

Topics in Large Data Analysis and Visualization (CS677)

Soumya Dutta and Preeti Malakar

Logistics

Course Instructors

- Instructors:
 - Preeti Malakar (pmalakar@cse.iitk.ac.in)
 - <https://www.cse.iitk.ac.in/users/pmalakar/>
 - Soumya Dutta (soumyad@cse.iitk.ac.in)
 - <https://soumyadutta-cse.github.io/>
- TAs
 - Kartik Jain (M.Tech), Vishal Kumar (M.Tech), Nitesh Trivedi (PhD)

Class Timings

Monday: 3:35 - 4:50 PM

Tuesday: 2:05 - 3:20 PM

Location: H. R. Kadim Diwan Building, Room - 101 (KD-101)

Course Topics

S.No.	Topic	Lecture hours
1	Introduction to scientific simulations and data analysis	2
2	Introduction to parallel computing	1
3	Introduction to scientific visualization	1
4	Research paper discussion on topics related to: 1. Visualization of time-varying data 2. Visualization of multivariate data 3. Flow visualization 4. Ensemble data visualization	6
5	Research paper discussion on topics related to: 1. Statistical data analysis and visualization 2. Information theory-based data analysis and visualization 3. Visualization using AI	5
6	Research paper discussion on topics related to: 1. High performance visualization 2. Performance data visualization 3. Scalable analysis and visualization	4
7	Research paper discussion on topics related to: 1. Remote visualization 2. In situ analysis and visualization 3. Resource-constrained analysis and visualization	4
8	Research paper discussion on topics related to: 1. Information visualization 2. Application-specific visualization (e.g. climate, cosmology)	3

Grading/Evaluation Scheme

Paper presentation	35%		
	Presentation 70%		Viva 30%
	Instructor (70%)	Peer (30%)	
Mid Sem	10%		
End Sem	10%		
Assignments	40% (15% for Assignment 1 and 25% for Assignment 2)		
Attendance	5% (minimum 80% required)		

Assignments

- Assignments will be done in a group of 3
- Please form your group by August 2nd and email the names and roll numbers of group members to TA: Nitesh Trivedi (nitesht@cse.iitk.ac.in)
 - One email from each group is sufficient
- If you are unable to form groups, let us know and we will help
 - But please try to form group among yourselves!

Noteworthy Points

1. We might add new, drop existing, or reorder topics depending on the progress and class feedback. Things may be changed by mutual consent after discussion in class.
2. Lectures and papers assigned in the class are the best resources.
3. Grading will be relative.
4. If required, extra classes will also be conducted in weekends.

Policies

- You are expected to be on time for the lectures. Attendance will be collected.
- You are expected to submit your assignments in time.
- If you are unwell, please follow the standard IITK procedure.

Academic Honesty

- Please **DON'T CHEAT or Plagiarize!!**
- Students caught cheating or plagiarizing may automatically fail the course and will be reported to the institute. No exceptions!
- You are expected to cite **ALL** sources in your work/reports.
- Your assignments should be your own original work.
- IITK CSE Anti-cheating policy: <https://www.cse.iitk.ac.in/pages/AntiCheatingPolicy.html>
- The List of Things I Never Want To Hear Again (by Tamara Munzner)
 - <https://www.cs.ubc.ca/~tmm/courses/cheat.html>

Do ask for help, we want you to learn and succeed!!

References

- There is no mandatory assigned textbook for this course
- We will primarily follow selected research papers
- Here are some reference books

