DP FP performance per watt
  - 3x increase over Kepler.
  - 22 nm process

# The Future: Mobile !



# HOT from CES!

- NVIDIA announced today that it is developing high-performance ARM-based CPUs.
- “Project Denver” - NVIDIA CPU running the ARM instruction set + NVIDIA GPU on the same chip.
- Microsoft’s announcement: bringing Windows to ultra-low power processors like ARM-based CPUs