SPIE Student Chapter
University of Rochester

Graduate **S**tudent **A**ssociation
Linking Us Together

SPIE SUMMER COLLOQUIUM SERIES

How to give an engaging technical presentation

Who: Prof. Sandhya Dwarkadas

When: June 23, 2015 – 12:00 PM

Where: Goergen 101

Ever gone to a talk and started sleeping after few slides? Would you like to avoid that in your own talks?

Come and listen to tips and tricks to improve your presentation skills from Sandhya Dwarkadas, Chair of Computer Science. **All graduate students are welcome to attend.**

THERE WILL BE PIZZA AND DRINKS!

For more information, e-mail urspie@gmail.com

The event is cosponsored by the Graduate Student Association

SPIE Student Chapter
University of Rochester

SPIE SUMMER COLLOQUIUM SERIES:

CALL FOR SPEAKERS

- •PRESENT YOUR RESEARCH TO A GROUP OF PEERS
- •REHEARSE A TALK FOR A CONFERENCE
- •PREPARE YOUR THESIS DEFENSE OR PROPOSAL
- •SHARE YOUR RESEARCH PROBLEMS WITH OTHER STUDENTS

You can do all that and more during the SPIE summer colloquium series

On Tuesdays throughout the summer (starting on June 30th), we will be having a lunch-hour colloquium series during which one or two students can present their research to their peers.
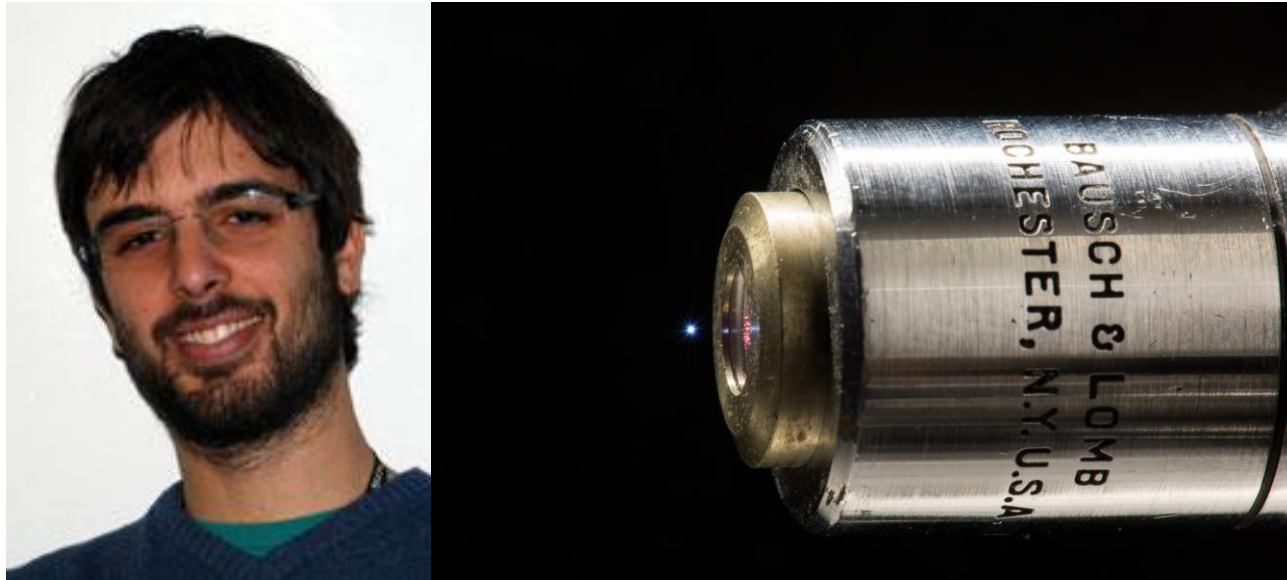
We welcome students in all departments working with light-related technology to present!

On top of that, there will be prizes awarded to the top two speakers.

If interested, please contact us at **urspie@gmail.com**

Improving Your
Technical Presentation Skills

Sandhya Dwarkadas

University of Rochester

URCS

Why do Presentations Skills Matter?

- Essential for
  - Crystallizing your ideas
  - disseminating important results
    - Ideas don't sell themselves; they will lie on the shelf and gather dust unless you sell them
  - Explaining your work to colleagues
  - Giving talks/seminars in industry or academia
  - Selling your ideas to funding agencies (or venture capital firms)
  - Interviewing for jobs

URCS

Presentation Skills

- Written
- Oral

Oral Presentation:
The Three MUST HAVES

- Content: know your material *really* well
- Design: Organize the material and create a high-quality presentation (usually, for formal research talks, in the form of slides)
  - Drive home key points
  - Visualize what you are saying
- Delivery: plan your oral presentation/what you will say along with each slide
  - practice, practice, practice

URCS

Content: Know Your Material

- Do you have sufficient motivation for the work?
- What is the state of the art?
- What is your contribution/approach? How is it novel?
- Is the work mature enough for presentation/have you ironed out the corner cases?
- How sound are your results and analysis?

Remember: you are the expert (have chosen to become one): now you need to project that image

Design: Organize Your Material

- What are the key points you want your audience to remember?
  - Keep it simple
  - Repeat them: tell them what you're going to tell them (forecast) and why, tell them, and tell them what you told them (summary)
- Is your presentation at an appropriate level for your audience?
- Start with the outline

URCS

Delivery

PRACTICE, PRACTICE, PRACTICE!

Build your confidence; get feedback; form a support group; return the favor

URCS

ROCHESTER

Know Your Audience and Purpose

- Who is your audience? Why are they there? What do they know? What biases do they have?

- What is the purpose of your talk?

  – To inform? To persuade? To inspire? To teach?

- Is this a formal or informal occasion? What is the size of your audience? How much time do you have?

Conference Talks

- Remember
  - There is no way you will cover every detail of a 10 page paper in 25 minutes
  - The main goal is to get the audience interested in your work so they go read the paper
  - The talk is that sales job (but don't overdo the selling)

How to Give a Bad Talk: The Ten (9) Commandments*

- Thou shalt not waste space
- Thou shalt not be neat
- Thou shalt not covet brevity
- Thou shalt not write large
- Thou shalt not use color
- Thou shalt not illustrate
- Thou shalt not make eye contact
- Thou shalt not skip slides in a long talk
- Thou shalt not practice

*Courtesy David Patterson, circa 1983, via Mark Hill, with appropriate modification to accommodate changes in technology

URCS

ROCHESTER

Thou Shalt Not Covet Brevity

- Do not omit technical material from your paper
  - You did the work; it is important; make sure the audience understands all nuances of approach and also how smart you are
  - Many in audience will never read the paper – they *must* leave the room fully understanding your approach, motivation, and contributions!
- Include lots of material in each slide
  - Avoid sentence fragments because they may make you look illiterate.
    - Also, if the slides have full sentences, then you can read the slides verbatim and audience will be able to follow along.
    - All points you make orally should also be on the slide, and vice versa.
    - Some may say that no item on a slide should span more than one line. Ignore this! Take as much room as you need to make your point.
    - Take advantage of technology – small fonts allow you to provide information-rich slides.
      - Fonts smaller than 24 point are fine
      - And the important people sit in front anyhow!
    - Make several points on each slide.
- Include lots of slides in each talk
  - 1 Lampson = 1 slide per second
  - Impress audience with intensity and difficulty of material
    - They should leave knowing that you did a lot of work and that it was hard, even if they don't understand all of the details.
  - Avoid moving content to "backup slides"
    - You probably won't get a chance to show many of them

13

Slide Design

- 3 is the golden number (almost!); 3-5 bullets or points per slide
  - Don't overcrowd
  - Make sure font is legible even in your figures (test it out in a room of similar size)
  - Spell and grammar check!
  - No need for complete sentences, but be consistent in your style and format

URCS

A General Talk Outline (25 mins.)

- Title/author/affiliation (1 slide)
- Motivation and problem statement (1-3 slides)
- Related work (0-1 slides)
- Main ideas and methods (7-8 slides)
- Analysis of results and key insights (3-4 slides)
- Summary (1 slide)
- Future work (0-1 slide)

URCS

Outline Slide or No Outline Slide: To be or not to be

URCS

Roadmap

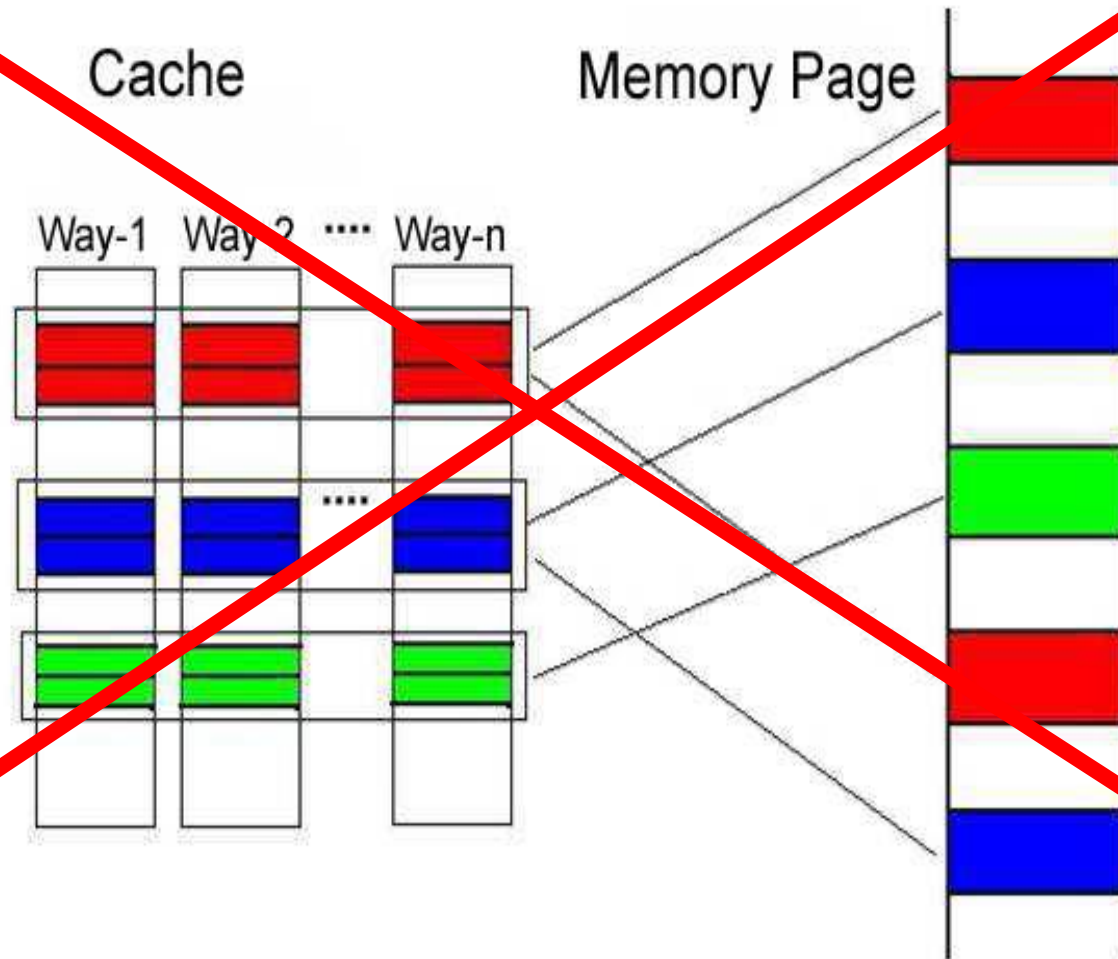- Background

- Design

- Evaluation

- Conclusion

URCS

Roadmap

- Background
- Design
- Evaluation
- Conclusion

URCS

Background:
Brief Introduction of Page Coloring
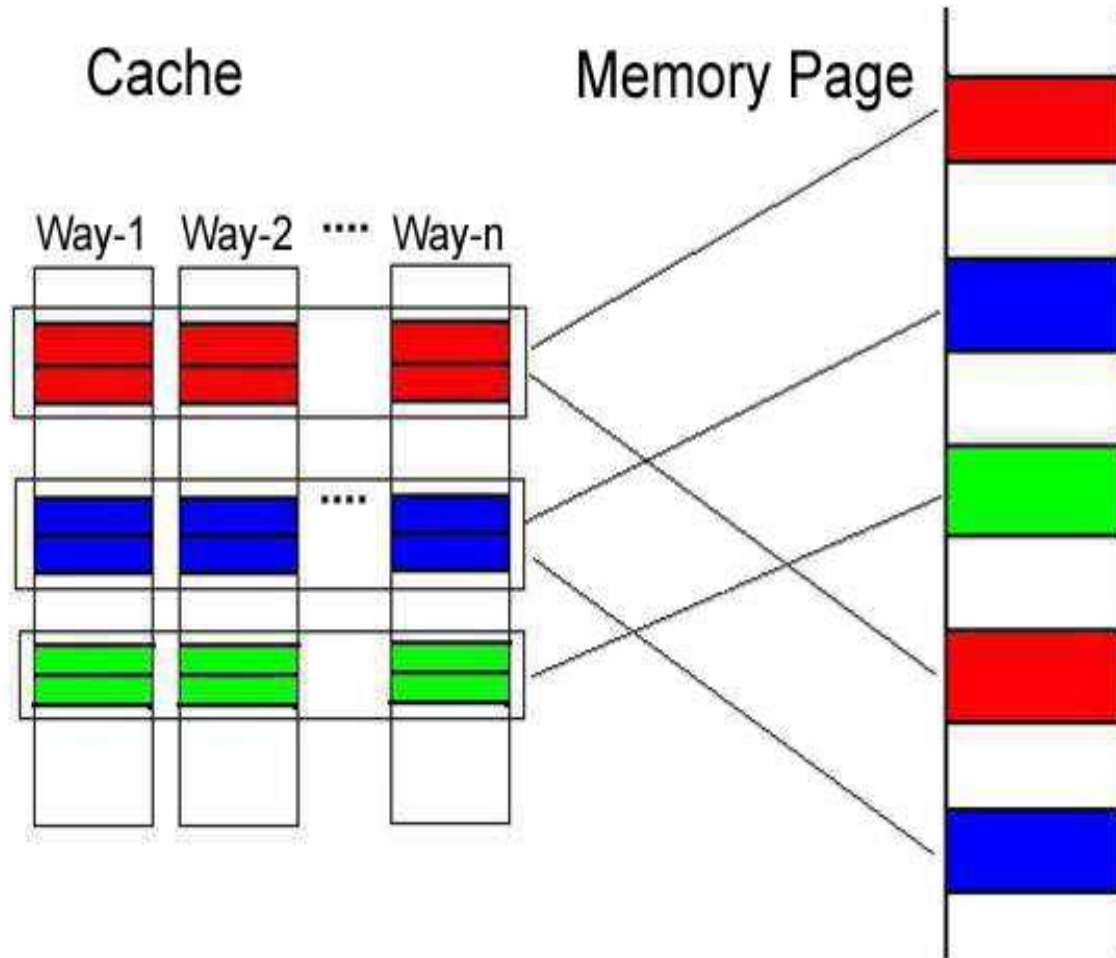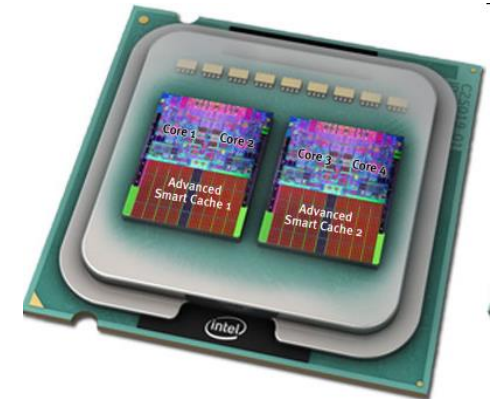
Background:
Brief Introduction of Page Coloring
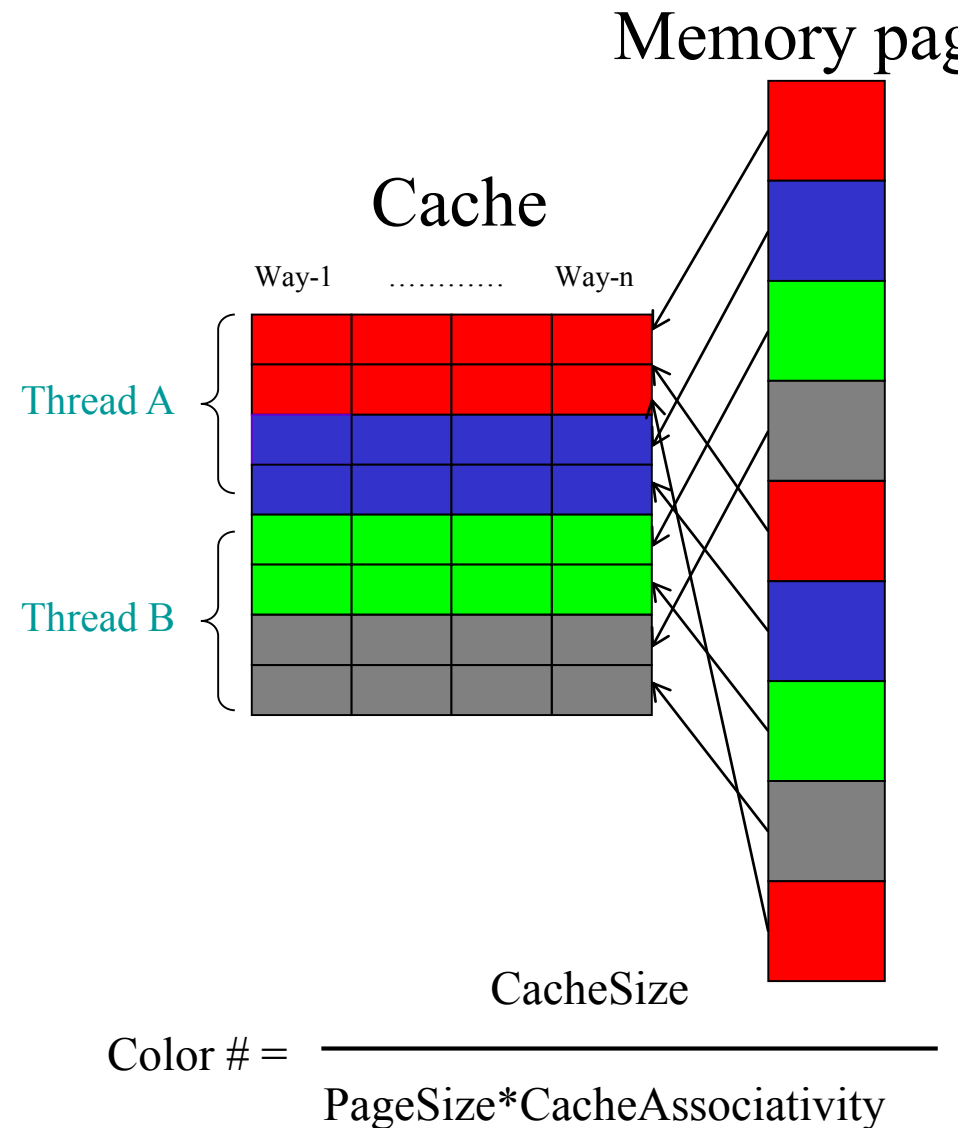
Instead …

The Multi-Core Challenge

- Multi-core chips
  - Dominant on the market
  - Last level cache is commonly shared by sibling cores, however sharing is not well controlled

- Challenge: Performance Isolation
  - Poor performance due to conflicts
  - Unpredictable performance
  - Denial of service attacks

Picture courtesy Intel

URCS

22

Possible Software Approach: Page Coloring

- Partition cache at coarse granularity
- Page coloring: advocated by many previous works
  - [Bershad'94, Bugnion'96, Cho '06, Tam '07, Lin '08, Soares '08]
- Challenges:
  - Expensive page re-coloring
    - Re-coloring is needed due to optimization goal or co-runner change
    - Without extra support, re-coloring means memory copying
    - 3 micro-seconds per page copy, >10K pages to copy, possibly happen every time quantum
  - Artificial memory pressure
    - Cache share restriction also restricts memory share

Memory pag

Cache

Way-1 ………… Way-n

Thread A

Thread B

CacheSize

$$Color \# = \frac{CacheSize}{PageSize * CacheAssociativity}$$

Hotness-based Page Coloring

- Basic idea
  - Restrain page coloring to a small group of hot pages

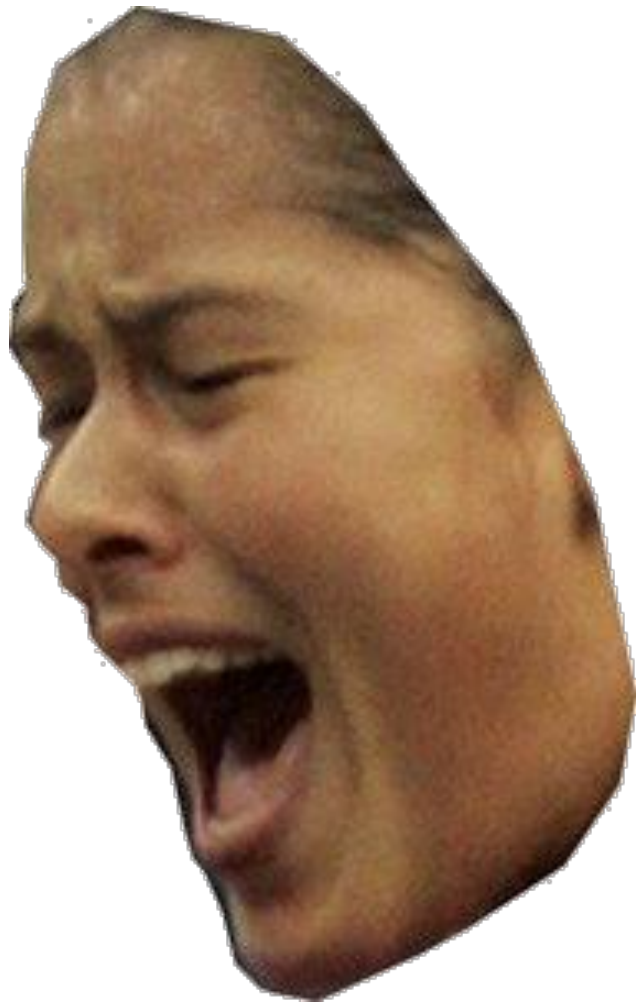- Challenge:
  - How to efficiently determine hot pages

URCS

Roadmap

- Efficient hot page identification
  - locality jumping
- Cache partition policy
  - MRC-based
- Hot page coloring

URCS

Alternatively …

THE HOOK

(courtesy URCS Professor Ehsan Hoque)

URCS
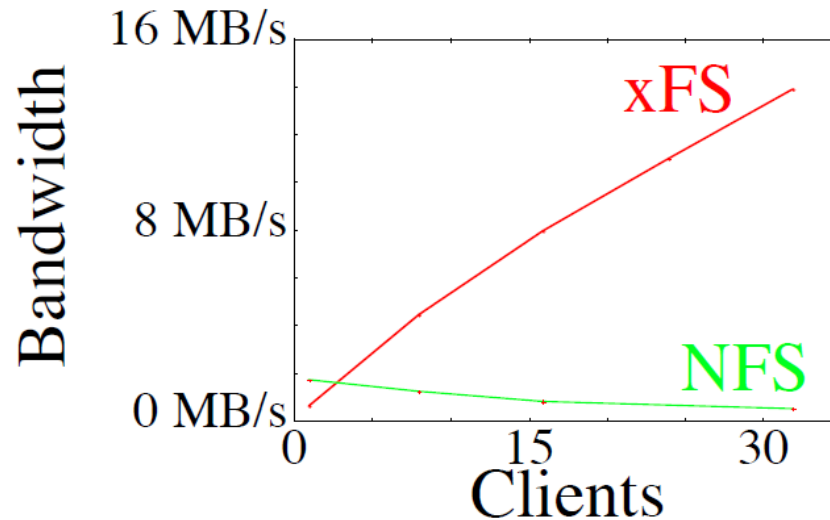
Scored a point

Scored a point

(a)   (b)

Expressions are the same, context is different.

Majority of the participants label (a) as anger, and (b) as disgust

Figure used by permission, copied from Aviezer et al.

Thou Shalt Not Illustrate

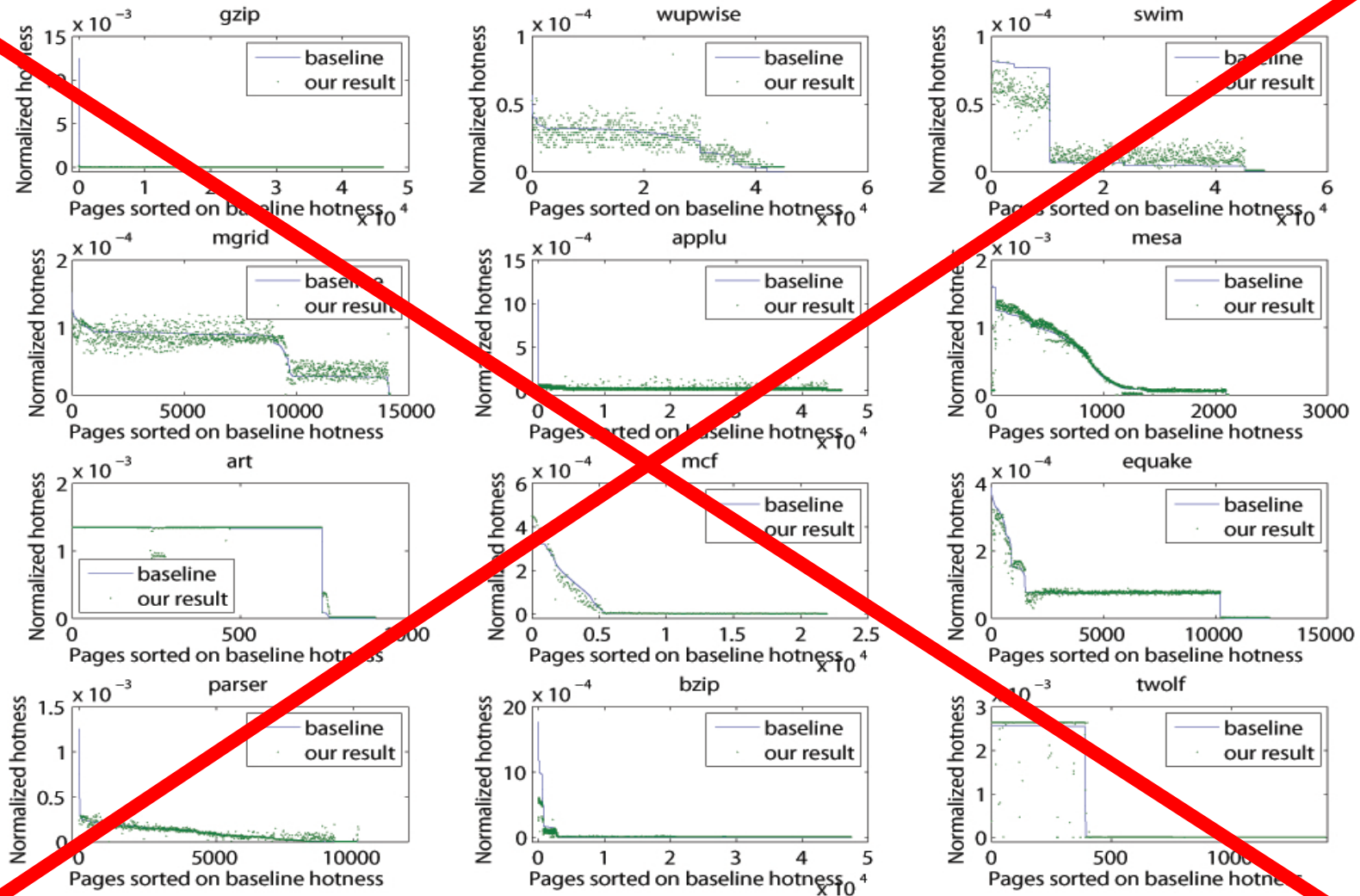| Clients	xFS BW	NFS BW
1	5.71995e+05	1.65997e+06
8	4.425325e+06	1.19731e+06
16	1.095445e+07	7.88792e+05
32	1.38927e+07	4.70548e+05

- Table:
  - Precision?
  - Allow audience to draw their own conclusion
- Pictures:
  - Worth a thousand words (or numbers)?

Accuracy
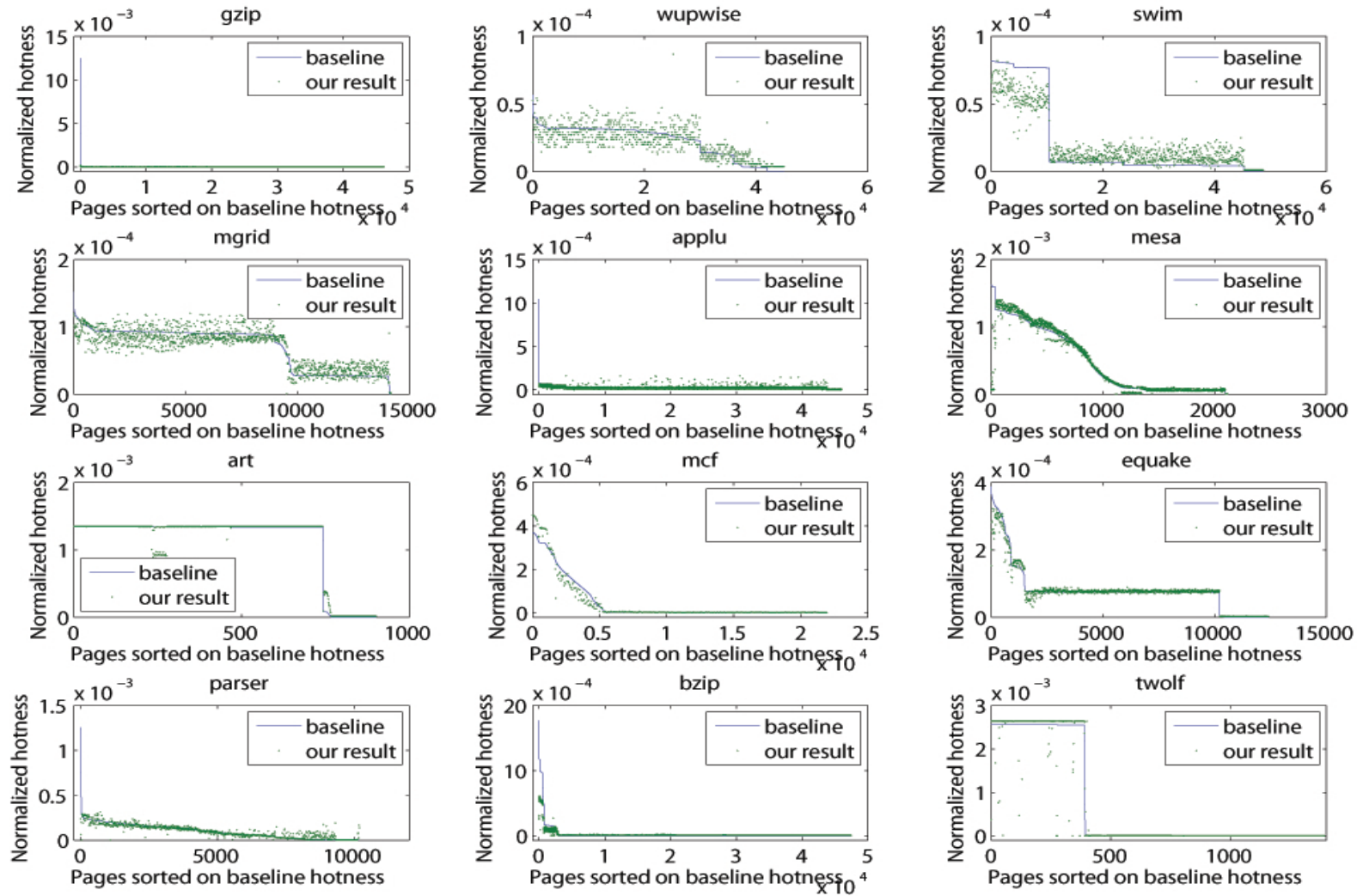
Accuracy

Instead …

Hot Page Identification Accuracy

- No major accuracy loss due to jumping as measured by two metrics (Jeffrey divergence & rank error rate)
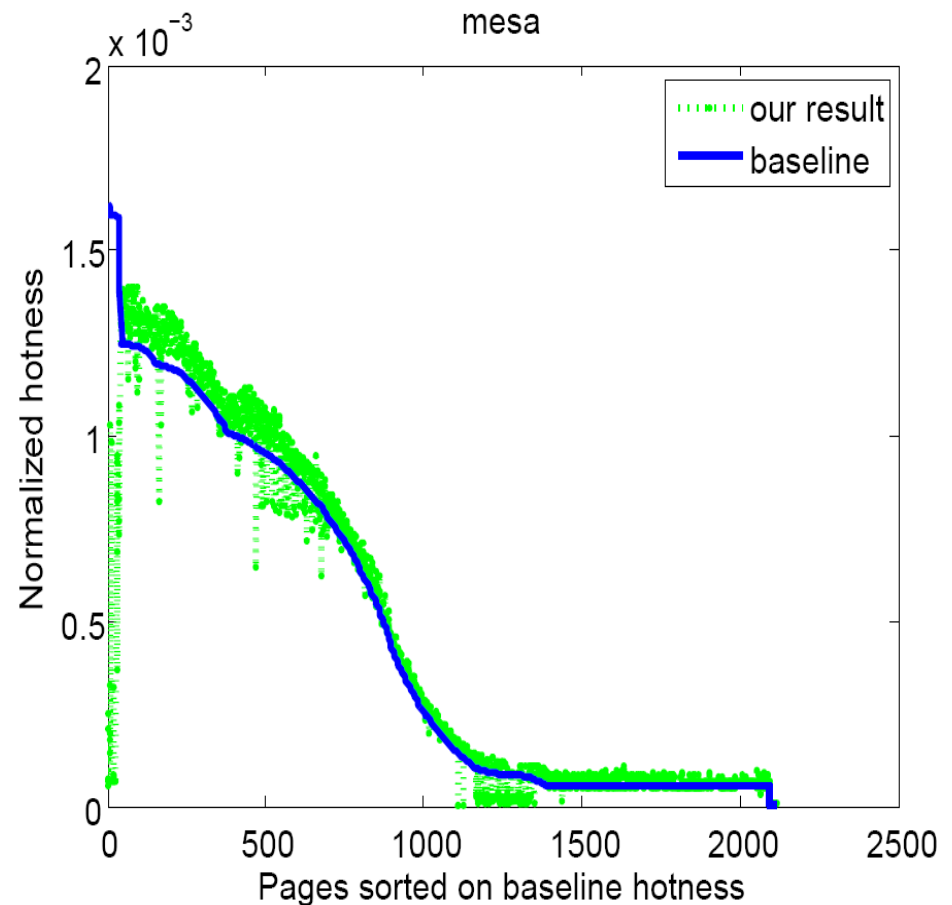
- Result is fairly accurate

URCS

Illustration and Color

- "A picture speaks a 1000 words"
  - A 1000 words don't speak, however
  - The picture may need a little help
- Color for emphasis (when appropriate)
- Animation when appropriate

URCS

Re-coloring Procedure

- Quick search for *K*-th hottest page's hotness
  - *Bin[i][j]* indicates # of pages in color *i* with normalized hotness in
  - *[j, j+1]* range

procedure *Recolor*

budget (recoloring budget)

old-colors (thread's color set under old partition)

new-colors (thread's color set under new partition)

if *new-colors* is a subset of *old-colors* **then**

$\quad$ *subtract-colors* = *old-colors* − *new-colors*.

$\quad$ Find the hot pages in *subtract-colors* within the *budget* limit and reallocate to *new-colors* in a round-robin fashion.

end if

if *old-colors* is a subset of *new-colors* **then**

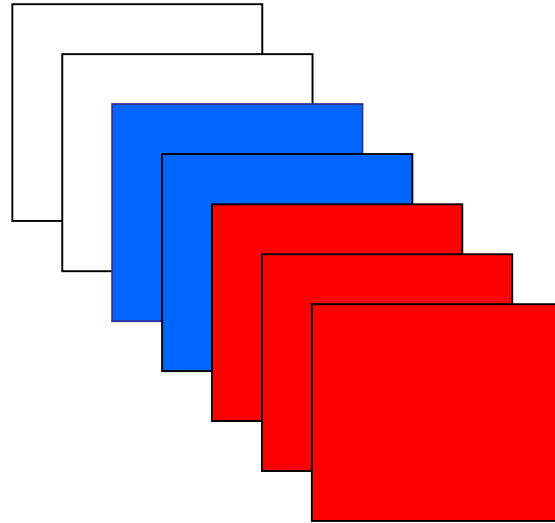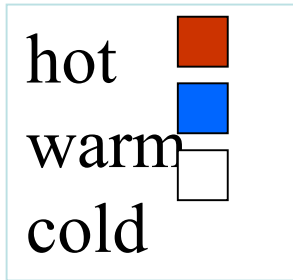$\quad$ *add-colors* = *new-colors* − *old-colors*.

$\quad$ Find the hot pages in *old-colors* within the $\frac{|new\text{-}colors|}{|add\text{-}colors|} * budget$ limit, and then move at most *budget*

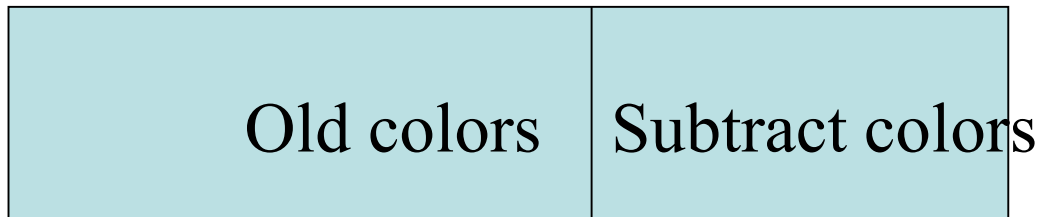$\quad$ (i.e. $\frac{|add\text{-}colors|}{|new\text{-}colors|}$ proportion) of them to *add-colors*.

end if

URCS

38

Instead …

Re-coloring Procedure(I)

hot ■
warm ■
cold □

Cache share decrease

Budget = 2 pages

Old colors	Subtract colors

Re-coloring Procedure(II)

hot
warm
cold
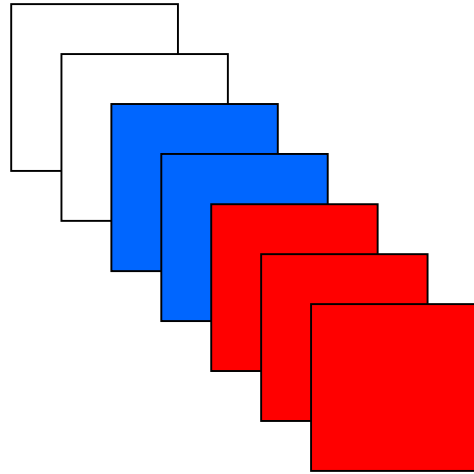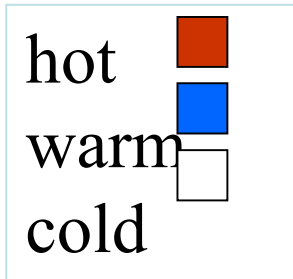
Cache share increase

Budget = 2 pages

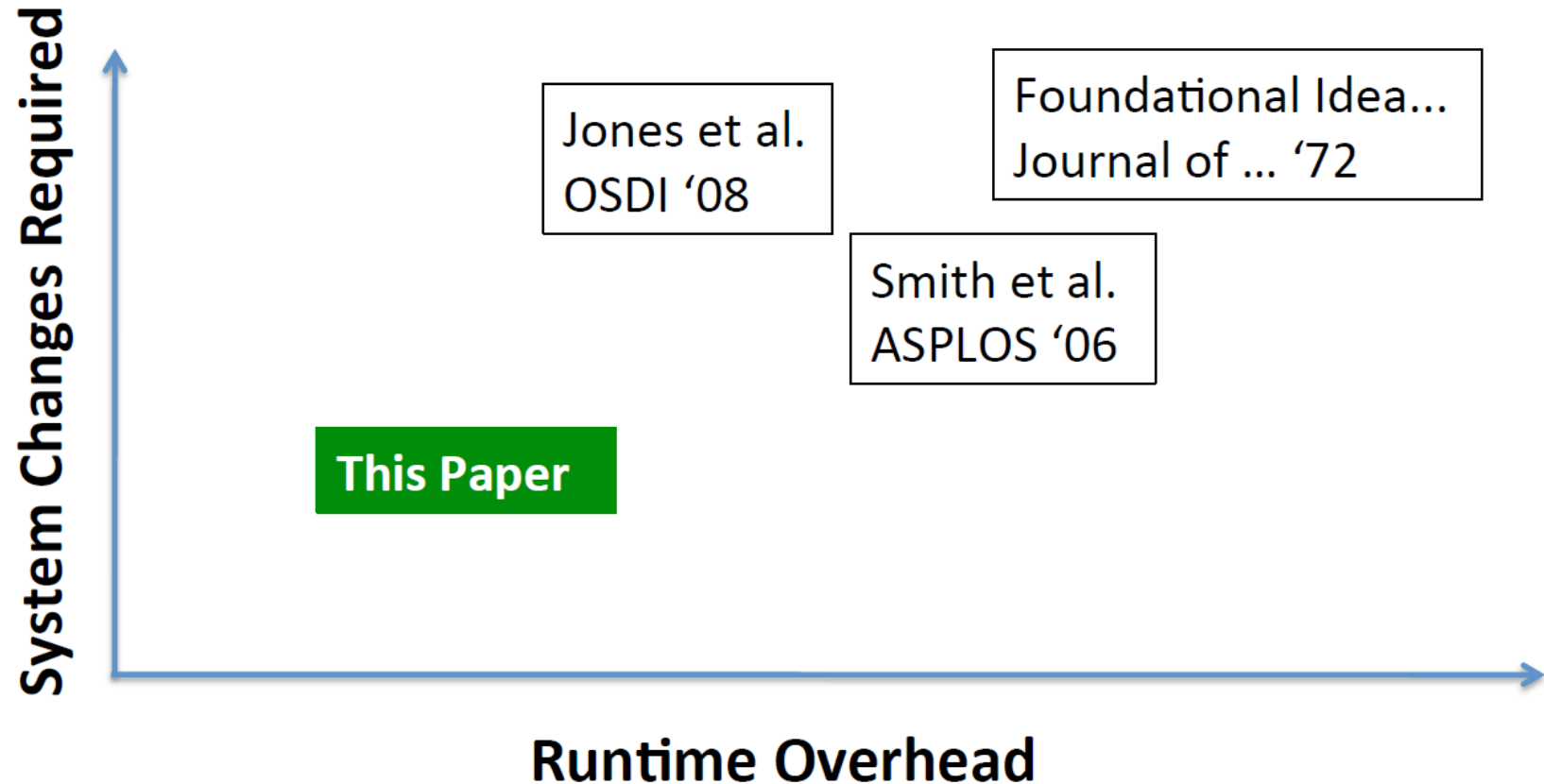| Old colors	Add colors

URCS

41

Related Work – Version I

- "A reasonable approach to page coloring"
  - ASPLOS'06
- "Another page coloring idea"
  - OSDI'08
- "Yet another page coloring idea"
  - ASPLOS'07

Related Work – Version II

Spatial display of design space highlights your novelty or approach

Conclusions

- A chance to summarize and place your work in a broader context

- Open problems?

- Future work?

Delivery

PRACTICE, PRACTICE, PRACTICE!

Build your confidence; get feedback;
form a support group; return the favor

URCS

Helpful Hints

- Record yourself and watch the video

- Enroll in a public speaking class
  - Toast masters, community courses

- Memorize first 5 minutes of your talk
  - Helps start out if you are nervous

- Leverage your nervous energy
  - Adrenalin can help you give a good talk

URCS

47

Plan Your Verbal Presentation

- Work on the flow

- Motivate the work

- What are the main points

- Reiterate the main points

- Summarize – tell them what you told them

URCS

Body Language

- Eye contact
- Fillers
- Gestures
- Enunciation
- Voice modulation and emphasis
- Speed of delivery
  - There's no prize for learning how to fit 20 words in 10 seconds
- Most of all, project your enthusiasm for what you are presenting!

URCS

Questions?

- Anticipate them
- Prepare backup slides
- Have a strategy for aggressive questioning
- Follow up

It Pays To Be Cautious!

- Redundancy/fault tolerance: make copies of your slides on a flash drive
    - Your computer may fail you
- Create versions in multiple formats for just in case
    - E.g., ppt and pdf
- Make sure you check the projection systems prior to your talk or session if at a conference
- Use practice talks to get possible questions
    - Be prepared with backup slides on details

URCS

ROCHESTER

Poster Presentation

- 1-2 minute presentation that addresses
  - What
  - Why
  - How/what's novel
  - Outcome
- Poster content
  - Once again, pictures speak a 1000 words
    - With some help from text
    - Don't overcrowd
    - Make sure the main points above stand out

URCS

Posters: Follow-Up Questions

- Be prepared to
  - Discuss approach in more detail
  - Discuss validation in more detail
  - Discuss limitations of your work
  - Discuss related work
  - Outline ongoing and future work

URCS

Writing Style

- Clear organization of individual ideas
  - Sections and paragraphs should have a logical flow
    - Define terms before you use them
    - Keep forward references to a minimum
  - Each section represents a high-level topic/organizational unit
  - Each paragraph contains a single idea with supporting details
  - Each sentence expresses a single point/detail
- Pay attention to detail – spelling and grammar

Good Presentation:
The Three (actually, Four) MUST HAVES

- **Knowledge of audience**: know your audience, purpose, and constraints

- **Content**: know your material ***really*** well

- **Design**: plan what you want to say and how you will say it (both visual and auditory)

- **Delivery**: practice, practice, practice! … and use feedback you receive to improve

URCS

Useful Resources

- Mark Hill's "Oral Presentation Advice", http://pages.cs.wisc.edu/~markhill/conference-talk.html

- CRA-W, http://www.cra-w.org/gradcohort

- http://www.randsinrepose.com/archives/2008/02/03/out_loud.html

- http://www.slideshare.net/selias22/taking-your-slide-deck-to-the-next-level

- Michael Alley: "The Craft of Scientific Presentations", http://www.writing.engr.psu.edu/handbook/presvisuals.html

URCS

56