



# Summary

ISLAM AKEF EBEID

# Lessons from SIGGRAPH

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- ▶ Benchmark my ideas and mindset
- ▶ Revealed the research frontiers in the field
- ▶ Networking
- ▶ Posters are a pool for immature ideas that we can use to build on

# Shogyo Mujo

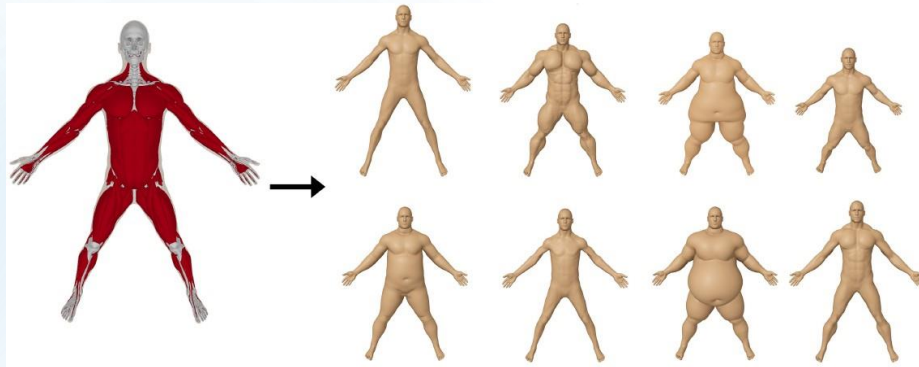
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- The Skull uses 360 degrees projection mapping



# Papers

# Computational Bodybuilding: Anatomically-based Modeling of Human Bodies



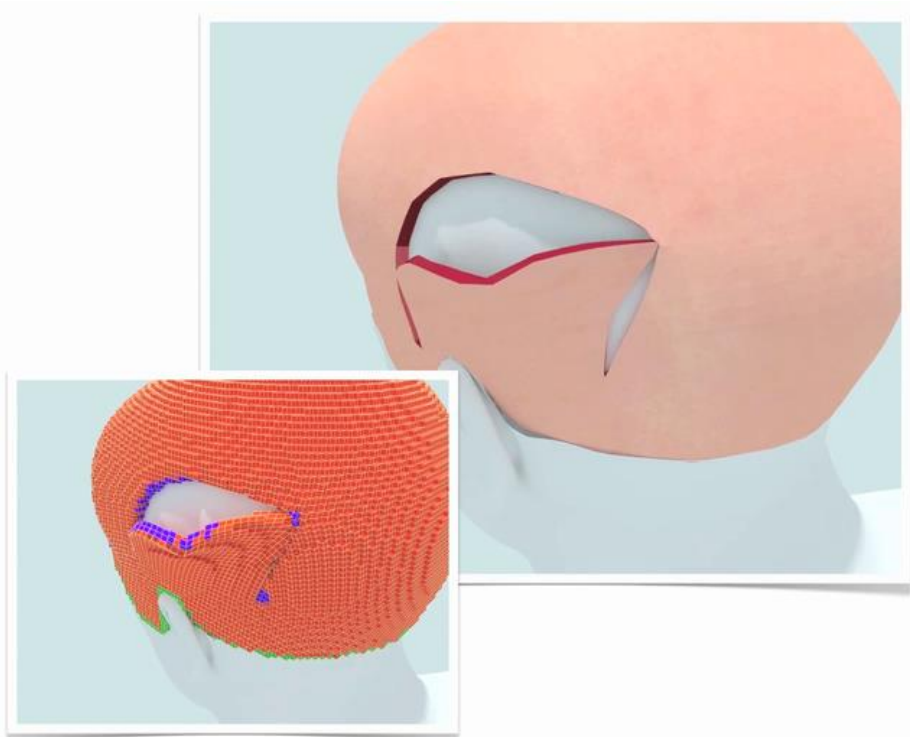
- ▶ Wide variety of human body shapes based on biological tissue growth of muscle and mass
- ▶ The simulation is not very accurate
- ▶ It opens a lot of areas in body growth simulations



# GRIDiron: An interactive authoring and cognitive training foundation for reconstructive plastic surgery procedures

6

- ▶ a tool to simulate plastic surgery operation done on soft tissues



# Trending topics from my presepective

- ▶ The Light Field Stereoscope: Used by Mark Bolas in his presentation, also A paper was published using the technique for HMD
- ▶ Adaptive Meshes: described and used in several papers, used by SapceX for their fluid simualtions

# Talks



## NVIDIA cuDNN

There several applications of Deep learning



## NVIDIA cuDNN

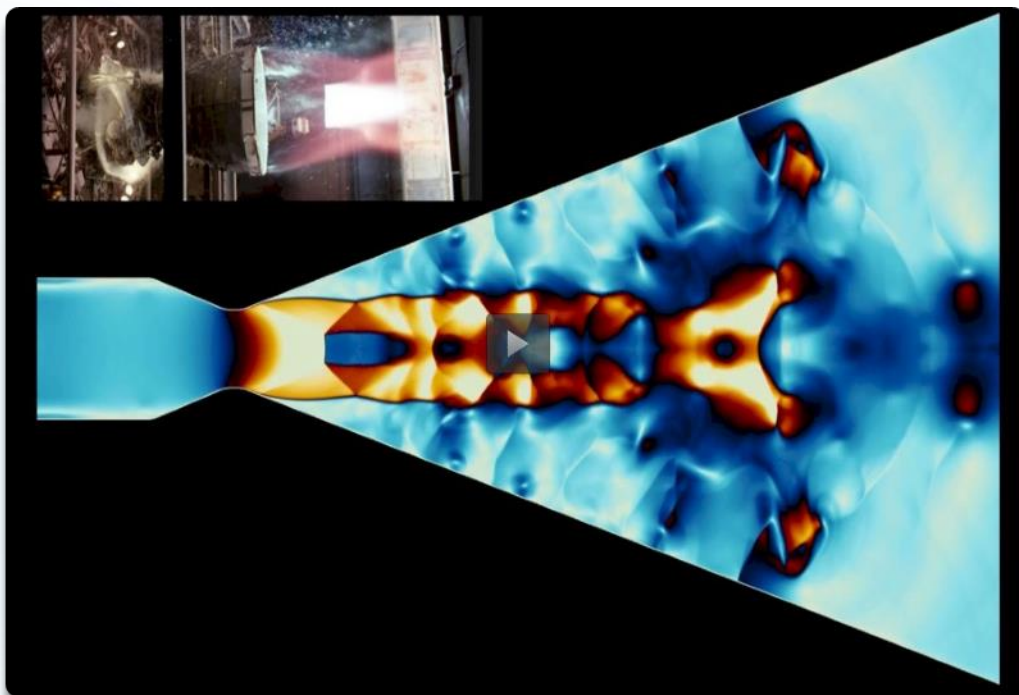
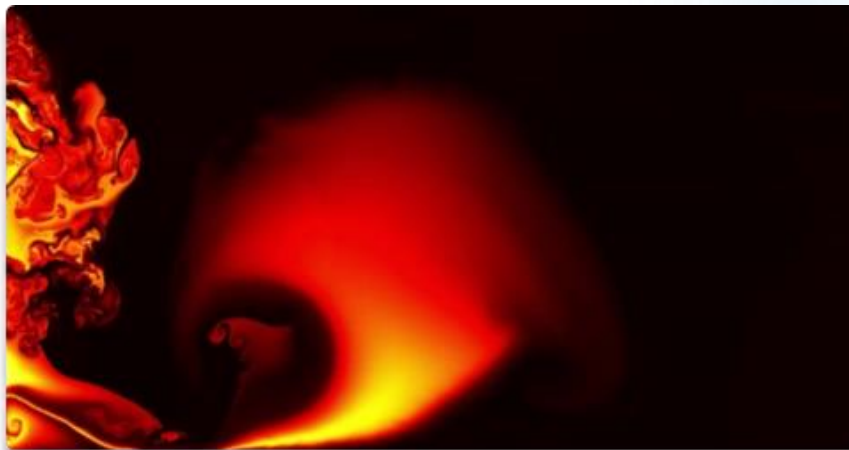
Training the network to answer strange questions like what a dog fish looks like



# SpaceX Mars Simulation

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- ▶ Simulating shockwaves generated by capsule entering the atmosphere
- ▶ Combustion simulation
- ▶ Adaptive Grids and compression
- ▶ They use Houdini





# Khronos Vulkan

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# Khronos WebGL

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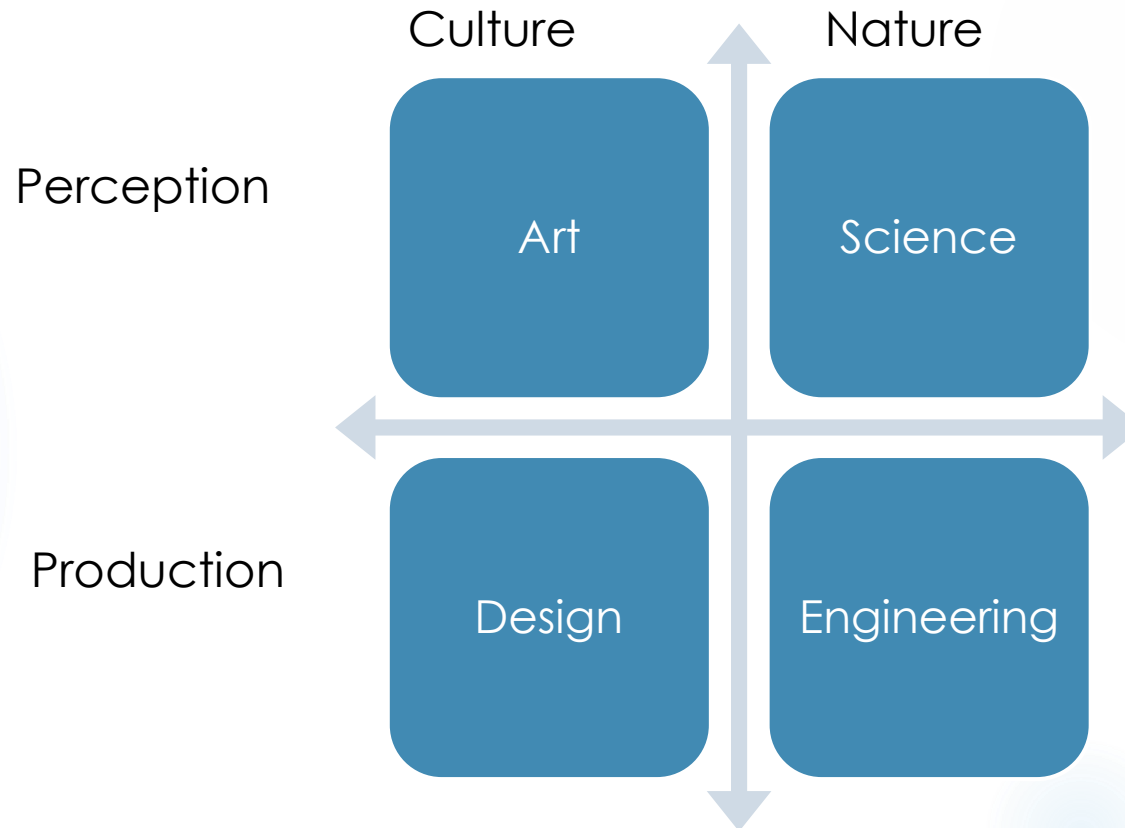
- ▶ <https://human.biodigital.com/index.html>



# Joi Ito – Keynote Speaker

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- ▶ Director of MIT Media Lab



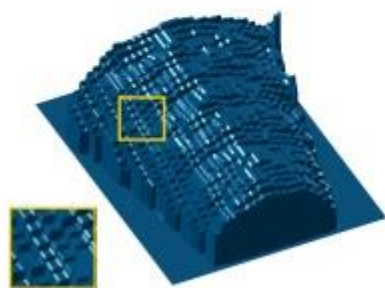
## Polarized 3D: Synthesis of Polarization and Depth cues for Enhanced 3D Sensing

Achuta Kadambi  
MIT Media Lab

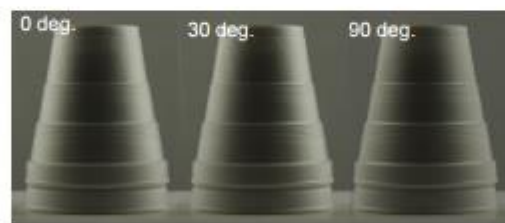
Vage Taamazyan  
Skoltech

Boxin Shi  
SUTD

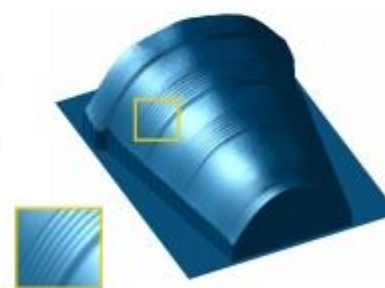
Ramesh Raskar  
MIT Media Lab



(a) Depth from Microsoft Kinect



(b) Three Photos using a Polarizer



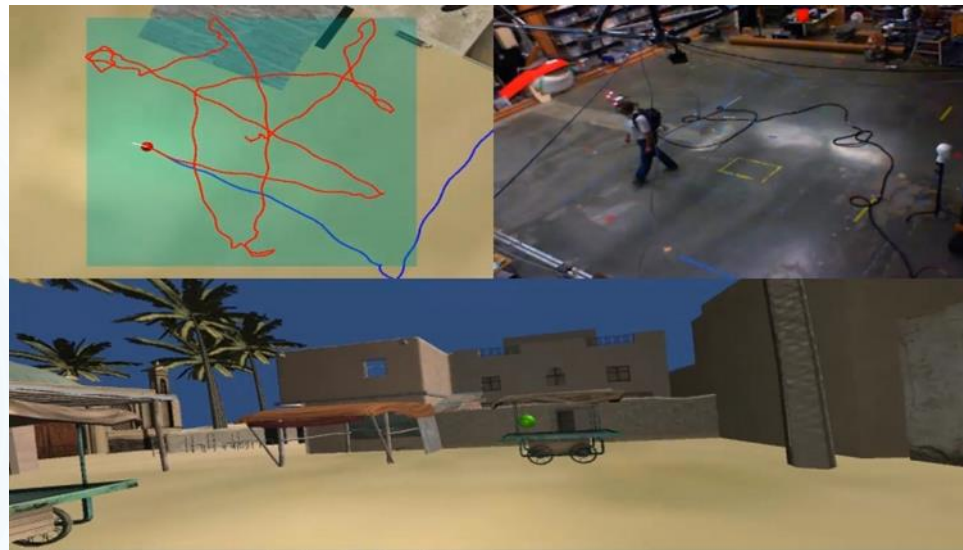
(c) Polarization Enhanced Depth

Fusing a polarization camera and a depth camera to enhance 3D reconstruction

Posters, VR Village, Emerging  
Technologies & Random Pictures

# Bryan Liked: Redirection Toolkit

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<https://vimeo.com/128641906>

# Bryan Liked: Multi-Projector Display System Calibration

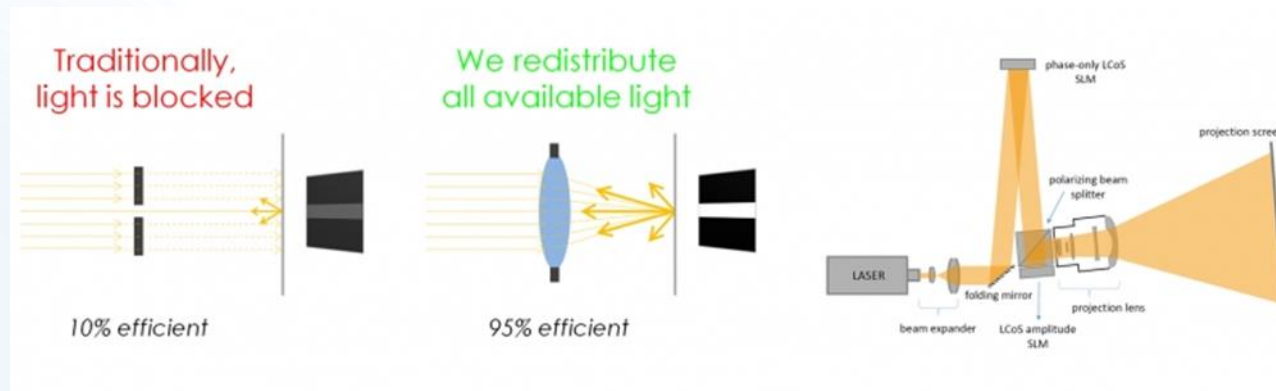
19



<https://vimeo.com/128641929>

# Bryan Liked: High-Brightness HDR Projector

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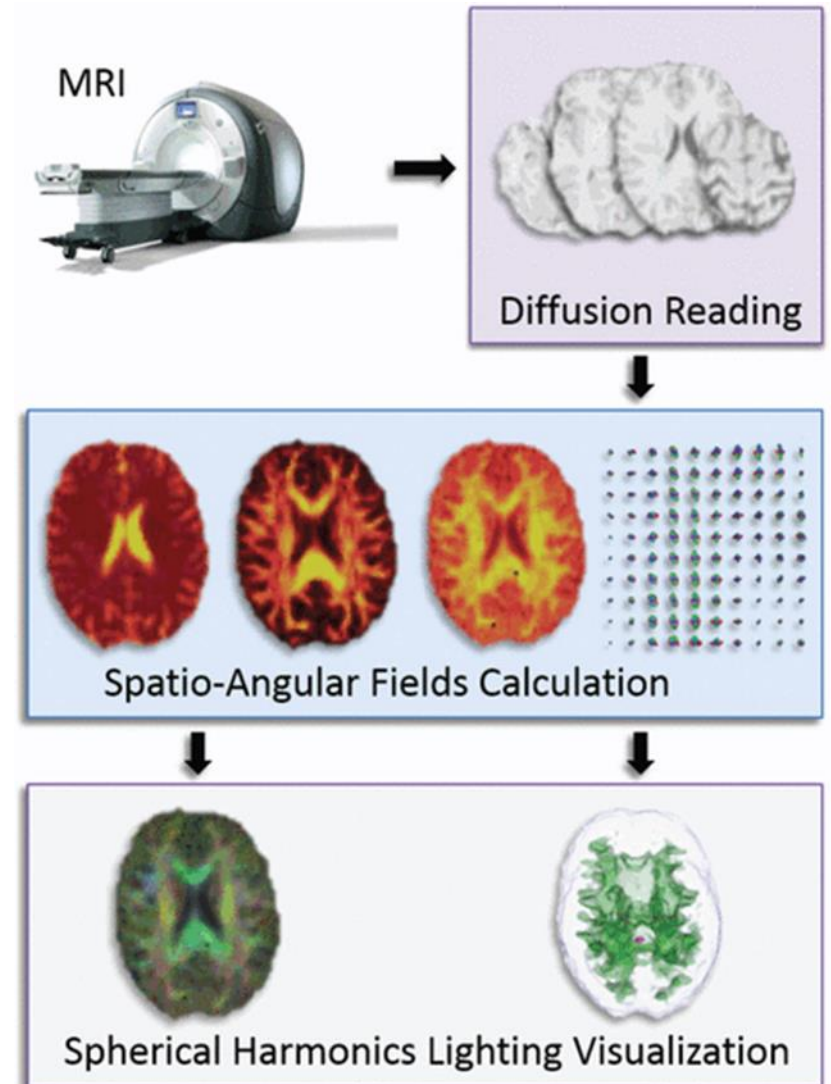
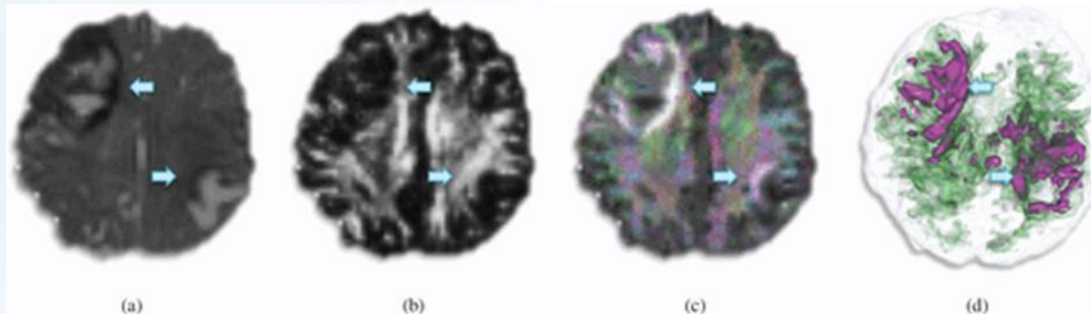


<http://s2015.siggraph.org/attendees/emerging-technologies/events/high-brightness-hdr-projection-using-dynamic-phase-modulation>



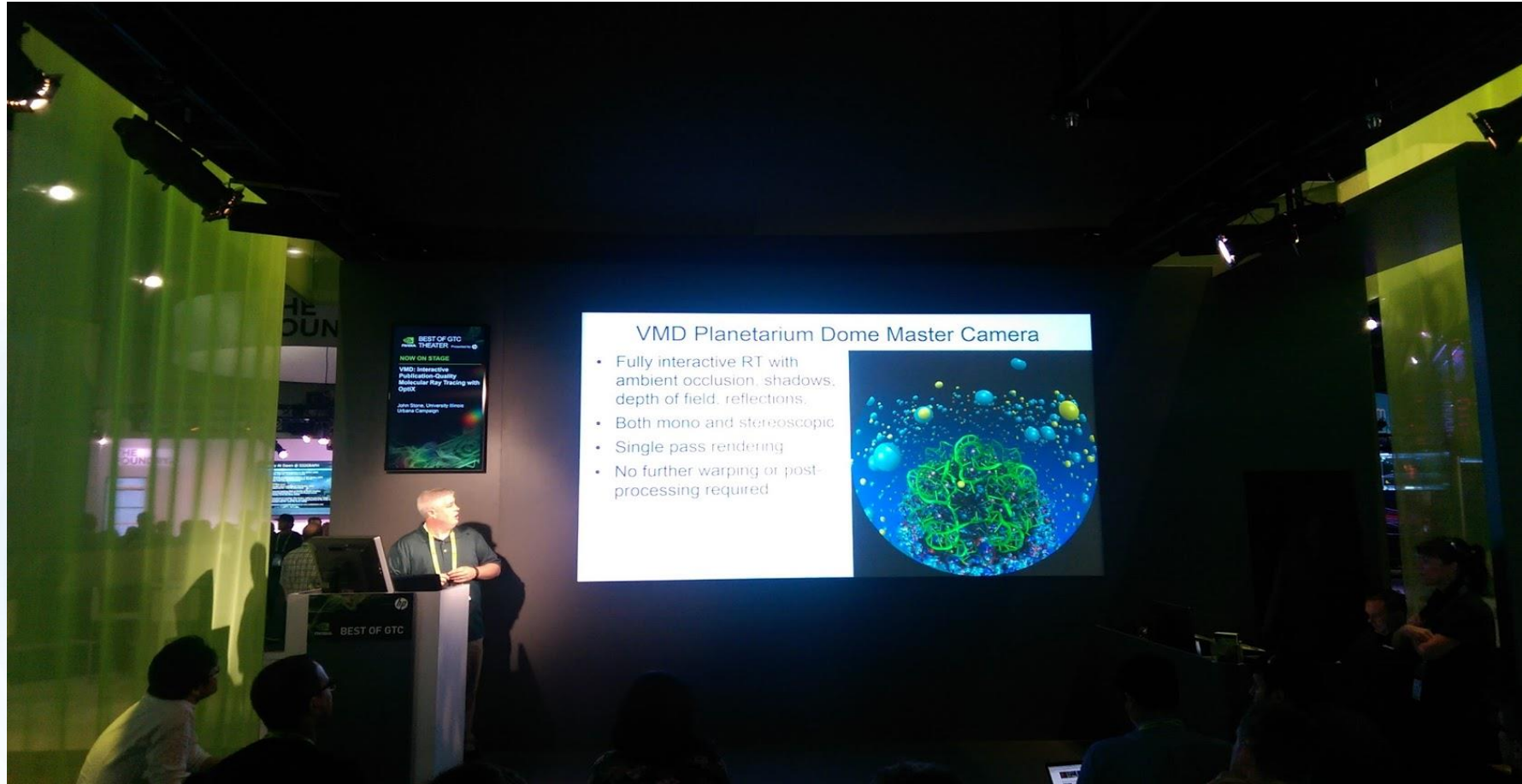
# Visualization of Brain Microstructure Through Spherical Harmonics Illumination of High Fidelity Spatio-Angular Fields

- Several presentations from IEEE SciVis 2014 conference



# VMD: Immersive Molecular Visualization and Interactive Ray Tracing for Domes, Panoramic Theaters, and Head Mounted Displays

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[http://www.ks.uiuc.edu/Research/vmd/publications/Stone\\_ImmersiveVisRT\\_BOF.pdf](http://www.ks.uiuc.edu/Research/vmd/publications/Stone_ImmersiveVisRT_BOF.pdf)





**SIGGRAPH**2015  
Xroads of Discovery

## **Wobble Strings: Spatially Divided Stroboscopic Effect for Augmenting Wobbly Motion of Stringed Instruments**

This system allows the rolling-shutter effect to be observed by the naked eye in real time using spatially divided stroboscopic projection. It produces a wobbly slow-motion effect by generating animation of sweep lines. Guitar players can monitor their strings' oscillation, and the audience can experience an artistic visual effect that corresponds with the guitar sound.

Shogo Fukushima  
Takefumi Hiraki  
Hiroki Yamamoto  
Hajime Kajita  
Takeshi Naemura  
The University of Tokyo







**SIGGRAPH2015**  
Xroads of Discovery

## Air Haptics: Displaying Feeling of Contact With AR Object Using Visuo-Haptic Interaction

A visuo-haptic augmented reality system that delivers pinching and pulling interactions with AR objects and characters. The system employs a cross-modal effect at the point where fingers feel an equivalent contacting sensation when pinching an object.

Yuki Ban  
Takuji Narumi  
Tomohiro Tanikawa  
Michitaka Hirose  
The University of Tokyo





**SIGGRAPH2015**  
Xroads of Discovery

## Moving Around in Virtual Space With Spider Silk

Move around in 3D space like a super human: jump high, glide, fly, teleport with spider silk, and more without position-tracking technologies.

Ping-Hsuan Han  
Da-Yuan Huang  
Hsin-Ruey Tsai  
Po-Chang Chen  
Chen-Hsin Hsieh  
Kuan-Ying Lu  
National Taiwan University

De-Nian Yang  
Academia Sinica

Yi-Ping Hung  
National Taiwan University

















