What's New in Radiance for 2013

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In Brief:

- Rewrote \texttt{rtcontrib}, renamed \texttt{rcontrib}
- Ashikhmin-Shirley reflectance model
- Minor improvements to \texttt{trad}
- Important bug fixes for BSDFs
Rewrote Rtcontrib

* First time I have (almost) completely rewritten a program in Radiance
* It needed it!
* Too much memory overhead
* Did not scale well with # processors
* New version works the same but faster
How Is It Different?

- It’s named rcontrib now, built in src/rt
- No longer calls rtrace — self-contained
- Subprocesses are copies of parent
- Using -c is now particularly efficient
- Also added -c option to vwrays
Before: rtcontrib -c 1
After: rcontrib -c 16
Ashikhmin-Shirley

* Anisotropic reflection model, similar to WGMD already in Radiance
* Added mostly for comparison purposes
* Has Fresnel component always active
* ...and colored specular component
* Nicolas Bonneel initiated addition
Compared to WGMD

void plastic2 mat1
4 0 1 0 .
0
6 .3 .7 .5 .26 .1 .02

void ashik2 mat2
4 0 1 0 .
0
8 .3 .7 .5 .26 .26 .26 150 5000

Colored specularity
Specular powers
Minor trad Improvements

* Related surprises:
  * I didn’t realize people still used trad
  * I didn’t realize trad still worked
* Fixed some Tcl/Tk issues
* Added slider for “Number of processes”
  * request by Terrance McMinn
BSDF Bug Fixes

* genBSDF output of Klems matrices flawed in 4.1 release
* Bug in proxy transmission
* Bug in tensor tree reciprocity
What's Next

* Interpolation method to bring BSDF measurements into tensor tree rep.
* Annual version of dctimestep that takes sky matrix rather than vectors
* Andy McNeil’s 4- or 5-phase method
* Fixes numerous problems in 3-phase
Interpolating measured BRDF data (PAB-Opto)