

Get Ready for PhD Dissertation

Technical Preparations

Chensong Zhang

LSEC & NCMIS

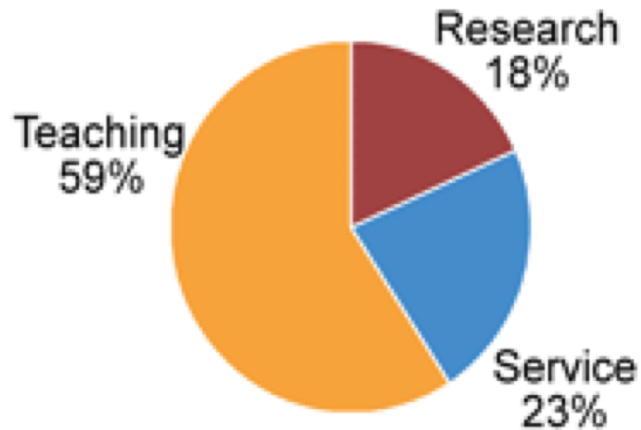
Chinese Academy of Sciences

Updated on Sep 18, 2019

The Origin ...

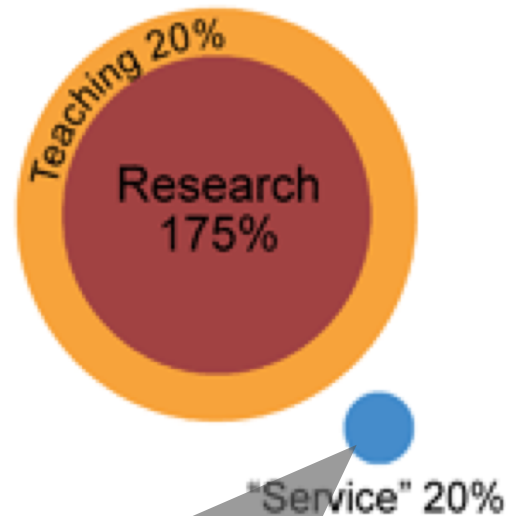
HOW PROFESSORS SPEND THEIR TIME

How they actually spend their time:



Source: Higher Education Research Institute Survey (1999)

How departments expect them to spend their time:



Referee, committee, education

How Professors would like to spend their time:

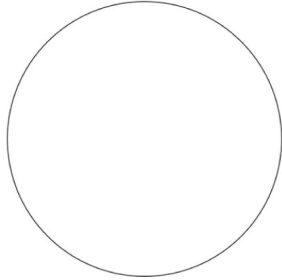
Don't tell me what to do

WWW.PHDCOMICS.COM

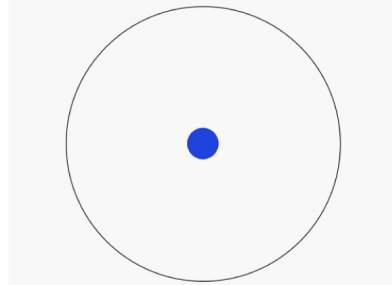
Talk about what we care and take every talk seriously!

An Illustrative Guide to PhD

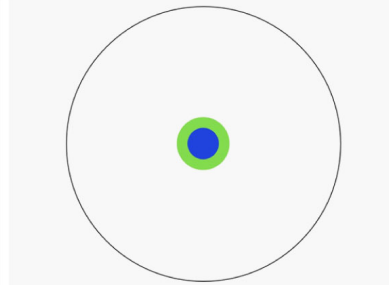
Imagine a circle that contains all of human knowledge:



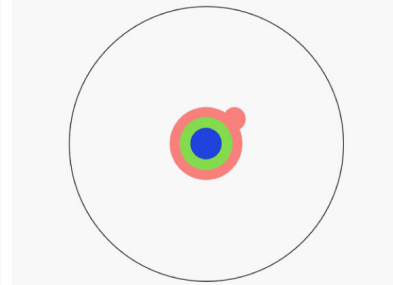
By the time you finish elementary school, you know a little:



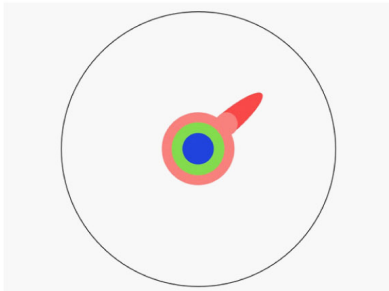
By the time you finish high school, you know a bit more:



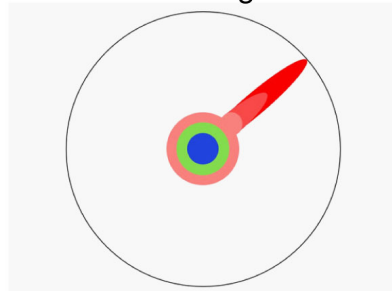
With a bachelor's degree, you gain a specialty:



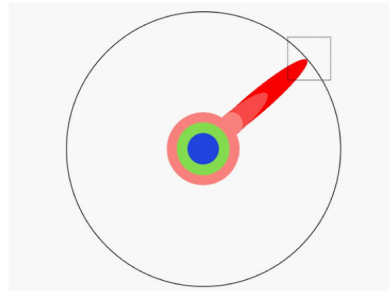
A master's degree deepens that specialty:



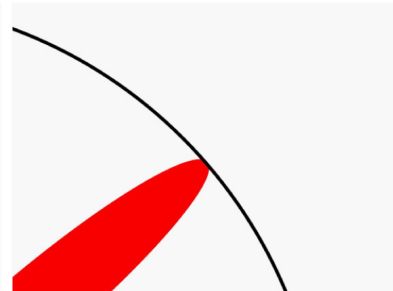
Reading research papers takes you to the edge of human knowledge:



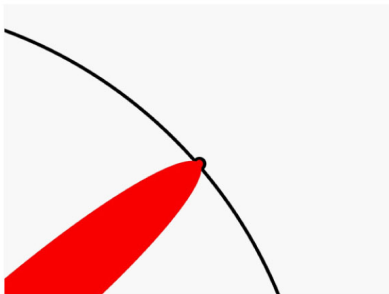
Once you're at the boundary, you focus:



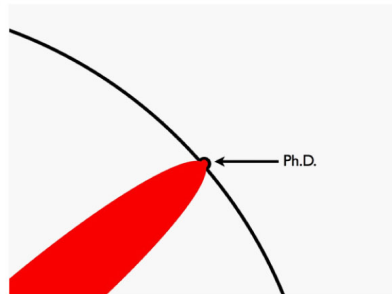
You push at the boundary for a few years:



Until one day, the boundary gives way:



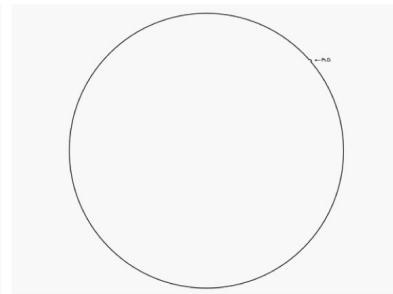
And, that dent you've made is called a Ph.D.:



Of course, the world looks different to you now:



So, don't forget the bigger picture:



Keep pushing.

Matt Might

Preparation for PhD Dissertation

- ✓ Choose an area
- ✓ Choose a research topic
- ✓ Get to know your area

Do your research

- Manage your time
- Draft your thesis/dissertation
- Proofread and revise
- Prepare oral defense

Stay organized and go digitalized!



A Dissertation Should ...

- Have a **clear objective**, based on a well worked out thesis or central question
- Be **well planned** and **widely researched**
- Contain consistent and correct **referencing**
- Be structured and expressed in an appropriate academic way
- Show that you have a good grasp of relevant concepts and are able to apply them
- Show that you have been able to use this to produce a well argued extended academic work

How To Deal With New Challenges

It is all about efficiency! Key: The right tools!

- **Reference managers**

BibTeX, Mendeley, BibDesk, EndNote, ...

- **Version control**

CVS, SVN, Git, Mercurial, ...

- **Time management**

Calendar, Todo List, Gantt Chart, ...

- **Cloud storage and sync**

DDL, Dropbox, Google Drive, iCloud, ...

- **Integrated search engines**

Google, ScienceDirect, MathSciNet, SCI-Hub, Lib Genesis, ...

- **Communication**

Skype/WeChat, WhiteBoard, TeamViewer, GoToMeeting, ...



Outline

1. Organize your references
2. Prepare your slides/posters/CVs
3. Do version control and backup

When I Was A Student

- Go to the library to copy a paper
- File tons of papers in the office
- Try to remember which paper I need
- Find a paper in piles of papers
- File tons of papers in the office again
- Type in references by hand
- Prepare a webpage and CV
- Send email to a friend to get a paper



There is no such thing as too many books. There is only too little bookshelf!

Reference Management

- Check an interesting paper out
 - Have I seen this paper before? Maybe ...
- Check who is interested in a paper
 - How many downloads? Who's citing it?
- Organize citations & generating bibliographies
 - Don't want to enter references over and over again!
- Managing your documents & references
 - Soon you will have thousands of PDF files. How to find them?
- Sharing references with collaborators
 - Sending PDF files to collaborators via email? Not good!
- Creating your publication profile
 - Is your publication list up-to-date? No Way!

BibTeX Database

- O. Patashnik and L. Lamport, 1985
- User is freed from deciding how to format
- Easy to be reused in other documents
- Initialization overhead

An example given by H. Hudson, Berkeley

```
% The \cite command functions as follows:  
% \citet{key} ==>>      Jones et al. (1990)  
% \citet*{key} ==>>    Jones, Baker, and Smith (1990)  
% \citep{key} ==>>    (Jones et al., 1990)  
% \citep*{key} ==>>   (Jones, Baker, and Smith, 1990)  
% \citep[chap. 2]{key} ==>> (Jones et al., 1990, chap. 2)  
% \citep[e.g.][]{key} ==>> (e.g. Jones et al., 1990)  
% \citep[e.g.][p. 32]{key} ==>> (e.g. Jones et al., p. 32)  
% \citeauthor{key} ==>> Jones et al.  
% \citeauthor*{key} ==>> Jones, Baker, and Smith  
% \citeyear{key} ==>> 1990
```


Reference Management Tools

JabRef *reference manager*



 **MENDELEY**

citeulike 

 **BibSonomy**

wikindx4

 **EasyBib** Write Smart.

citelighter

https://en.wikipedia.org/wiki/Comparison_of_reference_management_software

Key Features

- Free
- Fast search
- Organize
- Read and annotate
- Cite and write
- Cross platform support
- Client + web-based access
- Communicate
- Increase awareness
- Discover interesting papers



Mendeley Desktop

The screenshot displays the Mendeley Desktop interface. At the top, there is a toolbar with icons for 'Add Documents', 'Delete Documents', 'Remove from Collection', 'Create Folder', 'Remove Folder', and 'Sync Library'. A search bar is located in the top right corner with the placeholder text 'Type here to search'.

On the left side, there is a 'My Library' sidebar with a tree view of folders and documents. The 'MSC Biology' folder is selected. Below the sidebar is a 'Filter by My Tags' dropdown menu with a list of tags including 'aging', 'allergy', 'asthma', 'autoimmune', 'baboon', 'biomarker', 'bone', 'bone marrow', 'cartilage', 'cellular therapy', 'differentiation', 'Dkk1', 'EAE', 'gene expression', 'GVHD', 'heart disease', 'heart failure', 'hematopoiesis', and 'MSC'.

The main area shows a list of documents in a table view. The columns are 'Authors', 'Title', 'Year', 'Published In', and 'Added'. The first document is 'Articles Mesenchymal stem cells for treatment of steroid-resistant, severe, acute graft-versus-host disease: a phase II study' by Blanc, Katarina Le; et al., published in 'The Lancet' in 2008.

On the right side, there is a 'Details' panel for the selected document. It shows the document type as 'Journal Article', the authors as 'K. Blanc, F. Frassoni, L. Ball et al.', and the title as 'Articles Mesenchymal stem cells for treatment of steroid-resistant, severe, acute graft-versus-host disease: a phase II study'. Other details include 'Year: 2008', 'Volume: 371', 'Issue:', and 'Pages: 1579-1586'. There is also an 'Abstract:' section and a 'Tags:' section with the tag 'autoimmune; GVHD; MSC'. A 'Citation Key:' is shown as 'Blanc2008', and a 'URL:' section with 'Add URL...' is also present. 'Catalog IDs' and 'ArXiv ID:' are listed at the bottom.

Three callout boxes are overlaid on the image:

- 'Set up and manage your reference groups' points to the 'MSC Biology' folder in the sidebar.
- 'Library showing all your documents (citation or table view)' points to the document list table.
- 'Add tags & notes and edit document details' points to the 'Details' panel on the right.

Access From Everywhere

The screenshot shows the Mendeley web interface. At the top, the URL is <http://www.mendeley.com/library/showrecent/document/3562480331/#document-3562480331>. The page title is "MENDELEY" and it says "Welcome back William Gunn / Inbox (1) My Account". Below the navigation bar, there are tabs for "Dashboard", "My Library", "Papers", "Groups", and "People". A search bar is present with the text "Search research papers".

In the center, there are icons for "Add Document", "Delete Documents", "Remove from Folder", "Create Folder", "Remove Folder", "Web Importer", and "Account Usage".

On the left, the "My Library" sidebar lists various categories like "All Documents", "Recently Added", "Favorites", "CiteULike", "Needs Review", "My Publications", "Unsorted", "Automatically Imported", "Biosensor", "CSCs Biology", "Data citation", "Data reuse", "Data sharing and...", "Elsevier Grand...", "Embryonic Stem Cells", "graph related", "iPSCs Biology", "linked data", "MSC Biology", "MSCs and Bone", "My Publications", "Myeloma", "Narratives in Medicine", "prov-xg public...", "Reinventing the...", "Research related", "Research2.0", "Science Journalism /...", "Semantic Web basics", "social media in...", "Social Network Analysis", and "Social Networks".

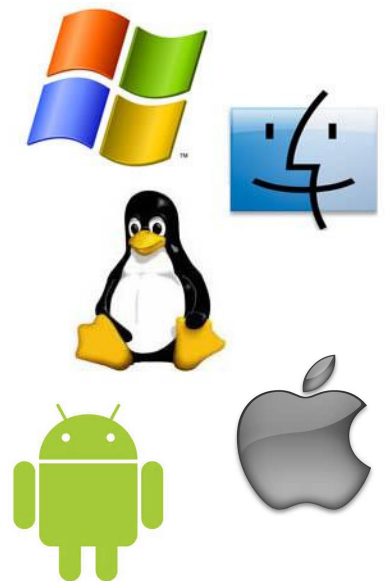
The main content area shows "Recently Added" with a list of documents. The selected document is "Citation advantage of open access articles." by Gunther Eysenbach (2006) from *PLoS biology* 4 (5) p. e157. The URL is <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1459247&tool=pmcentrez&rendition=abstract>. It was added 2 minutes ago and is a PDF (112.63 KB). Below the document list, there are buttons for "View abstract", "Edit tags and notes", and "Edit document details".

The "Edit Document Details" form is open, showing the following fields:

- Type: Journal Article
- Title: Citation advantage of open access articles.
- Authors: Eysenbach, Gunther
- Journal: PLoS biology
- Volume: 4
- Issue: 5
- Pages: e157
- Year: 2006
- URL: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1459247&tool=pmcentrez&rendition=abstract>
- Keywords: Bibliometrics; Biomedical Research; Biomedical Research; statistics & numerical data; Biomedical Research; trends; Internet; Internet; statistics &

At the bottom of the form are "SAVE" and "CANCEL" buttons.

You can also add references, edit and manage your library online



Adding A New Paper

You have different options to set up your library:

- Add single files or an entire folder
- “Watch a folder” to automatically import PDF files
- Drag and drop PDFs into Mendeley Desktop

and Mendeley will try to extract the document details automatically

Articles Mesenchymal stem cells for treatment of steroid-resistant, severe, acute graft-versus-host disease: a phase II study

Authors: K. Blanc, F. Frassoni, L. Ball et al.

Journal: *The Lancet*

Year: 2008

Volume: 371

Issue:

Pages: 1579-1586

Abstract:

Tags:

Keywords:
autoimmune; GVHD; MSC

Citation Key:
Blanc2008

URL:
Add URL...

Catalog IDs
ArXiv ID:

Authors	Title	Year	Published In	Added
Almeida-Porada, G...	Cotransplantation of human stromal cell progenitors into preimmune fetal sheep resu...	2000	Cell	3/7/09
Ball, L. M.; Bernard...	Cotransplantation of ex vivo expanded mesenchymal stem cells accelerates lympho...	2007	Blood	4/5/09
Ball, L; Bredius, R; L...	Third party mesenchymal stromal cell infusions fail to induce tissue repair despite ...	2007	Leukemia	3/22/09
Barrett, A John; Leb...	Prophylaxis of acute GVHD: manipulate the graft or the environment?	2008	Best Practice & Research ...	4/5/09
Bartholomew, Ameli...	Mesenchymal stem cells suppress lymphocyte proliferation in vitro and prolong skin graft s...	2002	Hematology	4/5/09
Bensidhoum, Morad...	Homing of in vitro expanded Stro-1 - or Stro-1 + human mesenchymal stem cells int...	2004	Journal of Clinical Onco...	3/7/09
Bianco, Paolo; RIMI...	Bone Marrow Stromal Stem Cells: Nature, Biology, and Potential Applications	2001	Stem Cells	3/7/09
Blanc, Katarina Le; ...	Articles Mesenchymal stem cells for treatment of steroid-resistant, severe, acute graft-ve...	2008	The Lancet	4/5/09
Blanc, Katarina Le; ...	Treatment of severe acute graft-versus-host disease with third party haploidentical mese...	2004	The Lancet	4/5/09
Chan, Rachel W S; ...	Generation of human pluripotent stem cells with ... and Stro-1	2009	Biotechnology	3/7/09
Colter, David C; Clas...	Rapid expansion of recycling stem cells in cultures of plastic-adherent cells from huma...	2009	Proc. Natl. Acad. Sci. U...	3/7/09
DENNIS, JAMES E.; ...	Origin and Differentiation of Human and Murine Stroma	2002	Stem Cells	3/7/09
Etheridge, S. Leah; ...	Expression Profiling and Functional Analysis of Wnt Signaling Mechanisms in Mesenchym...	2004	Stem Cells	3/22/09
Fang, Baijun; Li, Nin...	Cotransplantation of haploidentical mesenchymal stem cells to enhance engraft...	2009	Pediatric transplantation	7/10/09
Fröhlich, Mirjam; Gr...	Tissue engineered bone grafts: biological requirements, tissue culture and clinical rele...	2008	Current stem cell researc...	9/15/09
Gronthos, S; Grave...	The STRO-1+ fraction of adult human bone marrow contains the osteogenic precursors	1994	Blood	3/7/09
Gronthos, Stan; Zan...	Molecular and cellular characterisation of	2003	Journal of Cell	3/7/09

Other ways to Add Papers

- Add bib items automatically: [watch folders!](#)
- Add a bib item manually
- Use Mendeley Suggest: [big data](#)
- Drag and drop a PDF file to Mendeley
- Use quick-add buttons: arXiv, IEEE Xplore, ...
- Import from other software: BibTeX, EndNote, ...
- Sync with other services: Zotero, Citeulike, ...
- Use the Research Catalog: [>30M papers](#)
- Import using the web importer



Manage Your Library

Open attached PDF files in integrated viewer

Documents can be marked read/unread

Star your favorite papers

Filter by authors, tags, publications or keywords

My Library

- All Documents
- Recently Added
- Favorites
- CiteULike
- Needs Review
- My Publications
- Unsorted
- Automatically Imported
- Biosensor
- CSCs Biology
- Data citation
- Data reuse
- Data sharing and withholding
- Elsevier Grand Challenge for the Life S...
- Embryonic Stem Cells
- graph related
- iPSCs Biology
- linked data
- MSC Biology

MSC Biology

★	●	📄	Authors	Title	Year	Published In	Added
☆	●	📄	Almeida-Porada, Gr...	Cotransplantation of human stromal cell progenitors into preimmune fetal sheep resu...	2000	Cell	3/7/09
☆	●	📄	Ball, L. M.; Bernard...	Cotransplantation of ex vivo expanded mesenchymal stem cells accelerates lympho...	2007	Blood	4/5/09
☆	●	📄	Ball, L.; Bredius, R; L...	Third party mesenchymal stromal cell	2007	Leukemia	3/22/09
☆	●	📄	Barrett, A John; Leb...	Prophylaxis of acute GVHD: manipulate the graft or the environment?	2008	Best Practice & Research ...	4/5/09
☆	●	📄	Bartholomew, Ameli...	Mesenchymal stem cells suppress lymphocyte proliferation in vitro and prolong skin graft s...	2002	Hematology	4/5/09
☆	●	📄	Bensidhoum, Morad...	Homing of in vitro expanded Stro-1 - or Stro-1 + human mesenchymal stem cells int...	2004	Journal of Clinical Onco...	3/7/09
☆	●	📄	Bianco, Paolo	Biology, and Potential Applications	2001	Stem Cells	3/7/09
★	●	📄	Le Blanc, Katarina; ...	Mesenchymal stem cells for treatment of steroid-resistant, severe, acute graft-vers...	2008	Lancet	4/5/09
☆	●	📄	Blanc, Katarina Le; ...	Treatment of severe acute graft-versus-host disease with third party haploidentical mese...	2004	The Lancet	4/5/09
☆	●	📄	Chan, Rachel W S; ...	Clonogenicity of Human Endometrial Epithelial and Stromal Cells 1	2004	Biotechnology	3/7/09
★	●	📄		Rapid expansion of primary stem cells in cultures of plastic-adherent cells from huma...	2000	Acad. Sci. U...	3/7/09
☆	●	📄	DENNIS, JAMES E.; ...	Origin and Differentiation of Human and Murine Stroma	2002	Stem Cells	3/7/09
☆	●	📄	Etheridge, S. Leah; ...	Expression Profiling and Functional Analysis	2004	Stem Cells	3/22/09

Filter by My Tags

- Filter by Author's Keywords
- Filter by Authors
- Filter by My Tags
- Filter by Publications

autoimmune
baboon
biomarker
bone
bone marrow
cartilage

Search As Your Type

My Library

- All Documents
- Recently Added
- Favorites
- CiteULike
- Needs Review
- My Publications
- Unsorted
- Automatically Imported
- Biosensor
- CSCs Biology
- Data citation
- Data reuse
- Data sharing and withholding
- Elsevier Grand Challenge for the Life S...
- Embryonic Stem Cells
- graph related
- iPSCs Biology
- linked data
- MSC Biology

MSC Biology Edit Settings

Results for "bone" in "MSC Biology". Search in [All Documents](#) Clear

Search Results

- Circulating Skeletal Stem Cells**
Sergei A. Kuznetsov; MH Mankani; S Gr... - 2001 - The Journal of Cell Biology
...skeletal stem cells found in **bone** marrow (stromal stem cells, "mesenchymal...
- Bone Marrow Stromal Stem Cells: Nature, Biology, and Potential Applications**
Paolo Bianco; M RIMINUCCI; S Gronthos... - 2001 - Stem Cells
S tem C ells C oncise R eview **Bone** Marrow Stromal Stem Cells: Nature...
- Molecular and cellular characterisation of highly purified stromal stem cells derived from human bone marrow**
Stan Gronthos; ACW Zannettino; SJ Hay... - 2003 - Journal of Cell Science
Keywords: Adipose, **Bone**, Bone Marrow Stroma, Cartilage, CFU...
...stem cells derived from human **bone** marrow Stan Gronthos 1, *, Andrew C. W. Zannettino...
- Clonogenicity of Human Endometrial Epithelial and Stromal Cells 1**
Rachel W S Chan; KE Schwab; CE Gargett - 2004 - Biotechnology
...erative adult tissues such as **bone** marrow, intestine, and skin, rare...
- Origin and Differentiation of Human and Murine Stroma**
JAMES E. DENNIS; P Charbord - 2002 - Stem Cells
...is found not only for **bone** mar- row stromal cells, but...
- Homing of in vitro expanded Stro-1- or Stro-1 + human mesenchymal stem cells into the NOD/SCID mouse and their role in supporting human CD34 cell engraftment**
Morad Bensidhoum; A Chapel; S Francoi... - 2004 - Journal of Clinical Oncology
...detected in blood or in **bone** marrow (BM) and spleen as...
- Plasticity of marrow-derived stem cells**
Erica L Herzog; L Chai; DS Krause - 2003 - Blood
...Li Chai, and Diane S. Krause **Bone** marrow (BM) contains hematopoi- etic...
- Cotransplantation of human stromal cell progenitors into preimmune fetal sheep results in early appearance of human donor cells in circulation and boosts cell levels in bone marrow at later time points after transplantation**
Graca Almeida-Porada; CD Porada; N Tr... - 2000 - Cell
...and boosts cell levels in **bone** marrow at later time points...

Filter by My Tags

- All
- aging
- allergy
- asthma
- autoimmune
- baboon
- biomarker
- bone
- bone marrow
- cartilage
- cellular therapy
- differentiation
- Dkk1
- FAF

Details Notes

Year: 2000
Volume: 97
Issue: 7
Pages: 3213-3218

Abstract:

Tags:

Keywords:
CFU-F; marrow stromal cells; MSC

Citation Key:
Colter2000

URL:
Add URL...

Catalog IDs
ArXiv ID:
DOI: 10.1073/pnas.070034097
PMID:

Files:
Colter et al. - 2000 - Rapid expansion of recycling ...

Full Text Search with One Click



Multigrid and Gauss-Seidel Smoothers Revisited: Parallelization on Chip Multiprocessors

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{dan.wallin, henrik.lof, erik.hagersten, sverker.holmgren}@it.uu.se

ABSTRACT

Efficient solution of partial differential equations require a match between the algorithm and the target architecture. Many recent chip multiprocessors, CMPs (a.k.a. multi-core), feature low intra-thread communication costs and smaller per-thread caches compared to previous shared memory multi-processor systems. From an algorithmic point of view this means that data locality issues become more important than communication overheads. A fact that may require a re-evaluation of many existing algorithms.

General Terms

Algorithms, Performance

Keywords

Multigrid, Gauss-Seidel, Poisson equation, relaxation, orderings, cache blocking, OpenMP, temporal blocking, CMP

1. INTRODUCTION

Whenever there is a paradigm shift in computer architec...

Annotate and Highlight

The screenshot displays a PDF viewer interface with a toolbar at the top containing icons for Pan, Highlight Text, Add Note, Select Text, Copy, Paste, Rotate Left, Rotate Right, Zoom Out, Zoom In, Fullscreen, and Sync Library. A search bar is located in the top right corner.

The document content includes a section titled "Adult bone-marrow-derived mesenchymal stem cells are immunosuppressive and prolong the rejection of mismatched skin grafts in animals. We transplanted haploidentical mesenchymal stem cells in a patient with severe treatment-resistant grade IV acute graft-versus-host disease of the gut and liver. Clinical response was striking. The patient is now well after 1 year. We postulate that mesenchymal stem cells have a potent immunosuppressive effect in vivo." The text is attributed to *Lancet* 2004; 363: 1439-41.

A yellow highlight covers a portion of the text: "Mesenchymal stem cells given intravenously have been well tolerated. Furthermore, they are immunosuppressive and inhibit the proliferation of alloreactive T cells. Preliminary reports of reduced haemopoietic activity and a reduction in the clinical experience of acute GVHD in patients with grade IV acute GVHD treated with mesenchymal stem cells to treat acute GVHD after transplantation." A tooltip for this highlight shows the user's name, a timestamp of 10/16/2010 3:26:12 PM, and the text "See Gregory et al. 2004".

Another yellow highlight covers the text: "and daclizumab (1 mg/kg) for 4 weeks were ineffective". A tooltip for this highlight shows the user's name, a timestamp of 10/16/2010 3:24:55 PM, and the text "Highlighted by you at 3:24:55 PM on Saturday, October 16, 2010".

The document also features a line graph with two y-axes. The left y-axis is labeled "Bilirubin concentration (mmol/L)" and ranges from 0 to 300. The right y-axis is labeled "Number of stools per day" and ranges from 0 to 25. The x-axis represents time. Two data series are plotted: "Bilirubin" (represented by solid circles) and "Stools" (represented by open circles). Both series show a significant peak around day 22, corresponding to the patient's clinical symptoms described in the text.

On the right side of the viewer, there are tabs for "Details" and "Notes". The "Notes" tab is active, showing a text area with formatting options (B, I, U, list, indent). Below the notes area is an "Annotations" section, which displays a yellow sticky note with the user's name, a timestamp of 10/16/2010 3:25:52 PM, and the text "See Gregory et al. 2004".

Share with your Collaborators

The screenshot shows the Mendeley interface for a group named "Creatively named research papers, owned by [stephen croome](#)". The group is described as "Creatively named research papers, owned by [stephen croome](#)". The group is public and open. The page shows a list of documents added to the group, including "Effect of background noise on food perception" by Juliet Rowley, "Dreamboys, Meatmen and Werewolves: Visualizing Erotic Identities in All-Male Comic Strips" by Ricardo Vidal, and "Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomised controlled trials" by William Gunn. The group has 31 members and a link to the group page is provided: <http://www.mendeley.com/groups/536621/creatively-named-research-papers/>. A button "E-mail to colleagues" is also visible.

Groups can be private or public (invite only or open)

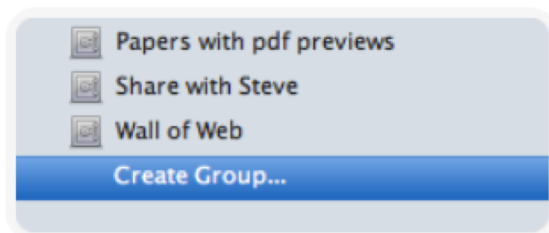
View the group online – other users can request to join or simply follow the activity of the group

Public groups only have the reference details – no full text. Private groups contain the full text including notes & annotations.

Communicate with Collaborators

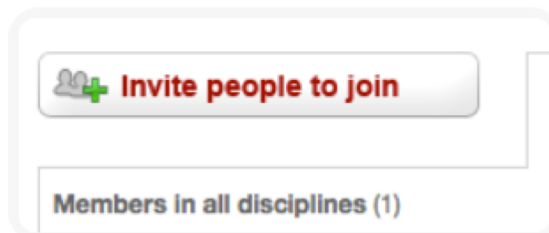
1. Create a private group

Create a private group to share your draft dissertation and associated references with all of your advisors in one place.



2. Invite advisors and reviewers

Invite your advisors and committee members to join so that everyone has easy access to all documents and references, all the time.



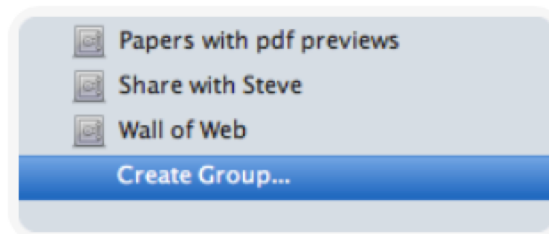
3. Track and respond to commentary

Your advisors can annotate your draft, and you can respond in real-time - so much easier than keeping track of multiple responses!



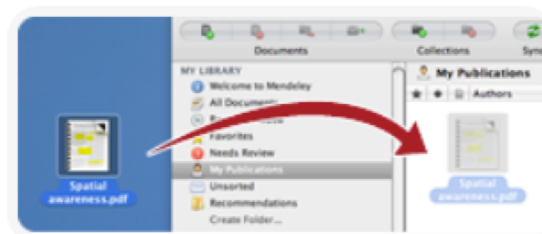
1. Create a private group

Create a private group on Mendeley to share PDFs and other documents with a group of your colleagues.



2. Add research and draft papers

Create a library of research specific to your group and add it to the group folder.



3. Annotate/write papers together

Share your thoughts with your colleagues and write papers collaboratively without having to constantly e-mail back and forth.



See more examples on <http://www.mendeley.com/how-we-help/>

Other Features

- In-application printing with annotation
- Advanced search options (title, author, abstract, ...)
- Access from everywhere
- Personalized search results
- Analyze hot research topics
- Search special characters
- More storage space
- Fast web access
- Better support for non-English documents?

So What?

- Go online and search a paper among millions of them
- Extend the search to people who is citing the paper
- Search a subject to write a paper or proposal
- Maintain a BibTeX library across all devices
- Cite a paper from the BibTeX library
- Search on laptop for a paper
- Not so many hardcopy papers in the office
- Share a paper with a collaborator easily
- Sometimes still ask a friend to find a paper
- Update my publication list automatically

Outline

1. Organize your references
2. Prepare your slides/posters/CVs
3. Do version control and backup

Keys to A Successful Talk

1. Provide appropriate **acknowledgments**
2. **Know your audience:** adjust for different audience
3. **Less is more:** Keep it simple, focus on key points
4. **Start your presentation strongly**
5. **Make the audience want to learn more**
6. **Time goes fast:** Be ready to skip slides
7. Q&A is as important as the talk itself
8. Learn from the best
9. **Practice and time** your presentation

*practice
makes
perfect*

Lessons Learnt from Steve Jobs



Six Presentation Secrets of **S. Jobs**:

1. Present what you're passionate about
2. Big picture first
3. Tell a story involving a villain
4. Bring numbers to life (5GB ~ 1000 songs)
5. Think visually
6. Be animated: use body language, visual aids, ...

- Good presentations are memorable
- Great presentations are motivating
- Good presentations contain valid info
- Great presentations contain minimal info
- Good presentations include stories
- Great presentations are stories

Tools for Making A Presentation

- PowerPoint/Keynote + LaTeXit/MathType
- TeX: Foil/Beamer/PowerDot
- Use a template!
 - Helps you to focus on the content
 - Gives you the possibility to easily create professionally looking slides
 - However, **personalizes** your slides!
 - Be careful with your user-defined macros

Beamer: Standard Templates

Berkeley

On the Complexity of SNP Block Partitioning Under the Perfect Phylogeny Model

Jens Beber, Tobias Holzer, Tobias Schödl, Robert Shmoor, Tibi Tsur

University of California, Berkeley
 Department of Computer Science
 Berkeley, CA 94720-1776
 {beber, holzer, schoedl, shmoor, tsur}@cs.berkeley.edu

Workshop on Algorithms in Bioinformatics, 2008

Outline

- Introduction
 - The Model and the Problem
 - The Integrated Approach
- Old News, Interesting Results
 - Hardness of PP-Partitioning of Haplotype Matrices
 - Hardness of PP-Partitioning of Genotype Matrices
- Open News, Interesting Results
 - Perfect PP-Phylogenies
 - Tractability of PP-Partitioning of Genotype Matrices

Objective of the integrated approach

- Partition the site sets into **comparable blocks**.
- Compute a **perfect phylogeny** for each block and combine them.
- Compute partition while computing perfect phylogenies.**

Implications for pp-partitions of haplotype matrices

Complexity

If $\text{rank}(M) = 2$ for a haplotype matrix M , we can find an optimal pp-partition in polynomial time.

Complexity

Computing pp for haplotype matrices is:

- NP-hard.
- not fixed-parameter tractable, unless $P = NP$.
- very hard to approximate.

Finding pp-partitions of genotype matrices

How many the genotype?

- The inputs of are **genotype matrices**.
- The inputs M do **not allow a perfect phylogeny**.
- What is $\text{pp}(M)$?

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Boadilla

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 Berkeley, CA 94720-1776
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Beamer: Personalized Templates

Introduction
Background information
The important things
Analysis of the work
Conclusion

Radboud University Nijmegen



Radboud University style for Beamer L^AT_EX
Show where you're from

Pim Vullers MSc

p.vullers@cs.ru.nl
http://www.cs.ru.nl/~pim/

Institute for Computing and Information Sciences – Digital Security
Radboud University Nijmegen

the 1st example presentation 2010
7th October 2010

TU e

Technische Universiteit
Eindhoven
University of Technology

Eindhoven University of Technology style for
Beamer L^AT_EX
Show where you're from

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http://www.cs.ru.nl/~pim/

Department of Mathematics and Computer Science
Eindhoven University of Technology

the 1st example presentation 2012
4th May 2012

Pim Vullers MSc

slides Example 2010

RU style for Beamer

1 / 7

Quiz: Antwort



Quelltext

```
1 public class QuizArray {
2     public static void main(String[] args) {
3         String[] myArray1 = { "geh", "du", "alter", "esel" };
4         String[] myArray2 = myArray1;
5         myArray2[3] = "sack";
6
7         System.out.print("myArray1: ");
8         for (int i = 0; i < myArray1.length; i++) {
9             System.out.print(myArray1[i] + " ");
10        }
11
12        System.out.print("\nmyArray2: ");
13        for (int i = 0; i < myArray2.length; i++) {
14            System.out.print(myArray2[i] + " ");
15        }
16    }
17 }
```

Ausgabe

myArray1: geh du alter sack
myArray2: geh du alter sack

Einleitung
●○○○○

Coding Style
○○○

Praxis
○○○○○○○○○○○○○○○○

Allgemeine Hinweise zu ÜB
○○○

Hinweise zum ÜB 3
○

Abspann
○○

Martin Thoma – Programmieren-Tutorium Nr. 10 bei Martin Thoma

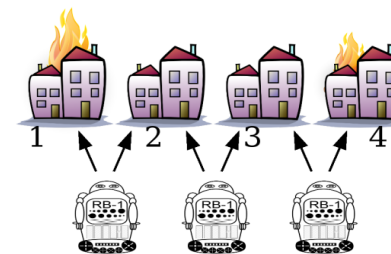
25. November 2012

4/28

department of mathematics and computing science

1/12

CGBG Fire Fighting



- 3 Agents have to fight fires:
 - Each house is burning or not.
 - Actions are restricted to 2 nearest houses.
 - Observations: flames ('F') or not ('N'). (for a observed subset of houses.)
 - Each house induces a local payoff function.
 - specified over subset of agents!



Collaborative
Graphical BGs

Frans Oliehoek

Games

Strategic Games
Compact Models
Imperfect Information

Exploiting
Structure

Two Types of
Independence

CGBGs

Experiments

Sequential
Decisions

Dec-POMDPs

Exploiting
Independence

Experiments

Summary

LIS

PowerDot: Standard Templates

Example of the tycja style

Hendri Adriaens Christopher Ellison

December 31, 2013

left footer right footer – 1 / 2

Example slide

Here is the binomium formula.

$$(a + b)^n = \sum_{k=0}^n \binom{n}{k} a^{n-k} b^k \quad (1)$$

We will prove formula (1) on the blackboard.

- Here
 - ◆ is
 - a
 - ◆ list
 - with
 - ◆ seven
- items.

left footer right footer – 2 / 2

Example of the husky style

Hendri Adriaens Christopher Ellison

December 31, 2013

left footer right footer – 1 / 2

Example slide

Here is the binomium formula.

$$(a + b)^n = \sum_{k=0}^n \binom{n}{k} a^{n-k} b^k \quad (1)$$

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left footer right footer – 2 / 2

CUPOSTER and RES Classes

AFEM@matlab

A MATLAB Package of Adaptive Finite Element Methods

Long Chen and Chensong Zhang

University of Maryland, College Park, MD, USA



Introduction

The finite element method (FEM) is one of the most commonly used numerical methods for the simulation of many practical problems in engineering and physics. Adaptive finite element methods (AFEMs) have been introduced to reduce computational costs while keeping optimal accuracy since 1970's.



Inaccurate FEM simulation could cause great disasters in practice. In Aug 23 1991, an offshore oil platform, the Sleipner A platform, in Norway sank in the North Sea which cost almost a billion dollars.

The post accident investigation traced the error to inaccurate finite element approximation.

Finite element courses are usually offered to engineering and mathematics students in colleges. But the programming of FEM and AFEM is very tedious and technique. MATLAB allows one to implement numerical methods quickly due to its vast predefined library of mathematical functions and compact vector/matrix operations. The goal of AFEM@matlab is to provide main building-blocks of FEMs and AFEMs in MATLAB.

Main Features

AFEM@matlab can be useful for both education and research. The purposes of this package are two-folds:

- **Education:** to help students to understand the philosophy and mechanism of standard finite element methods, adaptive algorithms and fast linear system solvers.

- **Research:** to provide a testbed for new adaptive algorithms and multilevel methods.

Main features of this package includes:

- Clean data structures;
- Short and efficient;
- Well-documented and easy-to-follow;
- Open source;
- Convenient debug tools.

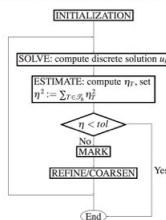
For easy communication and education purpose, our subroutines are written in one screen-page long with extensive comments. All subroutines are optimized using MATLAB vectored addressing and built-in functions. Numerical tests show that our program can solve a middle size (around a million unknowns) problem accurately in a few seconds on a desktop PC.

Adaptive Algorithm

After more than thirty years of extensive development, adaptive methods and multilevel discrete solvers are now standard tools in scientific computing. Because of the importance of the adaptive discretization technique and fast linear system solvers, they enters into undergraduate and graduate curriculum nowadays.

Adaptive mesh refinement is important for dealing with the multiscale phenomena and to reduce the size of the linear systems that arise from the finite element discretization. In many practical applications, solutions of partial differential equations (PDEs) are sometimes singular. Usually location and strength of

singularities are not known a priori. The aim of adaptive methods is to generate meshes adapted to problems *automatically* such that the approximation error in certain measure is smaller than a tolerance with minimal computational cost. See [3] for details. The standard adaptive algorithm can be written as:



Fast Solvers

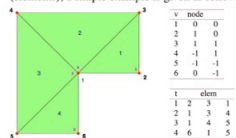
Multilevel discrete solvers, like Multigrid methods and preconditioned conjugate gradient (PCG) methods with multilevel preconditioners, are a group of algorithms for solving PDEs using a hierarchy of discretizations. They can be applied in combination with common discretization techniques and among the fastest solution techniques known today. In our package, we implement PCG with several commonly used multilevel preconditioners. It has linear complexity and requires much less physical memory than the direct solver in MATLAB.

Mesh Adaptation

Unlike other AFEM softwares, we do not record nor maintain the bisection tree information. Instead, we introduce an all-new algorithm to handle refinement (newest vertex bisection method) and coarsening [2]. Because this algorithm, our data structures and refinement/coarsening algorithms become extremely simple. We only need

- mesh.node
- mesh.elem
- mesh.type
- mesh.Dirichlet
- mesh.Neumann

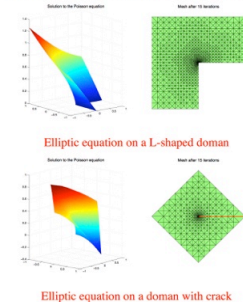
The main data structures are node (nodes) and elem (elements); a simple example is given as follows.



One of the advantages for using this simple data structures is the simplicity of implementation. Beginners do not need to spend much time to understand our code. See [1].

Examples

To enhance understanding of the subroutines in AFEM@matlab, several classical test examples are given in the package: L-shaped domain, domain with a crack, moving circle problem, and so on. We provide a GUI demo for a birdseye view of all test examples included also. Here are two of the examples:



Both problems have strong singularity and uniform grid will give bad approximation. Besides these simple examples, to help beginners and even someone with experience to start with, we developed a set of debug and graphical tools for programming and graphical output purposes.

Download

This package is an open-source software under the terms of the GNU General Public License. You can google it or go the following websites for downloading:

- <http://www.mathworks.com/matlabcentral/>
- <http://matlabdb.mathematik.uni-stuttgart.de/>
- <http://www.scribd.com/doc/100000000/AFEM@matlab>

Since the package is publicized in the Finite Element Circus at Penn State University in Nov 2006, it has been downloaded more than 1,500 times. And it has been also used for graduate-level finite element courses in a couple of universities:

- Numerical Methods Summer School for Graduate Students, Peking University
- Numerical PDE, University of New Mexico
- Scientific Computing II, University of Maryland

References

- [1] L. Chen and C.-S. Zhang. *Afem@matlab: a matlab package of adaptive finite element methods*. 2006.
- [2] L. Chen and C.-S. Zhang. *A coarsening algorithm and multilevel methods on adaptive grids by newest vertex bisection*. (in preparation).
- [3] R. Verfürth. *A review of a posteriori error estimation and adaptive mesh refinement techniques*. Wiley and Teubner, 1996.

Chensong Zhang

Curriculum Vice

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WORK EXPERIENCE

Associate Professor MARCH 2013 – PRESENT
 National Center for Math & Interdisciplinary Sciences
 Academy of Mathematics & Systems Science, Beijing, China

Assistant Professor OCT 2011 – MARCH 2013
 National Center for Math & Interdisciplinary Sciences
 Academy of Mathematics & Systems Science, Beijing, China

Visiting Assistant Professor AUG 2009 – FEB 2011
 Department of Mathematics
 Penn State University, State College, USA

Postdoctoral Fellow JUNE 2007 – JULY 2009
 Department of Mathematics
 Penn State University, State College, USA

EDUCATION

2002 – 2007 **Ph.D.** UNIVERSITY OF MARYLAND, USA
Applied Math and Scientific Computing

1999 – 2002 **M.S.** NANJING UNIVERSITY, CHINA
Computational Mathematics

1995 – 1999 **B.S.** NANJING UNIVERSITY, CHINA
Computational Mathematics

COMPUTER SKILLS

Programing C/C++, FORTRAN, Matlab, Python, CUDA, MPI, OpenMP

Software Word, Office, Doxygen, Web Design, L^AT_EX, OS X, Linux, MS Windows

HONORS AND FUNDINGS

- 2013 **Plenary Speaker**
16th National Symposium on Numerical Methods in Fluid
- 2012 **Plenary Speaker**
21st Intl. Conf on Domain Decomposition Methods
- 2012 **National Science Foundation of China**
91130011/A0117, co-PI
- 2011 **Plenary Speaker**
Symposium on Computational Science, Engineering & Finance
- 2009 **US National Science Foundation**
DMS-0915153, co-PI
- 2006 **Dean Dissertation-Completion Fellowship**
University of Maryland, College Park

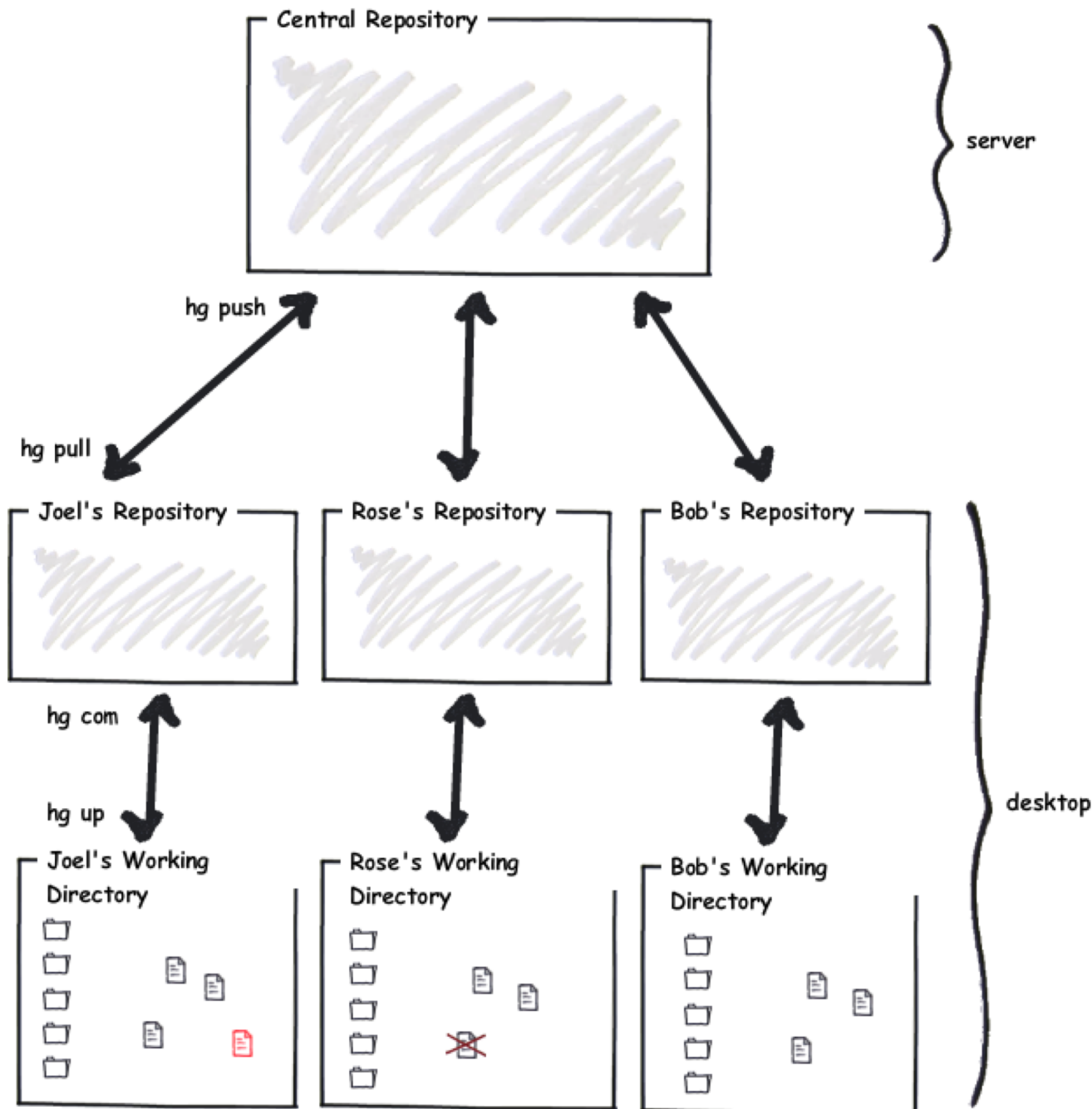
SELECTED PUBLICATIONS

- On adaptive Eulerian-Lagrangian method for linear convection-diffusion problems with X. Hu, Y.-J. Lee, & J. Xu *Journal of Scientific Computing*, 58 (2014)
- Combined preconditioning with applications in reservoir simulation with X. Hu, S. Wu, X.-H. Wu, et al. *SIAM Multiscale Modeling and Simulation*, 11 (2013)
- On the global existence and uniqueness of solutions to discretized viscoelastic flow models with Y.-J. Lee & J. Xu *Math. Models and Methods in Appl. Sci.*, 21 (2011)
- A posteriori error analysis for a class of integral equations and variational inequalities with R. Nochetto & T. von Petersdorff *Numerische Mathematik*, 116 (2010)
- A coarsening algorithm on adaptive grids by newest vertex bisection and its applications with L. Chen *Journal of Computational Mathematics*, 28 (2010)
- A posteriori error analysis for parabolic variational inequalities with K.-S. Moon, R. Nochetto, & T. von Petersdorff *ESAIM: M²NA*, 41 (2007)

Outline

1. Organize your references
2. Prepare your slides/posters/CVs
3. Do version control and backup

Distributed version Control System



- **CVS**
- **SVN**
- **Vesta**
- **Git**
- **Mercurial**
- **DCVS**
- **Fossil**
- **Monotone**

A Popular Example: Git

start a working area (see also: git help tutorial)

clone Clone a repository into a new directory
init Create an empty Git repository or reinitialize an existing one

work on the current change (see also: git help everyday)

add Add file contents to the index
mv Move or rename a file, a directory, or a symlink
restore Restore working tree files
rm Remove files from the working tree and from the index

examine the history and state (see also: git help revisions)

bisect Use binary search to find the commit that introduced a bug
diff Show changes between commits, commit and working tree, etc
grep Print lines matching a pattern
log Show commit logs
show Show various types of objects
status Show the working tree status

grow, mark and tweak your common history

branch List, create, or delete branches
commit Record changes to the repository
merge Join two or more development histories together
rebase Reapply commits on top of another base tip
reset Reset current HEAD to the specified state
switch Switch branches
tag Create, list, delete or verify a tag object signed with GPG

collaborate (see also: git help workflows)

fetch Download objects and refs from another repository
pull Fetch from and integrate with another repository or a local branch
push Update remote refs along with associated objects

Another Example: Mercurial

abort	abort an unfinished operation (EXPERIMENTAL)
add	add the specified files on the next commit
annotate, blame	show changeset information by line for each file
clone	make a copy of an existing repository
commit, ci	commit the specified files or all outstanding changes
continue	resumes an interrupted operation (EXPERIMENTAL)
diff	diff repository (or selected files)
export	dump the header and diffs for one or more changesets
forget	forget the specified files on the next commit
init	create a new repository in the given directory
log, history	show revision history of entire repository or files
merge	merge another revision into working directory
pull	pull changes from the specified source
push	push changes to the specified destination
qdiff	diff of the current patch and subsequent modifications
qinit	init a new queue repository (DEPRECATED)
qnew	create a new patch
qpop	pop the current patch off the stack
qpush	push the next patch onto the stack
qrefresh	update the current patch
remove, rm	remove the specified files on the next commit
serve	start stand-alone webserver
status, st	show changed files in the working directory
summary, sum	summarize working directory state
update, up, checkout, co	update working directory (or switch revisions)

BitBucket: Git/Hg

Dashboard

Overview

Repositories

Pull requests

Issues

Snippets



Everything's awesome!

All your pull requests and reviews are done and dusted.

[View all pull requests](#)

Repositories

Repository



XuNotes

Last updated 47 minutes ago



DOLFIN

Last updated 18 hours ago



mg_note

Last updated 3 days ago



fasp4ns

Last updated 3 days ago



fasp solver

Last updated 4 days ago



Cardiovascular FSI

Last updated 6 days ago



Parallel Computing Book

Last updated Oct 11 2016



HPC book and course

Last updated Oct 1 2016

An extra copy does not hurt! Cloud, Time Machine, sync across computers, external hard disks, ...

BitBucket: Compare Commits

Comments (0)



What do you want to say?

Files changed (2)

+0 -0 mgnote.pdf
+3 -3 subspace.tex

mgnote.pdf

View file

Comment

Binary file modified.

subspace.tex

Side-by-side diff

View file

Comment

```
603 603 Theorem~\ref{thm:two-grid-convergence} can be viewed as a special case of the X-Z identity in the case of space decomposit:
604 604 According to \eqref{eq:xzc1T}, we get
605 605 $$
606 606 -c_1 = \sup_{\|w\|_{\cA}=1} \inf_{\substack{w = v_c + v \ \forall \ v_c \in V_c, v \in V}} \|v_c + \Pi_c v\|_{\cA^2} + \|(\overline{\cS}
606 606 +c_1 = \sup_{\|w\|_{\cA}=1} \inf_{\substack{w = v_c + v \ \forall \ v_c \in V_c, v \in V}} \|v_c + \cPi_c v\|_{\cA^2} + \|(\overline{\cS}
607 607 $$
608 608 We can prove that
609 609 $$
```

```
710 710 %%%%%%%%%%
```

```
711 711
```

```
712 712 Assumption~\ref{Assump:MSC} is not easy to verify directly. So we now give a few useful estimates for the constants in the:
```

```
713 713 -\begin{lemma}[Estimate of $K_1$]\label{lem:K1}
```

```
713 713 +\begin{lemma}[Estimates of $K_1$]\label{lem:K1}
```

```
714 714 Assume that, for any $v \in V$, there is a decomposition $v = \sum_{j=1}^J v_j$ with $v_j \in V_j$ satisfying
```

```
715 715 $$
```

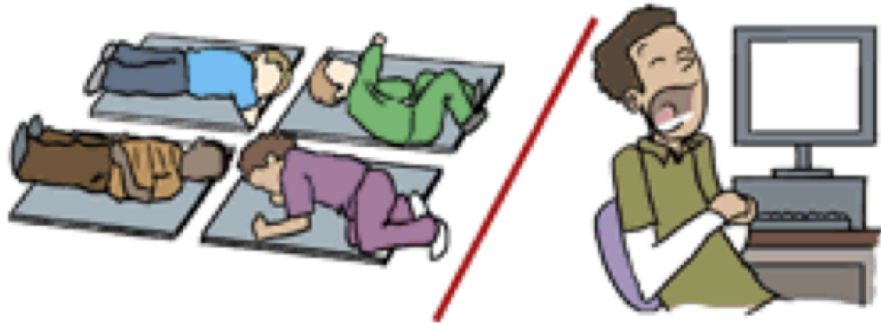

BitBucket: Compare Side-to-Side

base/src/wrapper.c

dvector rhs, sol; // right-hand-side, solution	97	97	dvector rhs, sol; // right-hand-side, solution
AMG_param amgparam; // parameters for AMG	98	98	AMG_param amgparam; // parameters for AMG
itsolver_param itparam; // parameters for itsolver	99	99	itsolver_param itparam; // parameters for itsolver
	100	100	
fasp_param_amg_init(&amgparam);	101	101	fasp_param_amg_init(&amgparam);
fasp_param_solver_init(&itparam);	102	102	amgparam.AMG_type = UA_AMG;
	103	103	amgparam.print_level = *ptrlvl;
itparam.tol = *tol;	104	104	amgparam.aggregation_type = VMB;
itparam.print_level = *ptrlvl;	105	105	
itparam.maxit = *maxit;	106	106	amgparam.coarse_dof = 100;
	107	107	amgparam.presmooth_iter = 1;
amgparam.print_level = *ptrlvl;	108	108	amgparam.postsmooth_iter = 1;
	109	109	
mat.row = *n; mat.col = *n; mat.nnz = *nnz;	110	110	amgparam.strong_coupled = 0.00;
mat.IA = ia; mat.JA = ja; mat.val = a;	111	111	amgparam.max_aggregation = 100;
	112	112	
rhs.row = *n; rhs.val = b;	113	113	fasp_param_solver_init(&itparam);
sol.row = *n; sol.val = u;	114	114	itparam.tol = *tol;
	115	115	itparam.print_level = *ptrlvl;
fasp_solver_dcsr_krylov_amg(&mat, &rhs, &sol, &itparam, &amgparam);	116	116	itparam.maxit = *maxit;
}	117	117	
	118	118	
/**	119	119	mat.row = *n; mat.col = *n; mat.nnz = *nnz;
* \fn INT fasp_wrapper_dbsr_krylov_amg (INT n, INT nnz, INT nb, INT *ia, INT *j	120	120	mat.IA = ia; mat.JA = ja; mat.val = a;
* REAL *a, REAL *b, REAL *u, REAL tol,	121	121	
* INT maxit, INT ptrlvl)	122	122	rhs.row = *n; rhs.val = b;
	123	123	sol.row = *n; sol.val = u;
* \brief Solve Ax=b by Krylov method preconditioned by AMG (dcsr -> dbsr)	124	124	
*	125	125	fasp_solver_dcsr_krylov_amg(&mat, &rhs, &sol, &itparam, &amgparam);
* \param n Number of cols of A	126	126	}

Grad School Is Like Kindergarten

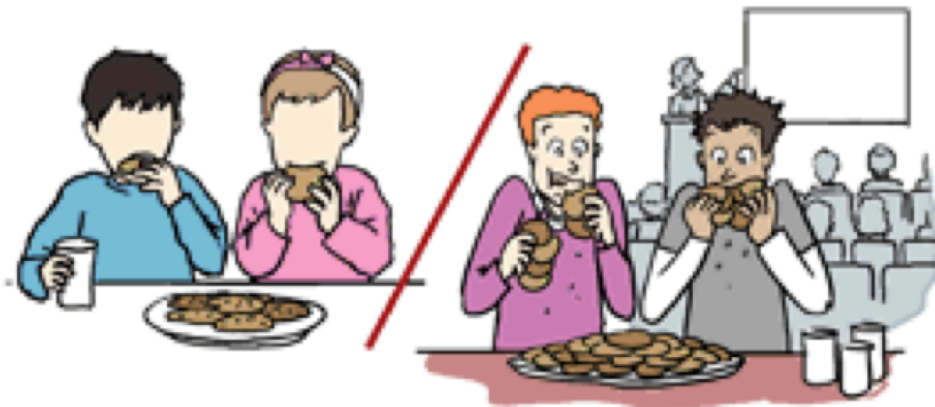
ALL DAY NAPPING IS ACCEPTABLE



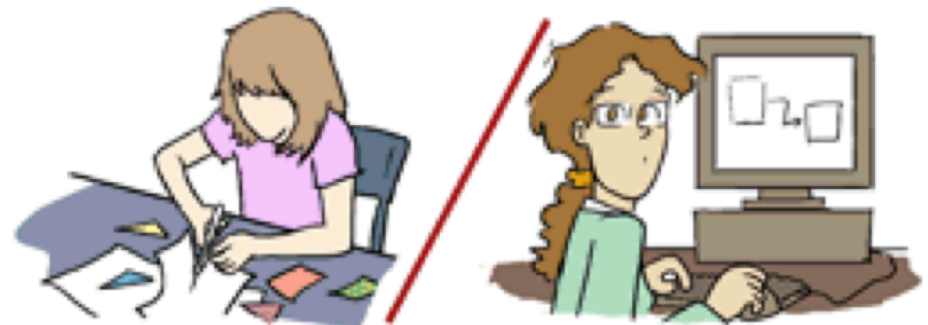
THERE IS CONSTANT ADULT SUPERVISION



YOU GET COOKIES FOR LUNCH



MOST COMMON ACTIVITY:
CUTTING AND PASTING



Source: <http://www.phdcomics.com>

PHD: Permanent Head Damage / Piled Higher and Deeper. Withdrawn from the real world, overworked, underpaid, stressed, and painfully uncertain about his or her life!

THANK YOU!