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# AE 401A: Technical Communication

Instructor:

**Prof. Abhijit Kushari**

email – [akushari@iitk.ac.in](mailto:akushari@iitk.ac.in)

Class Timing:

**T: 10:00 – 11:50, AM**

Classroom:

**Online**



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# Course Outline

- Selection of a technical topic
- Development of presentation material
- Technical presentations
- Preparation and submission of technical report



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# Grading Policy (S/X)

- **Presentation**

- Presentation on a **technical** topic (maximum 10 minutes)

- **Report**

- On the same topic (500-1500 words, single column, double spacing, font size 12, font type: Times New Roman)
- Similarity should be < 25% based on the turnitin software

([www.turnitin.com](http://www.turnitin.com))

- **Attendance**



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# Technical Writing/Presentation

- Survey or review papers
- Journal/conference papers
- Project proposals for research grant
- Thesis/dissertation
- Status reports of projects
- Project Reports
- Books
- ...



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# Writing

**Piled Higher and Deeper** by Jorge Cham

[www.phdcomics.com](http://www.phdcomics.com)



title: "Writing" - originally published 7/21/2014

- Internal resistance to writing is immense!!!

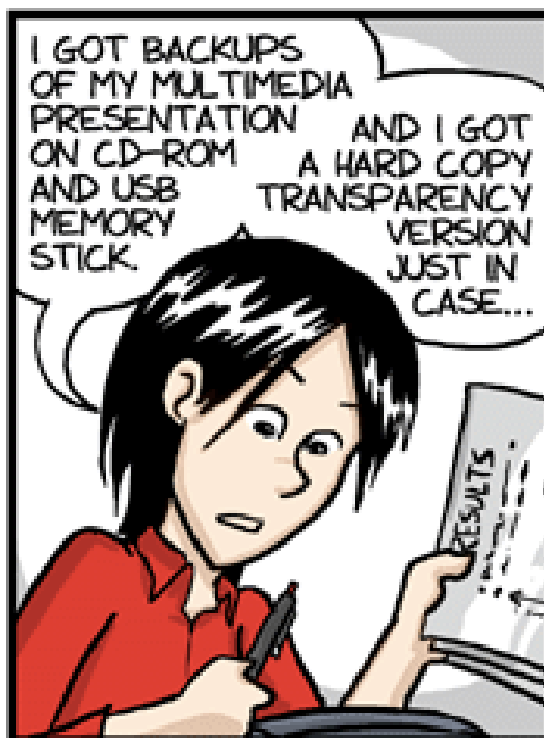
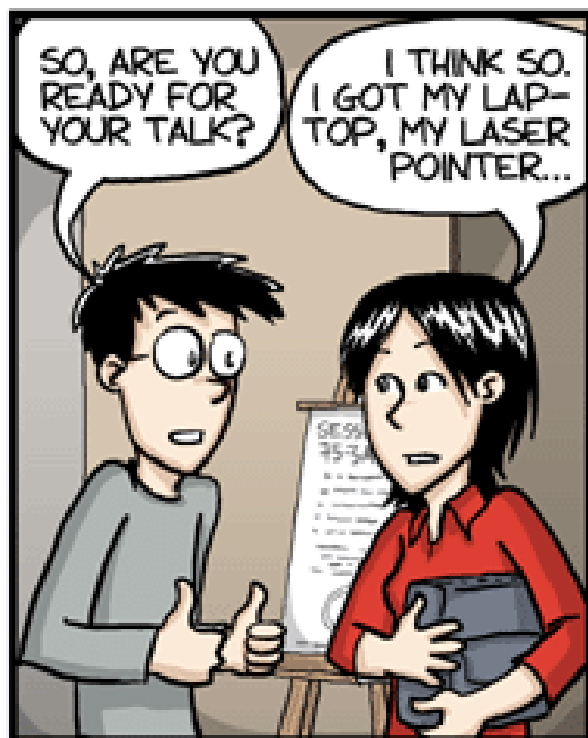


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# Presentation

**Piled Higher and Deeper** by Jorge Cham

[www.phdcomics.com](http://www.phdcomics.com)



[www.phdcomics.com](http://www.phdcomics.com)

title: "Conference" - originally published 8/25/2004

- You present your work and yourself!!!



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# Do not Plagiarize

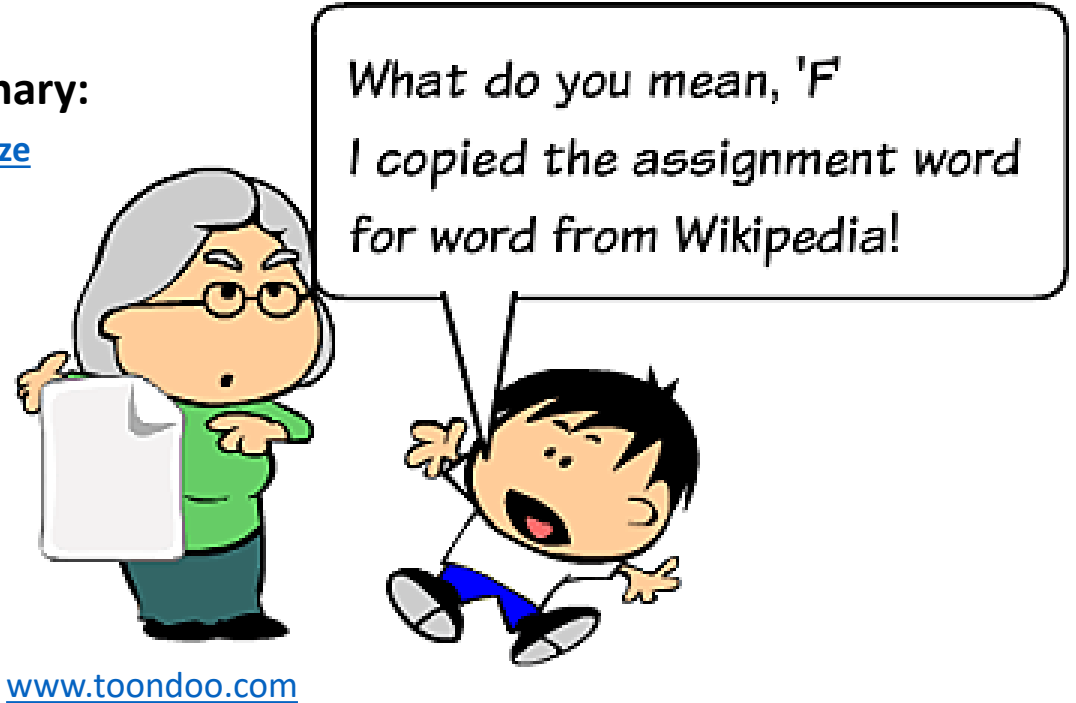
## PLAGIARISM - BY DAVEFOORD

From Merriam-Webster online dictionary:

[www.merriam-webster.com/dictionary/plagiarize](http://www.merriam-webster.com/dictionary/plagiarize)

to plagiarize means:

- “to steal and pass off (the ideas or words of another) **as one's own**”
- “to use (another's production) **without crediting** the source”
- “to commit **literary theft**”
- “to present as new and original an idea or product derived from an existing source”





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# Consequences of Plagiarism

[www.merriam-webster.com/dictionary/plagiarize](http://www.merriam-webster.com/dictionary/plagiarize)

*"Plagiarize (and plagiarism) comes from the Latin *plagiarius* "kidnapper." This word, derived from the Latin *plaga* ("a net used by hunters to catch game"), extended its meaning in Latin to include a **person who stole the words**, rather than the children, of another."*

- Leading journals and conferences check for plagiarism prior to acceptance
- Plagiarism brings bad name
- It can also affect your job as the employer can enforce strict action

## Ensure to:

- Write/present your own material
- Properly cite, do not copy without giving due credit

**Copyright  
infringement??**





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# Copyright Infringement

From Merriam-Webster online dictionary:

[www.merriam-webster.com/dictionary/plagiarize](http://www.merriam-webster.com/dictionary/plagiarize)

## Copyright:

- “the exclusive legal right to reproduce, publish, sell, or distribute the matter and form of something (such as a literary, musical, or artistic work)”
- “the **legal right** to be the only one to reproduce, publish, and sell a book, musical recording, etc., for a certain period of time”

## Infringement:

- “an encroachment or trespass on a right or privilege”



# Why Write/Present

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- **Transfer:**
  - Information
  - Message
  - Ideas
- Contribute to the existing body of knowledge
- Provide building blocks for others to work
- Help ourselves learn the field and streamline our thoughts
- Identify our deficiencies and get ideas for future work
- Get credit for work we have done
- Get feedback and improve

I write because  
I don't know  
what I think  
until I read  
what I say.

— Flannery O'Connor



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[www.mcgillillustrations.com](http://www.mcgillillustrations.com)



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# Your Goal

- **Make it easy for the reader/audience to understand your work**
- **Clarity, brevity and simplicity**
- Tell a certain story (a rather dry one)
- Give your audience one or two takeaways
- **NOT** to impress others with your personality or intellectual capability



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# Material Preparation Tips



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# Outline

- Title
- Abstract (not for presentation)
- Introduction (motivation & background)
- Body
  - Same approach for paper & presentation
- Results
- Conclusions



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# Title

- Tells what your paper is about
  - As short as possible but no shorter
  - Include distinctive features: “reliable”, “scalable”, “low-cost”, “high-intensity”
  - Avoid witty and exclamatory titles
  - Use keywords for search engines to pick



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# Abstract (not for presentation)

- Summarizes your paper
  - Brief context and background
  - What are your findings?
  - Must stand-alone without reference to the main body
  - Try to write abstract after finishing the paper

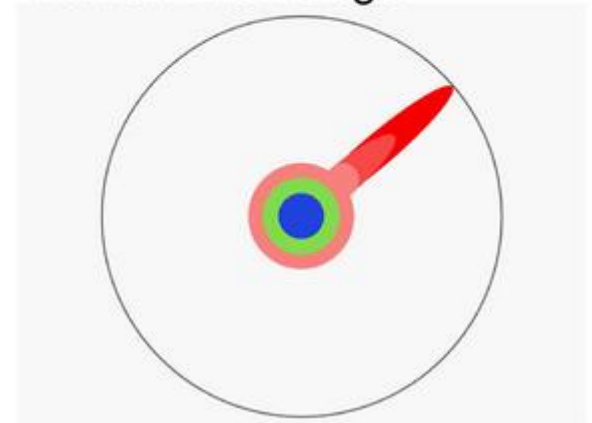


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# Introduction (motivation & background)

- Provides context and builds a platform for your work
  - Why do the work or why anyone would care? (provide motivation)
  - What has been done?
  - What is the gap or unexplored area?
  - What is your aim?
  - What is your approach?

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



[www.denisezannino.files.wordpress.com](http://www.denisezannino.files.wordpress.com)



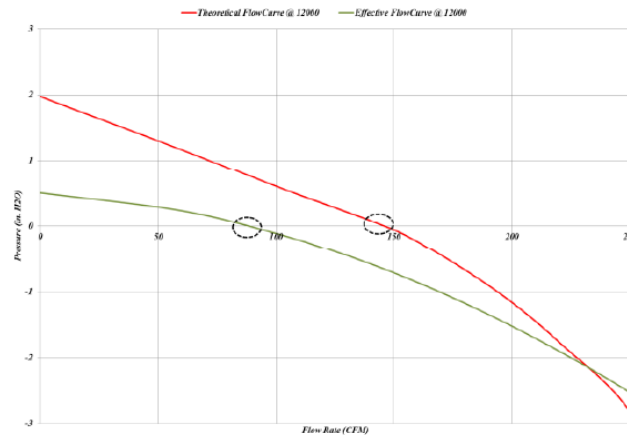
- Provides all the necessary details of your approach
  - Details of experimental/computational setup and parameters investigated
  - Provide enough information to reproduce the work
  - Ensure logical flow, keep track of where you are and where you are heading





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- The outcome of your work
  - Use **uncluttered, readable and self-sufficient** figures
  - Compare with previous work, benchmark or experiment, to show your contribution
  - In the text, explain the trends and clarify any unusual and interesting result
  - **Pay attention to the font size of figures**, should be similar to the body text



n=1 at fully laminar 1  
to be fully turbulent. 4  
is used, using the m  
blower, at n=1.8 K=  
the curves is depict  
passive flow through  
curve method is i  
experimentally obtain  
quarters of the x, y pl  
allowing for rapid mc  
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assumes back pressu  
scenarios 1 through  
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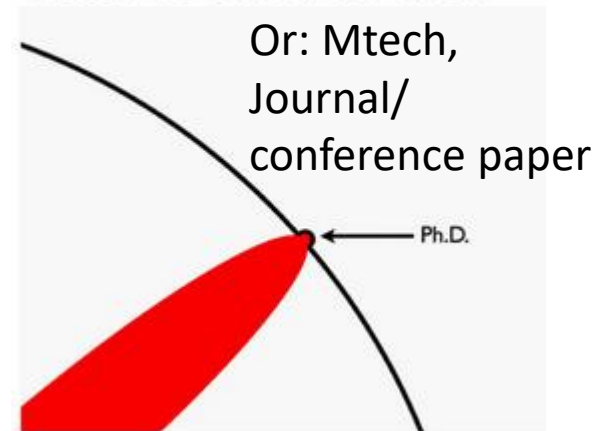
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# Conclusion

- What are the final takeaways from the work?
  - What have you accomplished?
  - What are your inferences?
  - What is the future direction?
  - **Do not repeat how you did the work**

**Your conclusions  
validated by reviewers**

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



[www.denisezannino.files.wordpress.com](http://www.denisezannino.files.wordpress.com)



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# Concise & Direct

## Prefer active voice instead of passive

- An algorithm to reduce computational effort is proposed by us
  - We propose an algorithm to reduce computational effort

## Prefer strong verbs instead of nouns

- We **made an assumption** that the fuel droplets were spherical
  - We **assumed** spherical fuel droplets

## Omit needless words

- Gas analyzer **is an instrument and it** is used to measure pollutant emissions
  - Gas analyzer is used to measure pollutant emissions

## Get the main idea out quickly, avoid mystery

- Reveal your whole story upfront (title, abstract, introduction)



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# Level of Details

## Where do you live?

Earth



[earthspacecircle.blogspot.com](http://earthspacecircle.blogspot.com)

India



[www.featurepics.com](http://www.featurepics.com)

Kanpur



[www.rediff.com](http://www.rediff.com)

IIT-Kanpur



[indiannewsdesk.com](http://indiannewsdesk.com)

- Know your audience:
  - Subject experts, professors, researchers
  - Aerospace engineers
  - Industry practitioners
  - General public
- Adhere to the time / page limit
  - Thesis defense
  - Conference, project presentation / report



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# Getting off the Block

- Make a presentation before writing the paper
- Think of different parts of the story and give titles to the slides accordingly
- Start with the titles that you find most interesting or for which material is readily available
- Start filling the slides with available material, preferably with figures
- Add concise bulleted messages for each slide
- Convert the bullets into sentences → paragraphs → paper





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# Revise/Edit

“The beautiful part of writing is that you don't have to get it right the first time, unlike, say, a brain surgeon.”

~Robert Cormier

- Start with a very rough draft. Add scattered, broken and unconnected sentences or bullets that cover the content
- Go paragraph by paragraph, see each paragraph conveys a message and each section has sufficient information
- Check for logical and smooth flow of information, rearrange text as required, delete unnecessary sentences/paragraphs/figures
- Finally edit for typos, grammar, redundancy, needless words





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# Font Size

## Font type: Calibri

Is this easy to read?	12
Is this easy to read?	14
Is this easy to read?	16
Is this easy to read?	18
Is this easy to read?	20
Is this easy to read?	22
Is this easy to read?	24
Is this easy to read?	26
Is this easy to read?	28

- It depends on the screen size and viewing distance, **generally minimum font size of 20 is OK**
- Generally **for written material font size of 10 or 12 is used, use similar font sizes for figures and text**





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[www.wikipedia.org](http://www.wikipedia.org)  
**AaBbCc**  
 serifs in red

# Font Type

## sans-serif

Is this better?  
 Is this better?  
 Is this better?  
 Is this better?  
 Is this better?  
 Is this better?  
 Is this better?

- **Recommended for presentations**
- Calibri, Arial, Tahoma, Verdana, Lucida Sans, Helvetica, Century Gothic

## serif

Is this better?  
 Is this better?  
 Is this better?  
 Is this better?  
 Is this better?

- **Recommended for papers**
- e.g. Times New Roman, Century, Garamond, Batang, Book Antiqua

## *script*

*Is this better?*  
*|s this better?*  
*Is this better?*  
*Is this better?*  
*Is this better?*  
*Is this better?*

- Recommended for invitations, greeting cards
- e.g. Vivaldi, Papyrus, Freestyle, Edwardian, Brush, French



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# Presentation

[thisisgraeme.files.wordpress.com](http://thisisgraeme.files.wordpress.com)

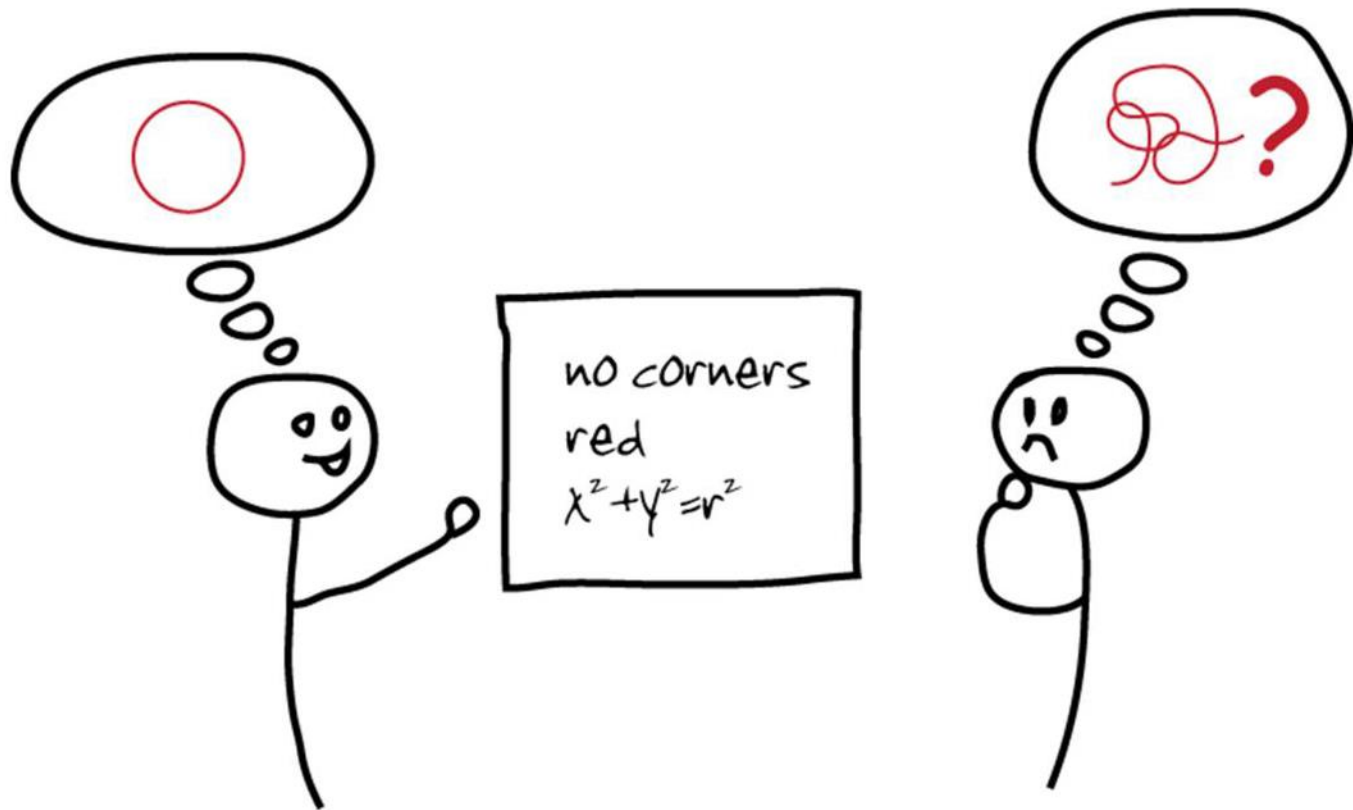


- **Don't read from the slides**, use them as a reference
- Speak loud and clear, be enthusiastic, engage with the audience
- Manage nervousness, **relax**



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# Presentation



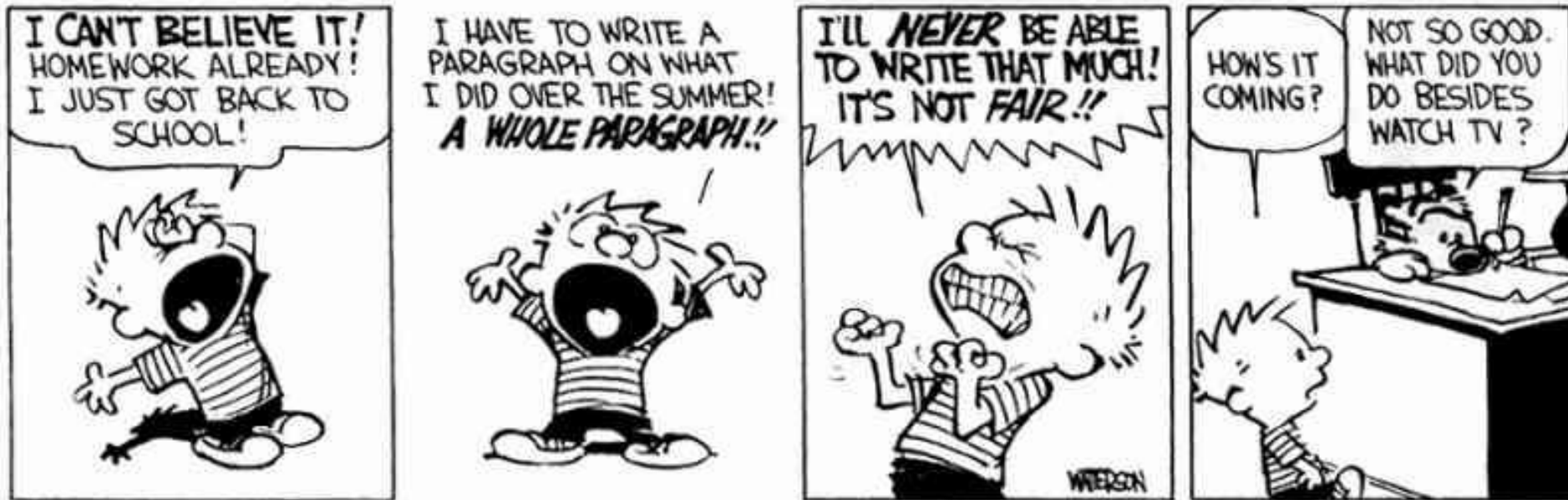
[users.ece.cmu.edu](http://users.ece.cmu.edu)

- Avoid filling slides with equations, formulas and too much text
- Use pictures, easily readable graphs, block diagrams
- **Make it simple** for the audience to understand



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# Content



[www.calvinandhobbes.co.uk](http://www.calvinandhobbes.co.uk)

- There is no substitute for good content !!!



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# Practice

- Technical communication is not rocket science
- Everybody can get better with experience
- Take opportunities to present/write → **get feedback** → improve
- Attend seminars/talks and read technical papers with a view to learn communication skills
- Everyone has a unique style
- There is no single solution, find things that work for you



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# Registered Students

**P: Presentation**

**R: Report**

#	Roll No	Name	email	Review by/for
Group 1 – P: 15/9, R: 22/9				
1	170819	YASH RAJ SINGH	yashrs@iitk.ac.in	Students of group 1
2	170811	VUTNOORI VAMSHI	vutnoori@iitk.ac.in	
3	170762	TUSHAR SINGHAL	tushars@iitk.ac.in	
4	170761	TUSHAR GOSWAMY	tgoswamy@iitk.ac.in	
5	170685	SHUBHAM	bshubhm@iitk.ac.in	
6	170653	SHASHANK KUMAR (S KUMAR)	shashku@iitk.ac.in	
7	170629	SANKET GAGGAR	gsanket@iitk.ac.in	
Group 2 – P: 22/9, R: 29/9				
8	170595	ROHIT SAINI	srohit@iitk.ac.in	Students of group 2
9	170589	ROHIT BALIRAM LANDGE	rohitbl@iitk.ac.in	
10	170516	PULKIT PANDEY	ipulkit@iitk.ac.in	
11	170506	PRIANK PRASAD	priankp@iitk.ac.in	
12	170499	PRATIGYA TOMAR	pratigya@iitk.ac.in	
13	170458	PARAG NANDARAM SONKUSARE	paragns@iitk.ac.in	
14	170420	NAVEEN BALAJI N	naveenb@iitk.ac.in	



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# Registered Students

**P: Presentation**

**R: Report**

#	Roll No	Name	email	Review by/for
Group 3 – P: 29/9, R: 06/10				
15	170414	NAMAN JAIN (S JAIN)	njnaman@iitk.ac.in	Students of group 3
16	170401	MRIGANK RAWAT	mrigankr@iitk.ac.in	
17	170388	MILLENNIUM GIRI	mgiri@iitk.ac.in	
18	170382	MATARIA PENCE JAGATBHAI	pencem@iitk.ac.in	
19	170371	MAITREYEE SRIVASTAVA	maitreye@iitk.ac.in	
20	170357	KUSH SHAILESH BAGLA	kushb@iitk.ac.in	
21	170349	KRISHNA PRAKASH ROY	kprakash@iitk.ac.in	
Group 4 – P: 06/10, R: 13/10				
22	170340	KHEMRAJ SUDHAKAR BAWASKAR	bkhemraj@iitk.ac.in	Students of group 4
23	170317	JATKAR SOHAM DEVIDAS	sohamj@iitk.ac.in	
24	170308	INSHU NAMDEV	inshu@iitk.ac.in	
25	170307	HRISHIKESH DUTTA	hrishi@iitk.ac.in	
26	170304	HITANSHU SAINI	hitanshu@iitk.ac.in	
27	170303	HIMANSHU VERMA	vermahi@iitk.ac.in	
28	170301	HIMANSHU GAUTAM PANDEY	hpandey@iitk.ac.in	





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# Registered Students

**P: Presentation**

**R: Report**

#	Roll No	Name	email	Review by/for
Group 5 – P: 13/10, R: 20/10				
29	170294	HARSHIT RAO	harshitr@iitk.ac.in	Students of group 5
30	170286	HARISH DECHIRAJU	harishd@iitk.ac.in	
31	170261	DUMPETI SANJAY	sanjayd@iitk.ac.in	
32	170259	DORANALA SAI SREEKAR	sreekar@iitk.ac.in	
33	170220	BURLA SRIVAR	srivar@iitk.ac.in	
34	170207	BHARAT SWAMI	bswami@iitk.ac.in	
35	170205	BAROT DIVYANSHU BHARATBHAI	divsb@iitk.ac.in	
Group 6 – P: 20/10, R: 27/10				
36	170200	AYUSH SONI	ayushp@iitk.ac.in	Students of group 6
37	170182	AVIRAL KHARE	aviralkh@iitk.ac.in	
38	170178	AVANI SHRIVASTAVA	avanish@iitk.ac.in	
39	170173	ASWIN J SHAJI	aswinjsj@iitk.ac.in	
40	170165	ASHISH SHAKYAWAR	ashsh@iitk.ac.in	
41	170163	ASHISH PATEL	apatel@iitk.ac.in	
42	170158	ASHISH GUPTA	ashishgp@iitk.ac.in	





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# Registered Students

**P: Presentation**

**R: Report**

#	Roll No	Name	email	Review by/for
Group 7 – P: 27/10, R: 03/11				
43	170145	ARCHIT GUPTA	archit@iitk.ac.in	Students of group 7
44	170141	APURVA NANDAN	apurvan@iitk.ac.in	
45	170122	ANKIT (AKHILESH KUMAR) KUMAR	ankitr@iitk.ac.in	
46	170097	AMRENDRA PRATAP SINGH	apsingh@iitk.ac.in	
47	170055	ADITYA SHIVAJI YEMULWAD	adiy@iitk.ac.in	
48	170052	ADITYA RAGHUWANSHI	adityarg@iitk.ac.in	
49	170016	ABHILAKH CHAUDHARY	abhilakh@iitk.ac.in	
Group 8 – P: 3/11, R: 10/11				
50	170015	ABHIJEET	abhinir@iitk.ac.in	Students of group 8
51	170002	AAIYUSH KAPURWAN	aaiyushk@iitk.ac.in	
52	10100063	RAHUL ARORA (Test Ignor) (D)	ashish2010.hbti@gmail.com	
53	150721	SNEHIL SHUKLA	snehils@iitk.ac.in	
54	160326	KASHISH THAKRAN	kashisht@iitk.ac.in	
55	160269	GHORPADE RAM DHONDIBA	ghorpade@iitk.ac.in	
56	160170	ASHWANI KUMAR	ashkmr@iitk.ac.in	

**Late registered students will be in Group 8**

**Note: for group 8, report is due on 10/11**



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# Topic Selection

- Select a topic and send it to me **positively** by **this Sunday (13/9)** for confirmation, earlier the better to freeze your topic
- Duplication of topic will not be allowed
- **Topics:**
  - Topic should be **technical**, and can include:
    - ✓ Overview of a research area
    - ✓ Prior work done by you
    - ✓ Summary of a research paper
    - ✓ Description and operation of a system
    - ✓ Etc...



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# Presentation

- **Presentation:** email me your presentation in pdf or ppt format at least 1 hour before commencement of lecture (i.e. by 9:00 AM), also keep it ready in your machine
- Limit your presentation strictly to **10 minutes**. I will ring a bell at **9 minutes**
- We can have Q&A for the next **2 minutes**, and reviewers can write their comments in the next **2 minutes**
- **Presentation review:** You need to submit the comments after all the presentations are over for the lecture (**your identity will not be revealed to the presenter**)
- You will get “X” grade if you are **absent for the presentation** or you do not submit the **presentation review**



# Report

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- **Report:** Email me your report in pdf format on the due date at least 1 hour before the commencement of the lecture (i.e. by 9:00 AM).
- Make sure that the report follows the prescribed format (500-1500 words, single column, double spacing, font size 12, font type: Times New Roman)
- You report must have similarity of less than 25% based on the turnitin software, **check this prior to sending the report with attached similarity report**
- **Report review:** You need to submit the comments in the given softcopy format **within three days** of receiving the report. **Email me the filled in softcopy (your identity will not be revealed to the author of the report)**
- You will get “X” grade if you do not submit the **report** or the **report review**



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# Remember

- **To get “S” grade, you need to:**
  1. Give a presentation (maximum 10 minutes)
  2. Submit a report (500-1500 words, similarity <25%)
  3. Attend minimum 5 sessions
- **None of the above can be relaxed, please plan accordingly**



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# Turnitin – Plagiarism Checking Software

- Go to: <http://www.turnitin.com/>

Create account

The screenshot shows the Turnitin website homepage. At the top, the browser address bar displays 'turnitin.com/en\_us/home'. Below the address bar, there is a navigation bar with the Turnitin logo on the left, and links for 'K-12', 'Higher Ed', 'Resources', 'Community', and 'Support' in the center. On the right side of the navigation bar, there is a red button labeled 'Contact Sales'. In the top right corner of the page, there is a link for 'Create Account' which is circled in blue, with a blue arrow pointing to it from the text 'Create account' above. Below the navigation bar, there is a large blue banner with the text 'Your Partner in Education with Integrity' in white. At the bottom of the banner, there are two white buttons: 'For K-12' and 'For Higher Education'.



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Create a new  
account

## Create a User Profile

### Have You Ever Used Turnitin?

If you've used Turnitin before, you can use the same email and password to log in. You can keep all your papers and grades together, even if you're now in a different class or a different school!

Email address

Password (Login to Turnitin)

Forgot your password? [Click here.](#)

### Create a New Account

Please select whether you will be using the service as an instructor or a student.

Student

Instructor

Teaching assistant

Login

# Account



# References

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[1] Chatterjee, A., How to write a passable technical paper.

<http://home.iitk.ac.in/~anindya/Writing.pdf>

[2] Clark, S., How to give a good technical presentation in computer science.

[http://www.cl.cam.ac.uk/~sc609/talks/how\\_to\\_give\\_pres.pdf](http://www.cl.cam.ac.uk/~sc609/talks/how_to_give_pres.pdf)

[3] Hertzmann, A., Writing research papers.

<http://www.dgp.toronto.edu/~hertzman/advice/writing-technical-papers.pdf>

[4] Kschischang, F. R., Giving a talk.

<http://www.comm.toronto.edu/frank/guide/guide.pdf>

[5] Puschel, P., Small guide to giving presentations.

<http://users.ece.cmu.edu/~pueschel/teaching/guides/guide-presentations.pdf>

[6] Raibert, M., Good writing.

<http://vlsicad.ucsd.edu/Research/Advice/writing.pdf>

[7] Strunk, W., White, E. B., Elements of style, 4<sup>th</sup> edition.



An aerial photograph of a university campus, likely the University of Michigan, showing various academic buildings, a large green lawn, and a central fountain. The campus is surrounded by trees and greenery. A semi-transparent white rectangular box is centered over the image, containing the text "Thank You" in a blue, sans-serif font.

Thank You