High Dynamic Range Imaging for Artists

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Zap Andersson
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Course Abstract:

This course is intended to aid in the practical application of high dynamic range imaging techniques. This course will cover a brief overview of HDRI, pre-production techniques, production techniques, and post-production techniques. Finally, examples of how HDRI has been used in the motion picture and broadcast industries will also be shown.

Prerequisites:

Participants should be familiar with basic techniques in digital photography and/or with basic computer graphics modeling and rendering. Basic compositing would also be helpful, but not required. Familiarity with specific image-editing and 3D modeling and rendering packages would be helpful. Prior knowledge of HDRI techniques and terms would be beneficial, but not required.

Level of Difficulty:

Intermediate.

Intended Audience:

This course is intended for 3D artists, photographers, compositors, students, educators, and anyone interested in visual effects, rendering, and video game design.

Course Syllabus:

8:30 – 8:40 (Witte) Introduction: Welcome and Speaker Introductions
10 minutes

8:40 – 8:50 (Bloch) What is HDRI? Why do we need it? Demo of some immediate advantages in Photoshop CS3
20 minutes

9:00 – 9:10 (Bloch) File Formats, Bit Depths, Raw Versus JPEG, all Radiance files are not the same.
10 minutes

9:10 – 9:25 (Witte) Shooting, manipulating, and implementing chrome balls
15 minutes
9:25 – 9:35 (Bloch) Creating Radiance files <Picturenaut, Photoshop, PhotoSphere> gamma issues
10 minutes

9:35 – 9:55 (Bloch) HDRI usage at EdenFX – Behind the scenes
20 minutes

9:55 – 10:00 (Bloch and Witte) Practical shooting advice – Do’s and Don’ts
Deadlines, Grey Cards, Calibration, Leveling, Fisheye vs Rectilinear
(Tell Audience: READ the HDRI FAQ!)
5 minutes

10:00 to 10:15 BREAK

10:15 – 10:30 (Witte) Tonemapping examples, (local versus global)
<Photoshop, Picturenaut, & Photomatix Pro>
15 minutes

10:30 – 10:45 (Witte & Bloch) Shooting & stitching photographic segmental
spherical panoramas - Nodal points, lens choice, stitching, masking, locking
everything down, shooting fast <Realviz Stitcher & PtGuiPro>
15 minutes

10:45 – 10:55 (Witte) Creating cgi HDRI spherical panoramas <Vue6>
10 minutes

10:55 – 11:05 (Witte) Panoramic Photographic Art – Panoramic Conversions
Panoramic Warping < HDRshop, Stitcher, & Flexify 2 >
10 minutes

11:05 – 11:25 (Andersson) HDRI in Mental Ray, What does that button
actually do? Tips & Tricks for tweaking HDRIs <Mental Ray, 3DS Max>
20 minutes

11:25 – 11:45 (Davis) 32-bit compositing: A new compositing paradigm
<Toxxik, 3DS Max>
20 minutes

11:45 – 12:15 (Koch) Behind the Scenes: HDRI in the movie “Transformers”
The reality of dynamic range, ad hoc vs. meticulous HDR capture, the hazards
of film production, using HDRI images, pretending you are using HDRI
images (faking dynamic range).
30 minutes

12:15 - 12:30 (All) Questions & Answers
Course Presenter Information:

Kirt Witte is a professional photographer and a Professor of Visual Effects at the Savannah College of Art and Design, in Savannah, Georgia, USA. He received his B.S. in Photography in 1991 and his M.F.A. in Computer Art in 2005. He has been shooting panoramic photography since 1992 is a member of the International VR Photography Association. Witte has been involved with HDRI since 2002 and has been teaching a class “High Dynamic Range Imaging” at the Savannah College of Art and Design since 2005. In 2006, he won 1st Place (Abstract Category) in the International Color Photography Awards. He has worked in advertising, internet, and the video game industries and continues to do freelance work. Witte is currently finishing production of his first photography book called, “The Other Savannah”. To see his work visit his website at http://TheOtherSavannah.com or visit his faculty website at http://employeepages.scad.edu/~kwitte/

Christian Bloch is an acclaimed Visual Effects Artist who works for Eden FX in Hollywood, California. His work can be seen in StarTrek:Enterprise, Smallville, Invasion, Lost, 24, and a growing number of movies and commercials. He has been a pioneer in the practical application of HDRI in post-production, specifically under the budgetary and time restraints of TV production. A native of Germany, Bloch earned a degree in multimedia technology. Years of research and development went into his diploma thesis about HDRI, which was honored with the achievement award of the University of Applied Sciences Leipzig. Since his thesis was published online in July 2004, it has been downloaded more than 15,000 times, and it has been established as the primary source of information on HDRI in Germany. “The HDRI HandBook” is the successor to Bloch’s diploma thesis, rewritten completely from the ground up in English and heavily expanded and updated. The German and French versions of the “The HDRI Handbook” are currently in production. To find out more, please visit: http://www.hdrlabs.com/book/index.html

Hilmar Koch, Computer Graphics Supervisor, joined Industrial Light & Magic in 1998 as a Senior Technical Director. He holds an undergraduate degree in Arts from Columbia College Chicago and in Mathematics from the Technical University in Munich. Prior to joining ILM, he worked as a digital effects supervisor for Blue Sky Studios in New York.
As a CG Supervisor, Koch specializes in rendering, computer lighting, digital effects, synthetic humans and digital environments. He collaborates closely with various departments, namely the CG artist group and the ILM stage and model shop. Koch is a liaison within ILM and in that role helps define the development plan for ILM's proprietary software. Koch is a native of Germany, born in Esslingen am Neckar and grew up in Munich. He has lived in the United States since 1994 and currently resides in Oakland, California with his wife and daughter.

Feature Film Credits include:

- TRANSFORMERS (Computer Graphics Supervisor)
- PIRATES OF THE CARIBBEAN: DEAD MAN’S CHEST - Technical Director
- CHICKEN LITTLE – Computer Graphics Supervisor
- THE ADVENTURES OF SHARK BOY AND LAVA GIRL – Computer Graphics Supervisor
- THE HULK - Sequence Supervisor
- HARRY POTTER AND THE SORCERER’S STONE - Sequence Supervisor
- PEARL HARBOR - Technical Director
- THE PERFECT STORM- Technical Director
- GALAXY QUEST - Technical Director
- THE DEEP BLUE SEA - Technical Director
- WILD WILD WEST - Technical Director
- JACK FROST - Technical Director

Hakan 'Zap' Andersson has been working as "Shader Wizard" at mental images since 2004 and is the author of numerous mental ray shaders, such as the subsurface/skin shaders, the car paint shader, as well as the architectural- and production shader libraries. Prior to mental images, Zap worked at EMT, Genius CAD Software, and Autodesk where he wrote software and designed user friendly interfaces for advanced mechanical design software, as well as authored two US patents. Originally educated as an Engineer in Electronics, Zap's passion for computer graphics caused his graduation year "special project" to be an actual hand-built and hand-wired graphics card, for which he wrote his first ray tracer - a program that eventually evolved into his own rendering engine RayTracker. Today Zap spends his days (and nights) writing shaders, documentation and tutorials for mental ray, and sometimes makes presentations at user events and conventions, as well as maintains a mental ray tips blog (mentalraytips.blogspot.com). Occasionally he also makes little experimental visual effects movies, and he has a background in music production.
Gary M. Davis began his career in after receiving a BFA in Computer Graphics from Bowling Green State University in 1992. Since that time, he has been heavily involved in visual effects and motion graphics for numerous clients in television, film, video games and architectural visualization projects. After spending nearly six-years developing ride films and digital photography systems for themed entertainment venues, at the turn of the Millennium he formed visualZ, LLC. From 2004-2007, Davis served as the only independent, worldwide certified training specialist for 3ds Max, Combustion and Toxxik. During this time he also authored The Focal Easy Guide to Combustion. At the Siggraph 2007 Conference, Davis was awarded the title of Autodesk 3ds Max Master 2007. Shortly thereafter, he joined the Media and Entertainment Division of Autodesk as specialist for 3D animation and compositing software solutions. He maintains visualZ as a consulting and training boutique in Orlando, Florida. http://www.visualZ.com

Bibliography:

Some of the extant materials the course will leverage are:

° The HDRI Galleries on http://www.hdlabs.com/gallery/index.html
° Picturenaut on http://www.hdlabs.com/picturenaut/index.html
° Smart IBL on http://www.hdlabs.com/sibl/index.html
° http://mentalraytips.blogspot.com/search/label/production%20library
Kirt Witte’s HDRI-related pages: http://employeepages.scad.edu/~kwitte/html/HDRI.html