Presentation and Oral Communication Skills

Sandhya Dwarkadas, University of Rochester
Susan Rodger, Duke University

CRA-W
Computing Research Association
Women

Welcome

Always greet your audience and tell them you are honored to talk to them!

Introduction

Susan H. Rodger, Professor of the Practice, Duke University

The Technical Me

PhD Computer Science, Purdue University
BS Math and CS, North Carolina State University

Research: Visualization, algorithm animation, software for learning computer, computer science education

Service: SIGCSE Board Chair, CRA-W Board

OutReach: Adventures in Alice Programming for K-12 teachers

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One minute exercise

On a scale of 1 to 10,
how confident do you feel right now?

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Please stand and put your hands on your hips

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One minute exercise

On a scale of 1 to 10,
how confident do you feel right now?

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Learn from the best

Who inspires you and why?

Ted Talks -

Amy Cuddy

“Your body language shapes who you are”

Sandhya Dwarkadas

- Education
  - Bachelor's degree in Electronics from Indian Institute of Technology, Madras, India
  - Master's and Ph.D. in Electrical and Computer Engineering from Rice University, Houston, Texas
- Research Area: Computer systems: architecture, parallel and distributed systems
- Post-Ph.D.
  - Research scientist at Rice for 4 years
  - Faculty member at University of Rochester since
    - Currently the Albert Arendt Hopeman Professor and Chair of Computer Science with a secondary appointment in Electrical and Computer Engineering
  - Sabbaticals at IBM Watson, HPCLinks/IISc India, EPFL Switzerland

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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

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

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

Delivery

PRACTICE, PRACTICE, PRACTICE!

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

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

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

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

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)

Motivation and Problem Statement

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

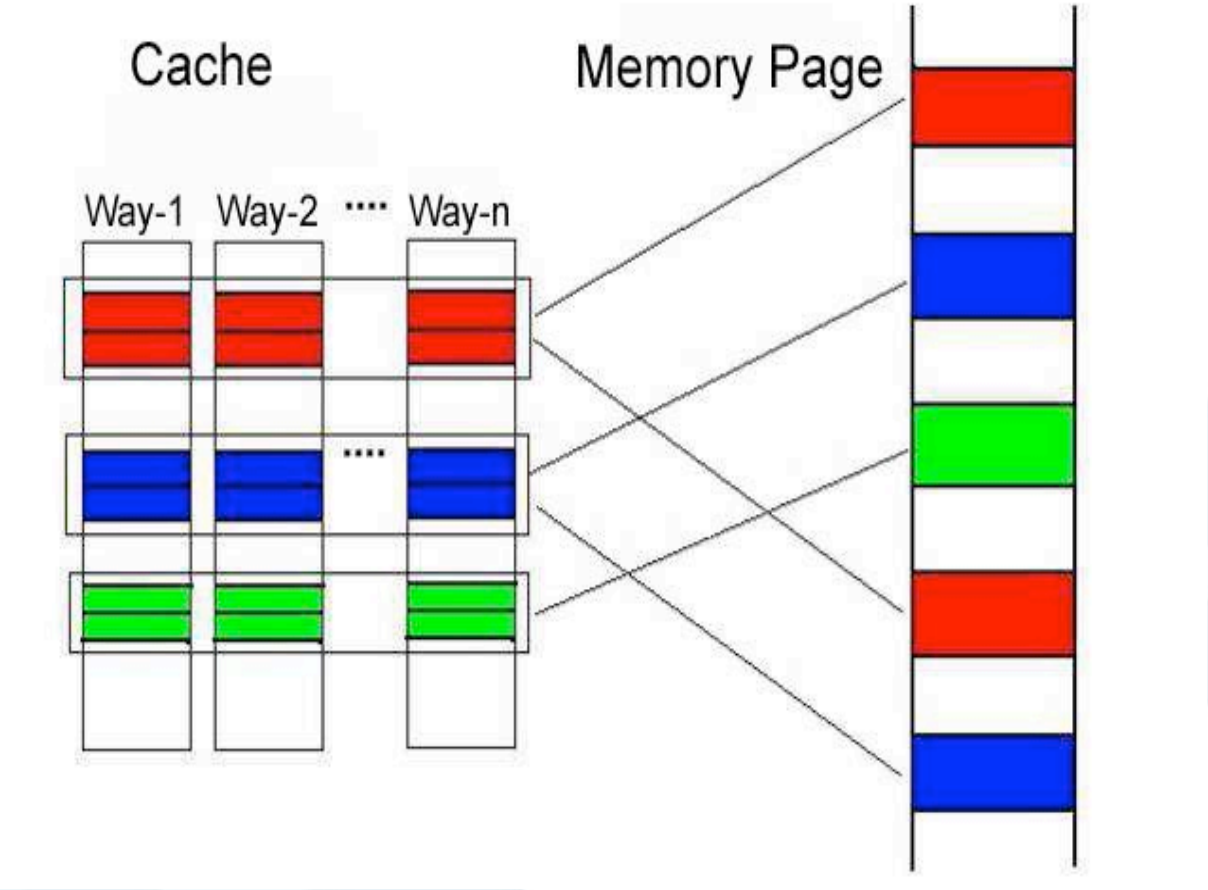
Roadmap

Background
Design
Evaluation
Conclusion

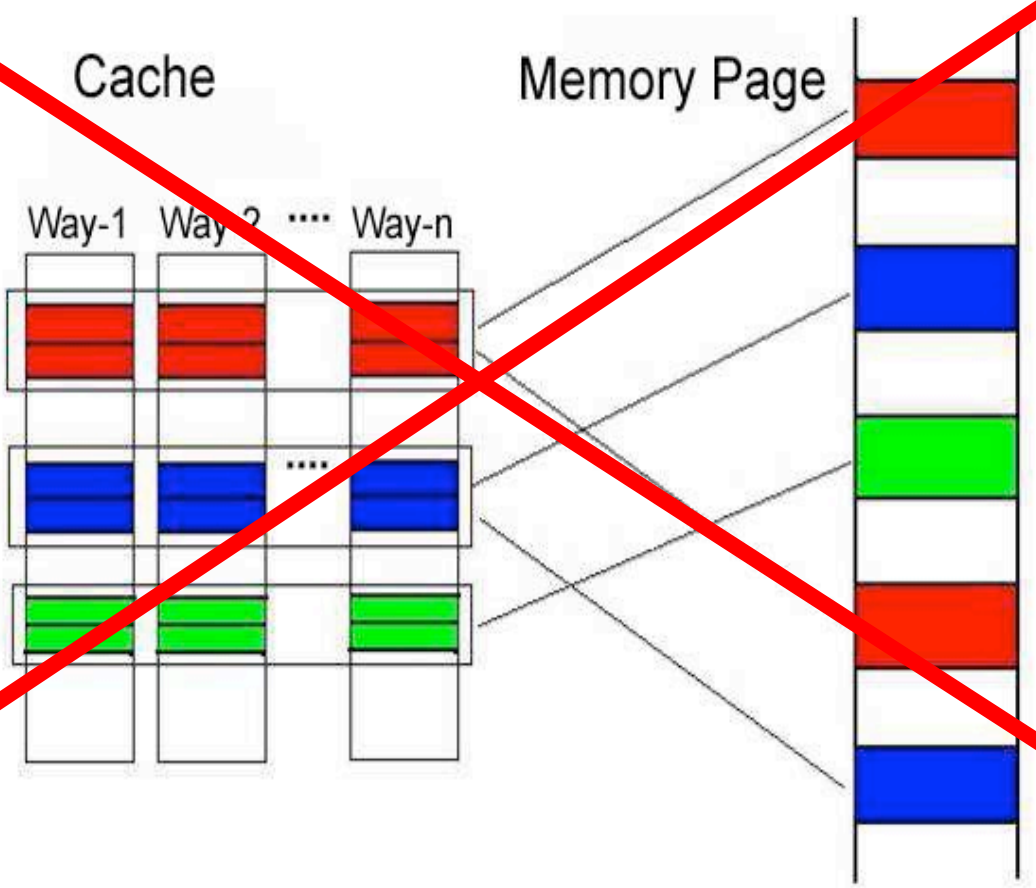
Roadmap

Background
Design
Evaluation
Conclusion

Background:
Brief Introduction of Page Coloring



Background:
Brief Introduction of Page Coloring



Instead …

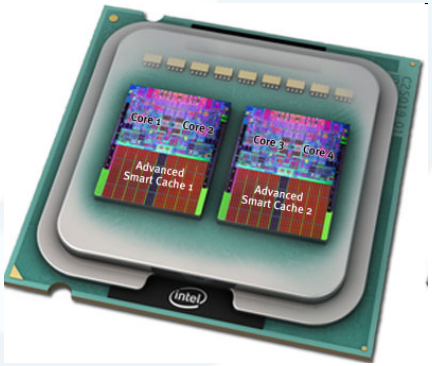
The Multi-Core Challenge

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

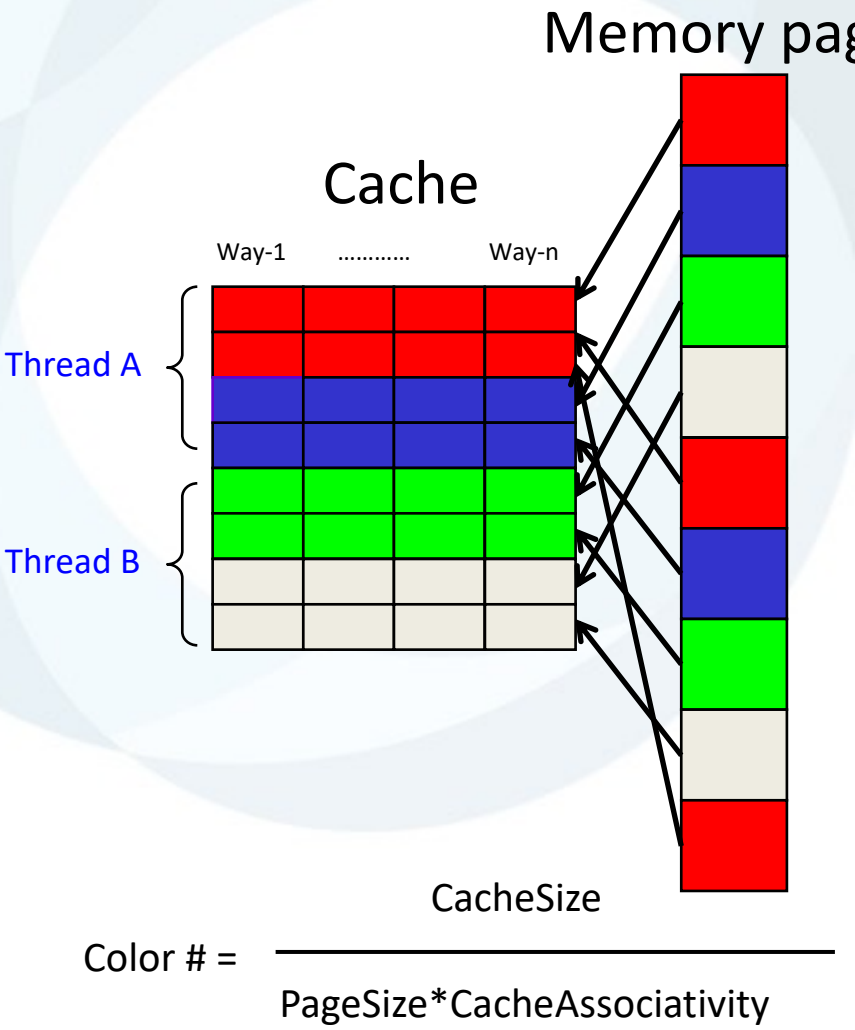
- Poor performance due to conflicts
- Unpredictable performance
- Denial of service attacks



Picture courtesy Intel

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



Hotness-based Page Coloring

Basic idea

Restrain page coloring to a small group of hot pages

Challenge:

How to efficiently determine hot pages

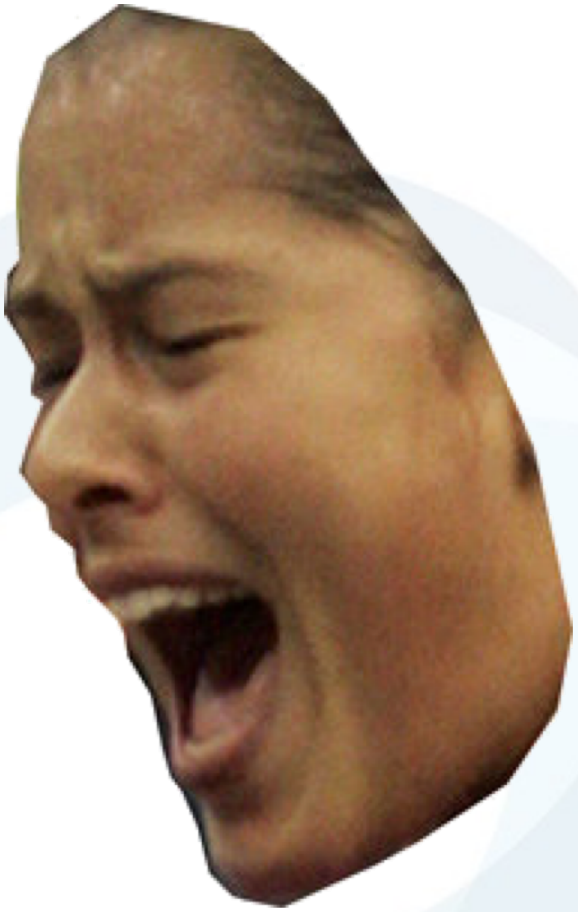
Roadmap

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

Alternatively …

THE HOOK

(courtesy URCS Professor Ehsan Hoque)



Scored a point

Figure used with permission, copied from Aviezer et al. (2012), Science, 338, 1225-1229.

Scored a point

Figure used with permission, copied from Aviezer et al. (2012), Science, 338, 1225-1229.

Main Ideas and Delivery

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

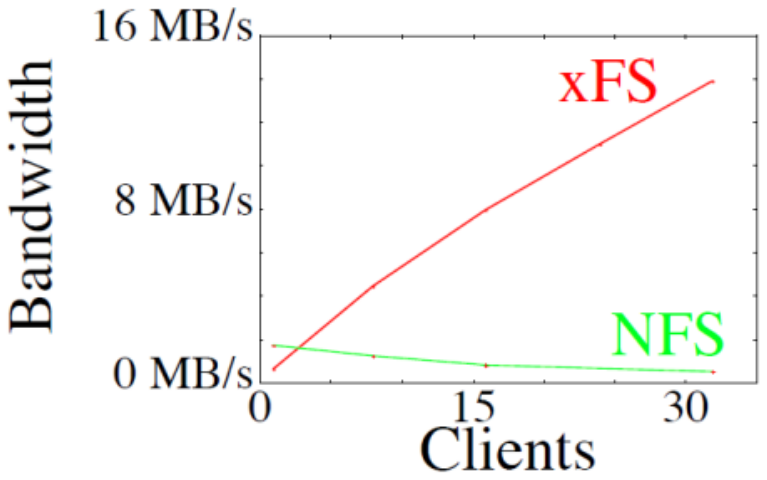


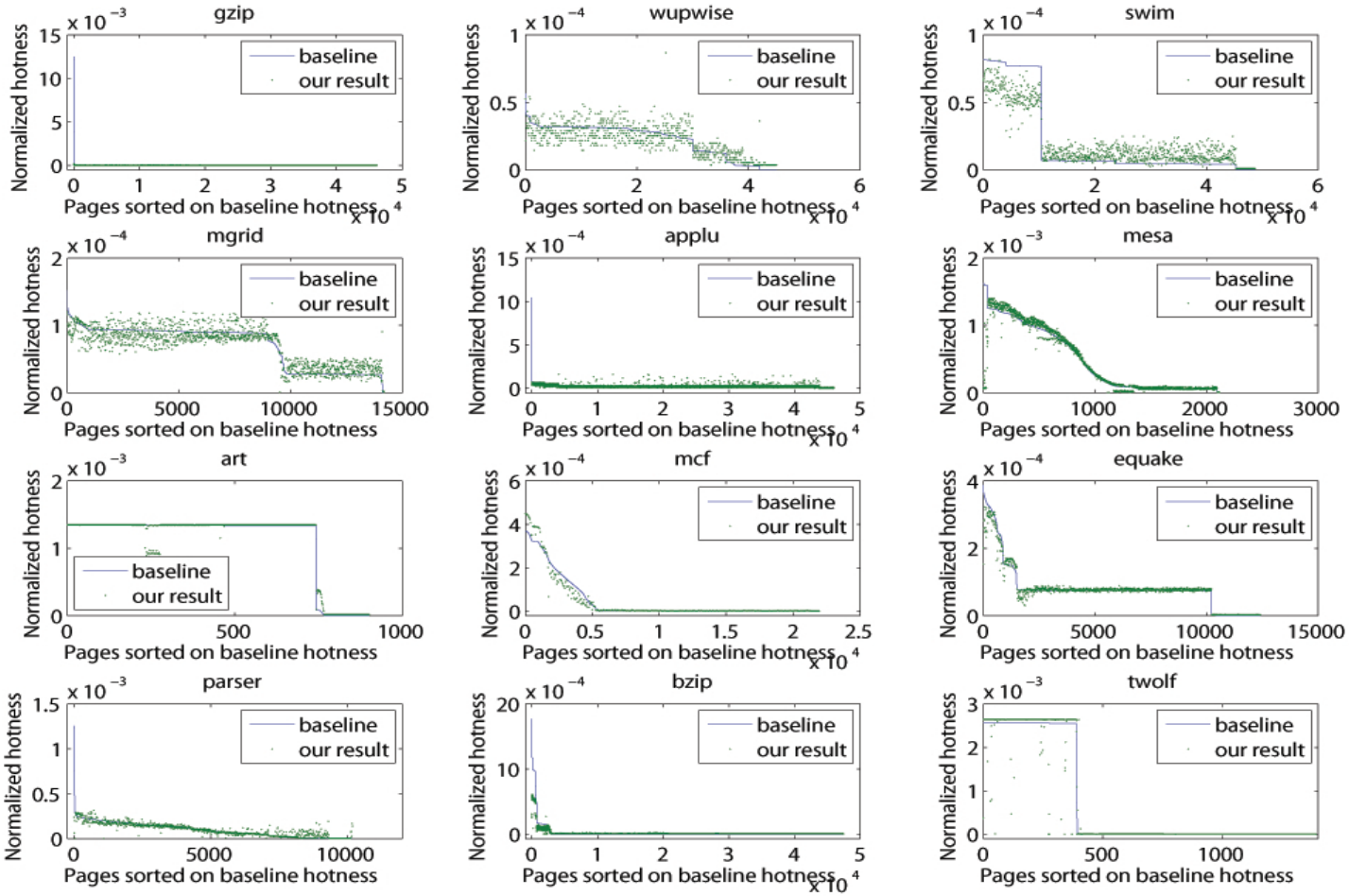
Table:

- Precision?
- Allow audience to draw their own conclusion

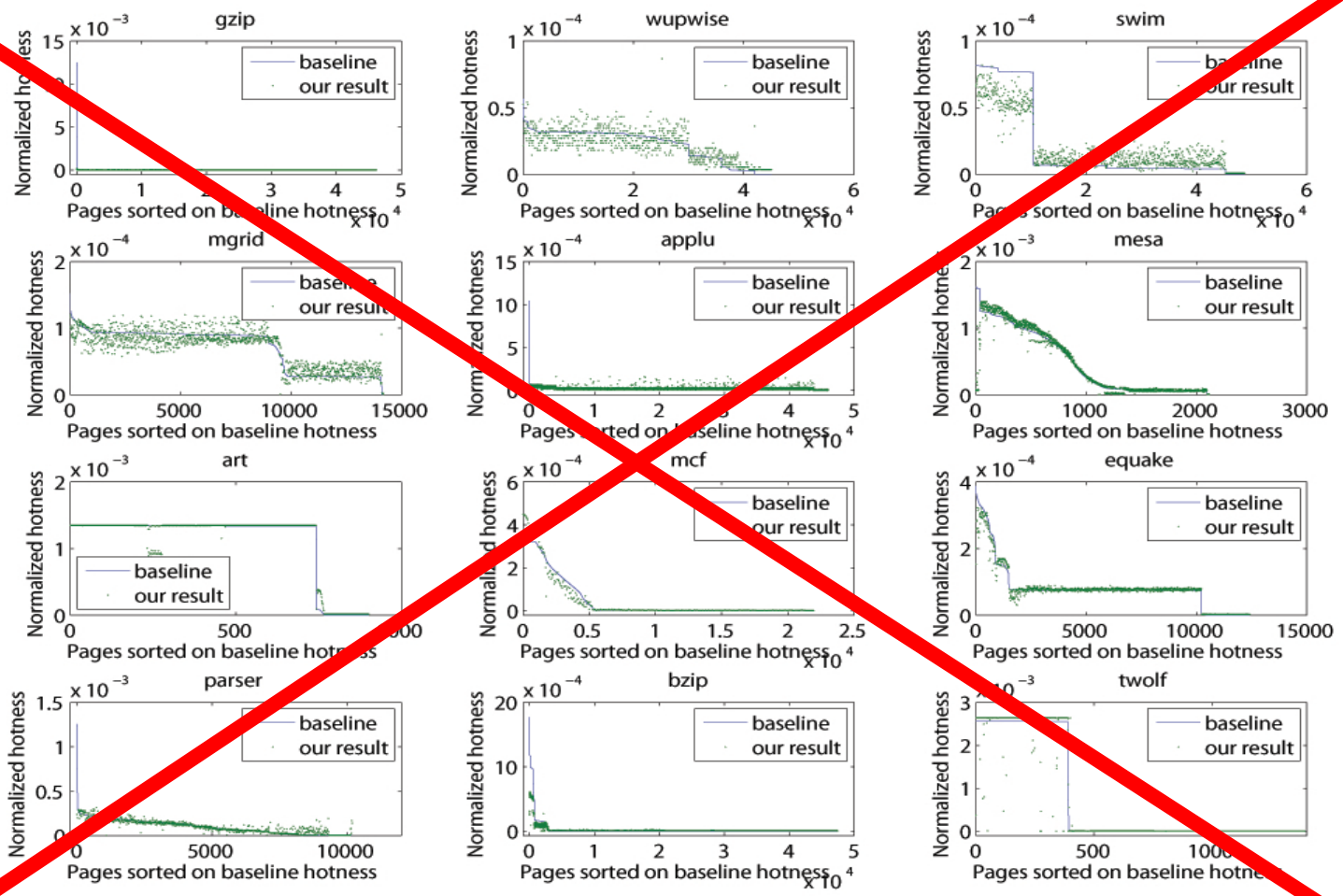
Pictures:

- Worth a thousand words (or numbers)?

Accuracy


gzip
wupwise
swim
mgrid
applu
mesa
art
mcf
equake
parser
bzip
twolf
baseline
our result
Normalized hotness
Pages sorted on baseline hotness

Accuracy


gzip
wupwise
swim
mgrid
applu
mesa
art
mcf
equake
parser
bzip
twolf
baseline
our result
Normalized hotness
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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

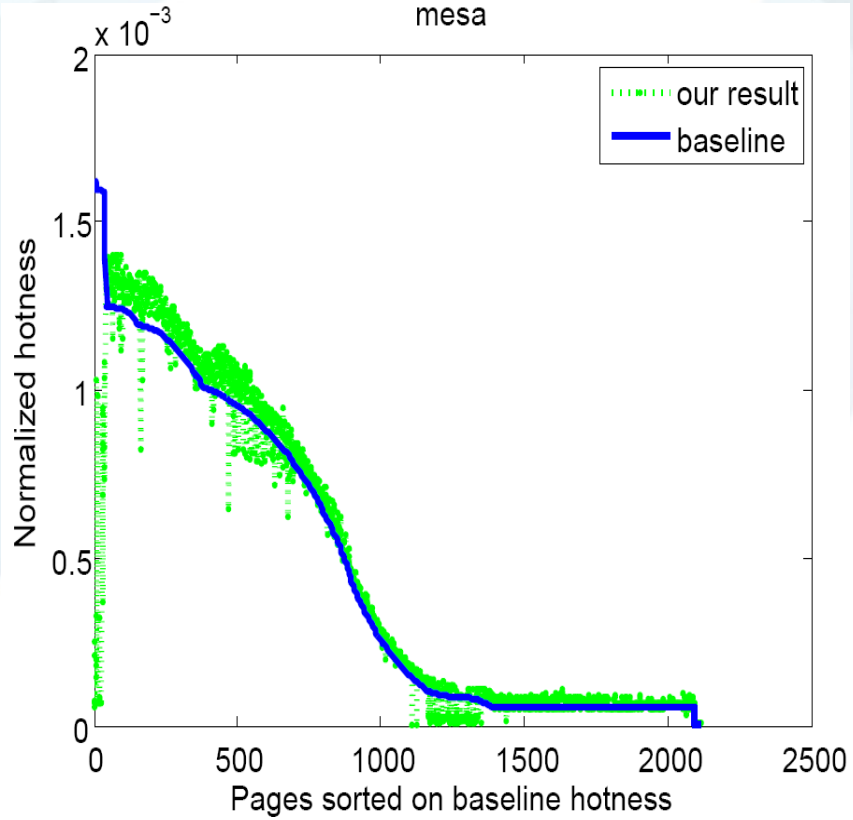

Illustration and Color

- “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

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**
subtract-colors = *old-colors* – *new-colors*.
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**
add-colors = *new-colors* – *old-colors*.
Find the hot pages in *old-colors* within the $\frac{|new\text{-}colors|}{|add\text{-}colors|} * budget$ limit, and then move at most *budget* (*i.e.* $\frac{|add\text{-}colors|}{|new\text{-}colors|}$ proportion) of them to *add-colors*.
end if

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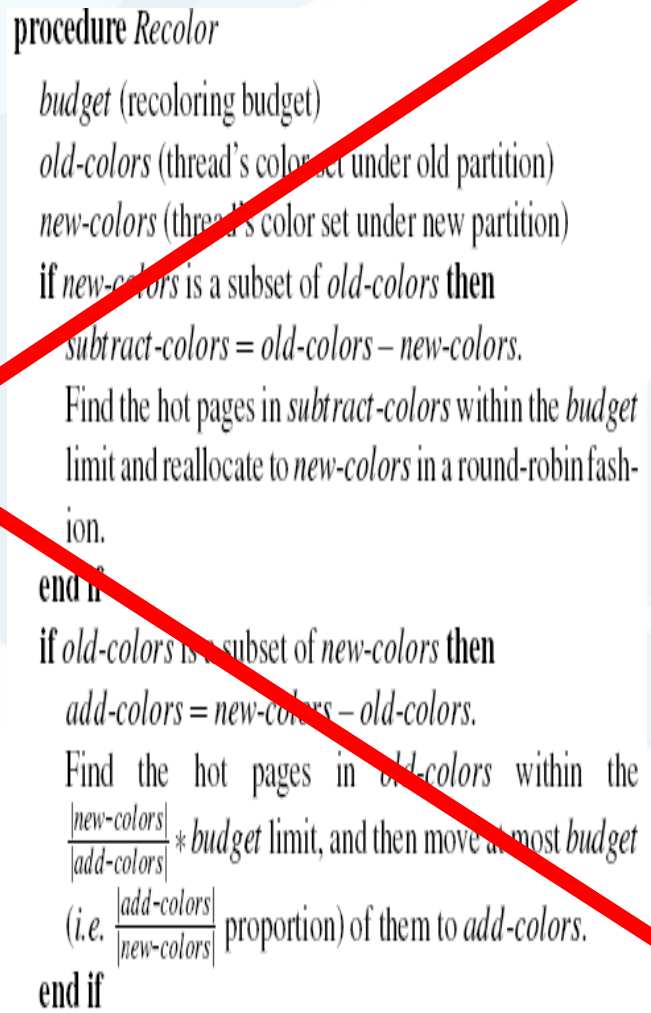

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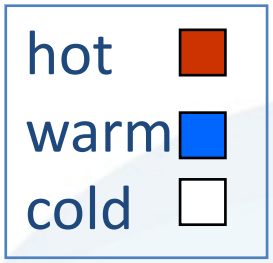
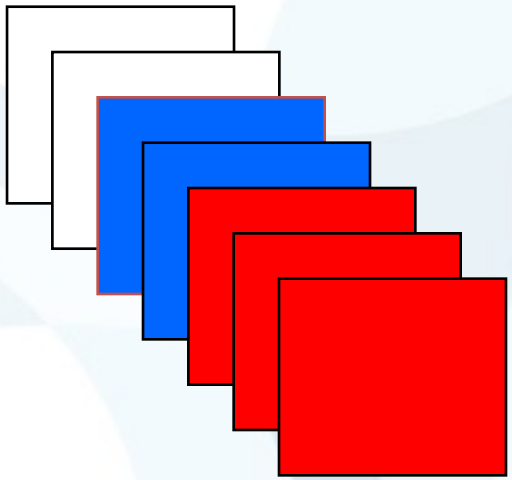
Instead …

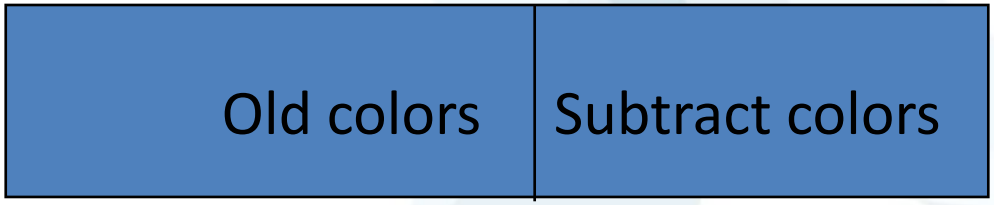
Re-coloring Procedure(I)



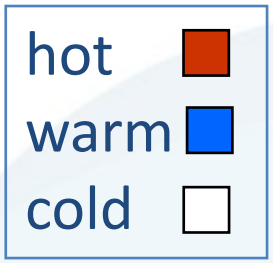


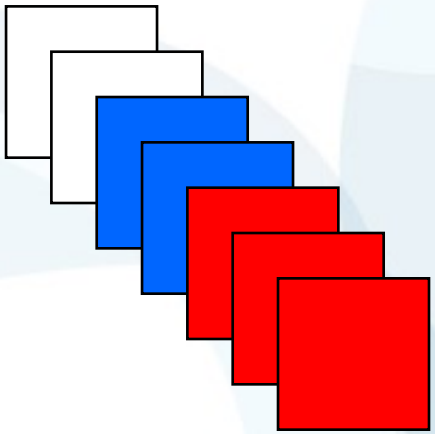
Cache share decrease

Budget = 2 pages



Re-coloring Procedure(II)





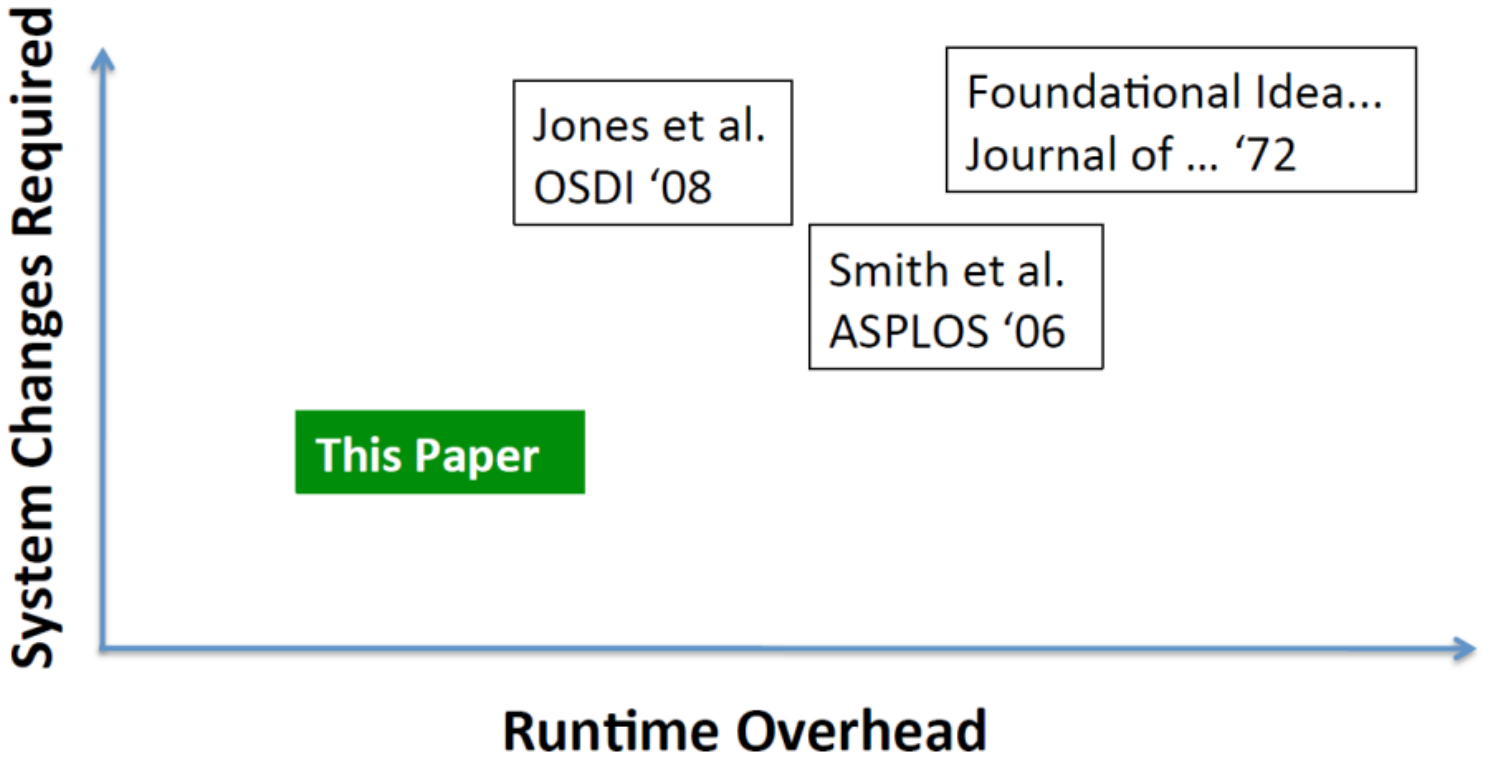
Cache share increase

Budget = 2 pages

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 & Confidence

Practice, Practice, Practice!

In front of a tough audience

Monotonous voice?

Improve articulation with tongue twisters

Peter Piper picked a peck of pickled peppers…

Projecting Your Voice

Let’s Try It

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

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!

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

Questions?

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

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

Books on Making Good Talks

Resonate: Present Visual Stories that Transform Audiences (Books)
Duarte, Nancy

slide:ology The Art and Science of Creating Great Presentations (Books)
Duarte, Nancy

Illuminate: Ignite Change Through Speeches, Stories, Ceremonies, and Symbols
Duarte, Nancy