Discussing Radiance

an Exploratory Analysis of the Radiance-General Mailing List Archives

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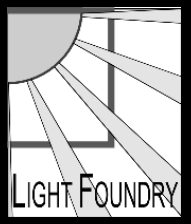


Outline

- Motivation
- Instrument
  - Categories for classifying data
- Analysis
  - Overview
  - Category examples (individual)
  - Problem resolution (group)
- Conclusions

Why Study Archives?

- Understand collaborative process among developers, experts and novices.
- What types of questions do users have?
  - How to use Radiance?
  - What is Radiance?
  - Why use Radiance?
- How did the group do as a whole?
- “All Communication Elements are Made Explicit” (MacDonald, 2003)
- Archive: [Radiance.general] May 2-Aug 17 2011

Individual Message Coding Instrument

- Unit of Analysis
  - Entire message (n=300)
  - Phrases in messages could be classified into multiple categories.
- Topic
  - Usually noted in subject line of message
  - Often users corrected subject lines
- **Analysis Categories**
  - Fourteen types
- References to external links
  - Copied into separate table

Coding Instrument: Categories

- How were the categories created?
  - Grounded theory
  - Computer supported collaborative learning
    - De Wever, B., Schellens T., Valcke, M., & Van Keer H. (2006). Content analysis schemes to analyze transcripts of online asynchronous discussion groups: A review. Computers and Education, 46, 6-28.
- Category properties
  - Distinctive
  - Assess a community of inquiry

Categories 1 - 7

1. **Announcement**
   An event, new feature
2. **Social**
   Introductions, chatter, “Inside” jokes
3. **Installation**
   Downloading, installing
4. **Error Messages**
   Questions and answers on understanding and fixing errors
5. **Syntax Question**
   “Why is this command not working?”
6. **Syntax Response**
   “You forgot to put the –xyz switch to invert….”
7. **Technique Question**
   How radiance operates, how to choose between different radiance strategies

Categories 8 - 14

8. Technique Elaboration

A response on how Radiance operates

9. Lighting Simulation Concept

Discussion of a general lighting concept,

10. Constructive Elaboration

Demonstrate a full understanding of a question + provide helpful feedback

11. Unresolved Question

Question was never responded to

12. Related Tools

This discussion is about

13. Unix

Unix operating system questions

14. References

links to outside resources

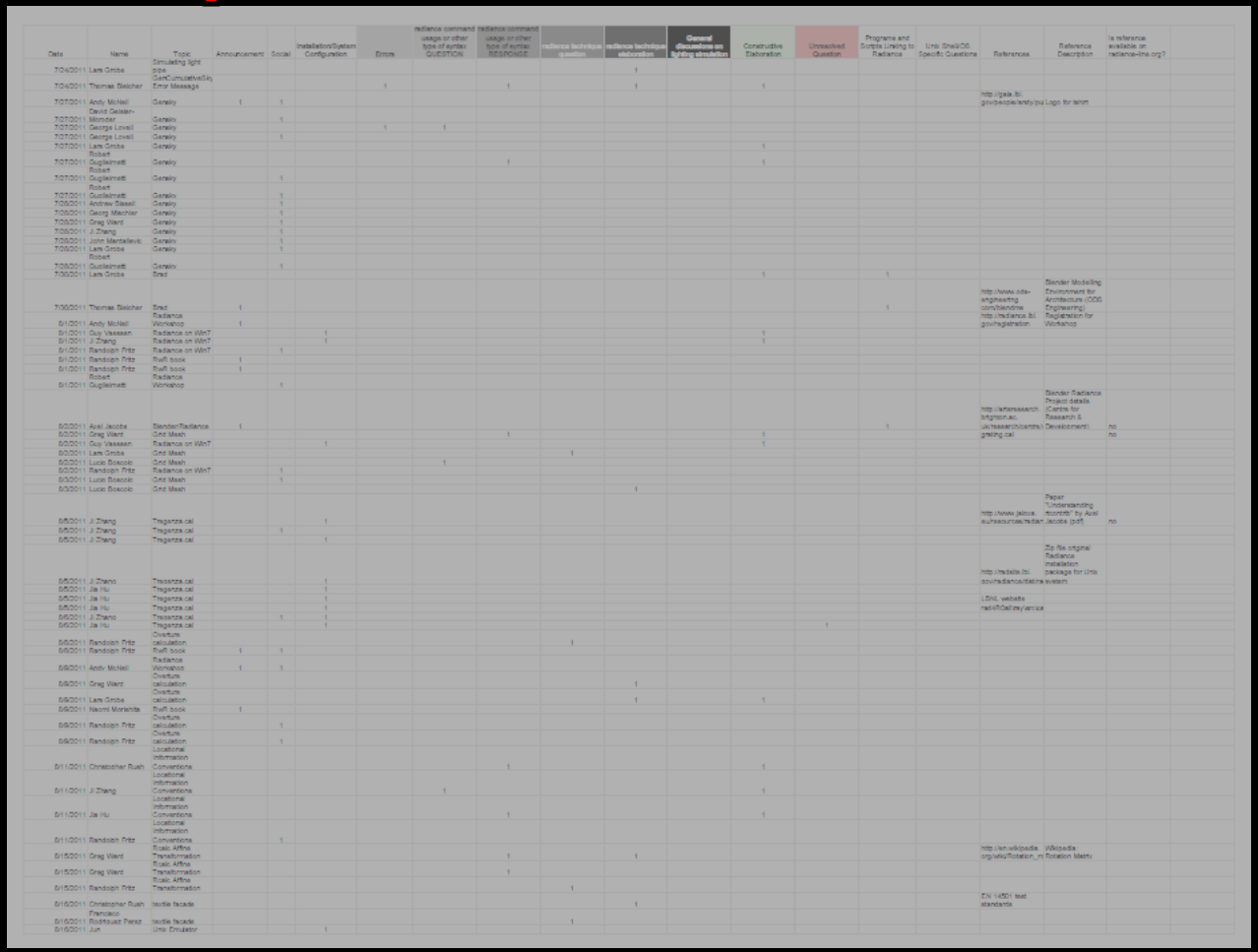
Coding Spreadsheet

Message Header

14 Categories

References

300 POSTS



Coded Examples

Message Header:

AAAAA BBBBB. radiance-online.org will be down tomorrow (Sat 4-June-2011). Fri Jun 3 11:20:06 PDT 2011

Message Body: **Category 1. ANNOUNCEMENT**

Hi All,

Just a heads up that the website (along with a few other websites including radsite at the lab - including radsite) will be down tomorrow (Sat 4-June-2011) from 12 to 14 hours starting at 6am PST / 2pm UTC.

Granted everything goes well the site will be back up after that period.

Thanks for your patience.

Coded Examples

BBBBB CCCCC. Subject: HELP ON RADIANCE INSTALLATION. Mon Jul 18 00:38:44 PDT 2011

3. INSTALLATION

Dear RADIANCE experts,

I'm BBBBB. Postgraduate students. Need your help on installing RADIANCE into my laptop. I'm using MacBook Mac OS X 10.6.7.
Read and follow instruction from RAdsite lbnl website and various forum and other websites showing instruction on installing the software. Unfortunately i'm lost and totally black out.
Honestly I do not know where to start, such as... where to type a command... Have tried XAMPP command as suggested but failed to execute or unzip the mentioned files/folder.
I've done the very first part of downloading the rad4R0all.tar.gz. (is it as simple as clicking the address, then it goes to your "downloads" folder, then double click, so from rad4r0_macosx-1.tar turn to a folder of rad4R0_macosx). Then? How to unpack or to be specific where to type this unzip<rad4roall.tar.gz.....

Thank you,

Coded Examples

JJJJ KKKKK. Subject: Can't get gensky to work without sun... Thu Jul 28 06:06:39 PDT 2011

The warning should be updated -- I have a suggestion: **2. SOCIAL**
"Warning - no light sources found. Wait a mo', you're NOT doing a daylight factor calculation, ARE YOU? I mean, really, in this day andage. Or could it be the clear sky option in LEED? Think about it: a clear sky WITHOUT sun - a physically impossible illumination condition in nature! Isn't that just a bit weird? No, no, don't hit Ctrl-C, I haven't finished..." **9. LIGHTING CONCEPT**

LLLL DDDDD. Subject: Can't get gensky to work without sun... Thu Jul 28 07:34:13 PDT 2011

2. SOCIAL
Ok, JJJJ, you gave me an idea, why not have all warning message strings replaced by some http-requests piping this mailing list's archives to STDERR? It is not wearable though :-(**13. UNIX**
Cheers,

Coded Examples

vvvvv xxxxx. Subject: Various (beginners) Radiance Guides and tools. Thu May 19 14:05:06 PDT 2011

14. REFERENCES

For people that are looking for a (beginner) guide to Radiance, I think the following info can be usefull:
Basic Radiance Cource:
http://sts.bwk.tue.nl/7S630/lecture%20sheets/.%5CLighting_simulation_software_Radiance_wk7_2010.pdf

How to install Radiance in a Virtual Machine:
http://sts.bwk.tue.nl/7S630/Simulatie/_overlay/HowtoinstallRadianceonyourcomputer_def.pdf

Radiance Tutorials from Learnix (lots of useful stuff both beginner and advanced):
http://www.jaloxa.eu/resources/radiance/documentation/index.shtml

General info about lighting technology:
http://sts.bwk.tue.nl/7S630/lecture%20sheets/.%5CLighting_Technology_introduction2010.pdf

Another Radiance tutorial (for MAC OS):
http://web.mac.com/geotrupes/iWeb/Site/Tutorials_files/Basic%20tutorial%20-%20Radiance-1.pdf

Radiance Wiki, (also has tools and MinGW and Cygwin Radiance):
http://www.bozzograo.net/radiancewiki/doku.php?id=start

Coded Examples

14. REFERENCES

Installation of Desktop Radiance (Windows):
http://wiki.naturalfrequency.com/wiki/Installing_Radiance_Tutorial

The book Rendering with Radiance
http://radsite.lbl.gov/radiance/book/
First Chapter: http://radsite.lbl.gov/radiance/book/ch1/ch1.pdf (rview has been changed to rvu).

Tools:
A Radiance viewer (on Windows) for finished Radiance pictures:
http://deluminaelab.com/download/raddisplay/RadDisplay_1.1.1_Setup.exe

A Radiance exporter for Sketchup:
http://su2rad.googlecode.com/files/su2rad_daysim_r03.zip

A falsecolor viewer for Radiance pictures in Windows:
http://pyrat.googlecode.com/files/wxfalsecolor.exe

II hope this helps

(Multiple) Coded Examples

GGGGG HHHHH. Subject: Three-Phase Method - subdivision of window with sensor located close to the window. Mon May 2 09:14:35 PDT 2011

Hi JJJJJ,

6. SYNTAX

I believe LLLLL is correct. I should have looked at your command more closely. The -I+ switch does not belong. If you remove it (or set -I-), then the computed radiance values will be accumulated according to the distributed rays out of rsensor, then split again into Klems direction bins by rtcontrib. The *.vmx files will each contain a single row of 145 RGB coefficients, which processed through dctimestep with the window's BTDF file will ultimately yield a single sensor value at each time step.

8. TECHNIQUE ELABORATION

I hope this makes sense. I find it a bit confusing, myself!

Best,

(Multiple) Coded Examples

TTTTT RRRRR. Subject: Error message "file coeff_perez.dat cannot be opened" Wed May 4 15:04:29 PDT 2011

Hi GGGGG.

How did you install Radiance/gendaylit? **3. INSTALLATION**

If you are on Linux and used a recent Debian package then see here:
http://www.radiance-online.org/pipermail/radiance-dev/2011-January/001093.html **14. REFERENCE**
The package maintainer forgot to include the file in the package. You can try to install
an older package or use the source from the official website (see below).
If you use another system (OS X or Windows) you should check that your RAYPATH environment variable is set.
Then check that the file is not in the folders listed in RAYPATH. If you are sure that you don't have the file grab the Radiance source code from here:
http://www.radiance-online.org/software/rad4R0all.tar.gz**14. REFERENCE**
Extract the archive, search for the file and place it in one of the folders listed in your RAYPATH. That should do it.
Regards, **10. CONSTRUCTIVE ELABORATION**

(Multiple) Category Examples

ZZZZZ FFFFF. Subject: rad -n and -N parameters / switches (was: how to use pfilt to perform anti-aliasing) Thu Jun 16 02:51:35 PDT 2011

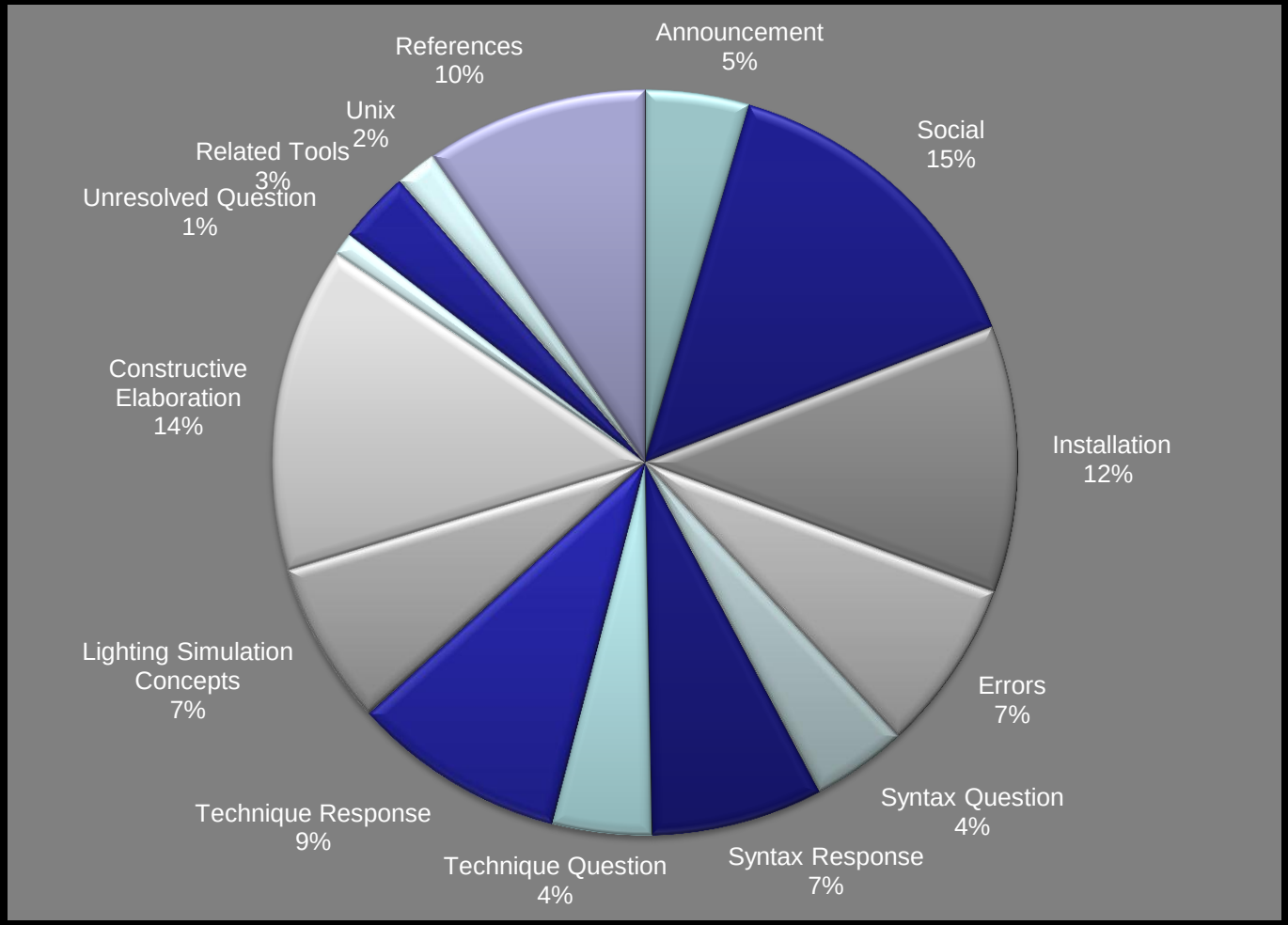
Dear LLLLL,
Thanks for your prompt reply! **1. SOCIAL**
I've tried the "-N npr" option, and here's the error message i got when I run "rad -N 6 ./test.rif" or "rad -N 4 ./test.rif" or "rad -N 2 ./test.rif":
rpiece: no NFS lock manager on this machine
rad: error rendering view 1 **4. ERROR**
I don't know the meaning of the error message, and I found no information by searching the email list. However, It seems I can get rad up and running by using "rad -N 1 ./test.rif" or just "rad ./test.rif".
I'm using a PC with Inter Core i7 CPU (8 cores, I guess based on what I see on the task manager...)
So, can you kindly advice me on:
1. why the "-N 6" cann't be accepted when I want to utilize 6 of the 8 cores of my CPU to speed up the rendering? **4. SYNTAX**
2. dose the npr means "number of processors/CPU" rather than "number of cores within each CPU"?
3. how to specify rad options to harness multi-core CPU's capability? **7. TECHNIQUE**
Thanks!

(Multiple) Category Examples

HHHHH JJJJJJ. Subject: Using Turbidity in gensky. Fri May 6 06:24:32 PDT 2011

E(global-h) = E(diffuse-h) + E(direct-h)
9. LIGHTING SIMULATION CONCEPT
or
4. SYNTAX
E(global-h) = (-B value) + (-R value)
4. SYNTAX
Note that this is different than the values used for gendaylit -W or -L which require direct *normal* and diffuse horizontal. But for gensky it seems the horizontal value is used for both diffuse and direct components, so take advantage of the additive nature of light. **8. TECHNIQUE ELABORATION**

Category Frequency Summary



Category Analysis

- SOCIAL (16.4% of all 451 marks)
  - The majority of threads on the message board were social discussions.
    - Facilitates more in-depth later discussion
    - Many “thank you” and “hello” messages

- CONSTRUCTIVE ELABORATION (16%)
  - Many threads on the message board had detailed answers and explanations to the users questions
    - Radiance community strives to help users understand and correct their errors.

Category Analysis

- INSTALLATION (13.1%)
  - New users have problems installing Radiance
    - Radiance is a complicated system for people who have never used it before
    - Website does not have enough information on installation process

- REFERENCES (10.9%)
  - There are many external links provided in discussions to help answer user questions
  - Four references previous messages on the discussion board

- TECHNIQUE ELABORATION (10.4%)
  - Radiance community responds about twice-fold to the syntax question
  - Often different techniques are presented

Category Analysis

- ERROR MESSAGES (8.4%)
  - Many users received error messages when using Radiance usually due to entering an incorrect command
- SYNTAX RESPONSE (8.4%)
  - Radiance community responds about twice-fold to the syntax question
- LIGHTING SIMULATION CONCEPTS (8%)
  - People discuss lighting simulation, not just Radiance!
- ANNOUNCEMENTS (5.1%)

Category Analysis

- TECHNIQUE QUESTIONS (4.9%)
  - Technique question and answers totaled 15%
- SYNTAX QUESTIONS (4.7%)
  - Syntax question and answers totaled 13%
- RELATED TOOLS (3.5%)
  - Regular discussion in this area reflects that Radiance is being used in conjunction with several other modeling and simulation platforms
- UNIX (2%)
- UNRESOLVED QUESTIONS (1.1%)
  - Very few unresolved issues!

Group Problem Resolution: Ideal + Good Cases

IDEAL CASE: People confirmed advice worked

RRRRR JJJJJ. Subject: Strange Error Message from genBSDF. Thu May 12 22:51:24 PDT 2011

Hello IIIII, thank you, it is working now. You were right all usual.

GOOD CASE: People simply “thanked” the group

HHHHH WWWWW. Subject: BRTD Function to Simulate Grid Mesh. Wed Aug 3 02:14:04 PDT 2011

Great!!! Thank you very much IIIII!

It is unclear if they were successful or not

Group Problem Resolution: OK Case

OK CASE: question responded to, but not followed up upon

SSSSS NNNNN. Subject: Problems with Impostor Surface Creation. May 23, 2011 11:38:10 PM PDT

No joy on this. I also tried the other recommendation by McMinn to include -o as well. I wonder if there is something different about my installation?

CCCCC PPPPPP: Problems with Impostor Surface Creation. Tue May 24 07:20:27 PDT 2011

Hi SSSSS, I think you are correct, and there is something wrong with your installation. I can convert your IES file with any set of options and no complaints. Perhaps you have a file or folder permissions problem. What machine are you running on and how was Radiance installed on it?

Group Problem Resolution: Suboptimal

SUBOPTIMAL CASE: question is not answered

MMMM HHHH. Subject: [help] tregenza.cal missing in Mac. On Sat, Aug 6, 2011 at 2:11 AM PDT

Sorry, I do not know why.

AAAA DDDD. Subject: [help] tregenza.cal missing in Mac. On Sat, Aug 6, 2011 at 2:11 AM PDT

May I know why some of these .cal files are not installed in the /usr/local/lib/ray or C:\Radiance\lib directory?

Although the question is not resolved it was replied too

Group Problem Resolution: Suboptimal

SUBOPTIMAL CASE: question is not responded to

JJJJ HHHH. Subject: Simulating Light Pipe Performance. Sun Jul 24 11:23:06 PDT 2011

Thanks for your suggestions. I search the mail archive but still have many queries. Please see bellow, sorry for so many questions...

How about the accuracy of calculated illuminance? Is that accurate or acceptable? If I use Radiance toolchain (rtcontrib), do I have to use metal material for tubular (round) pipe, and mirror or metal for square pipe?

The extension is developed for Radiance 3.7. It seems not updated for several years. Is that suitable for annual simulation?

Do you mean I separate direct and ambient calculations? Could you tell me how to do direct calculation only? If I set ab =0, it underestimates the direct sunlight illuminance. I do not know how to let the direct sunlight enter in to the space through the tubular light pipe. What materials should I have to use for the light pipe? Thank you very much.

None of these questions received any response

What We Learned

- The radiance community overwhelmingly is very supportive and helpful
  - For every question there are usually multiple, detailed responses
  - Very few unanswered questions
- Syntax, techniques, concepts are frequently intermixed
- Some challenges
  - Installation
  - Documentation
    - Syntax and technique references
    - Decentralized references
- Analysis is still preliminary

Future Work

- Coders are still cross-correlating analysis
- Instrument Revisions
  - Header refinements
    - Time between responses
  - Units/Category Marks
- Analysis
  - Deeper investigation of dynamics
  - Identify types of participants
  - Graphical

Future Work

- Topic list
  - Revisited topics
- Further longitudinal analysis
- Comparative studies
  - How does the Radiance community compare with other simulation or open-source projects?
- Inter-rater reliability
  - With another experienced Radiance user

Thank you