CD Project

NUS National University of Singapore
School of Computing

Course Schedule (2018)

Lectures:

- **13-14 July: 2-Day Introduction**
  (HW, Quiz, Prog-Asgmt)
- **21 July: Selection of Students**
- **23-27 July: Mini Lectures**

Prog. Assignment and Group Project:

- Apply them to *develop programs / software*

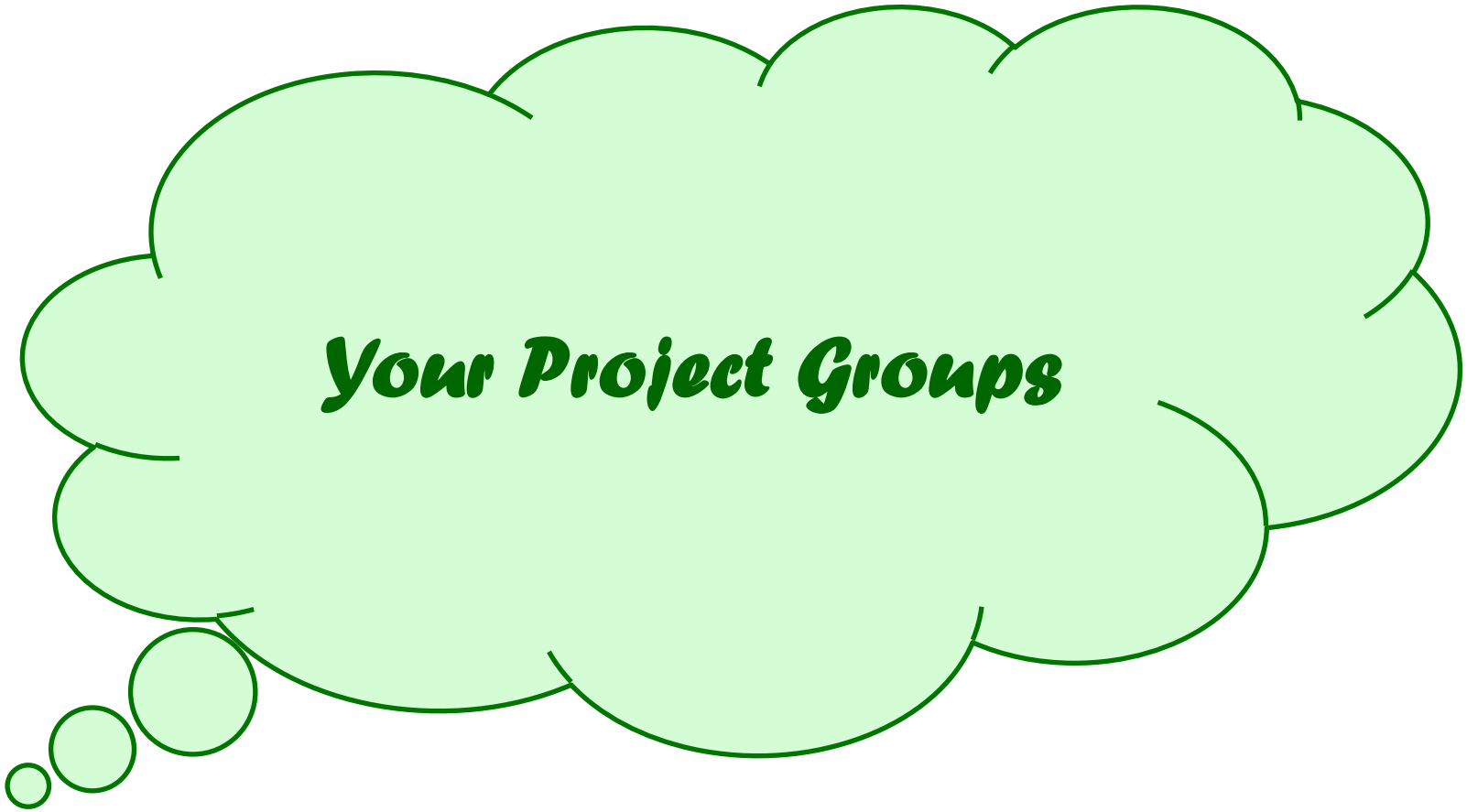
Goals of Group Project…

- Experience Project Proposal
- Experience with CD Algorithms
- Learn to analyze results
- Learn to write Project Poster
- Learn to give good presentation

Project Milestones (2018)

Team Project: (Milestones)

- **M1: Project proposal** [23-July]
- **M2: Interim Poster Report** [26-July]
- **M3: Poster Showcase** [01-Aug]



Diverse Project Groups

Diversity is Good

- University, Gender, Year-of-Study
- Groups 01, 02, …, 10, 11

Learn New Group Dynamics

- A new environment, a fresh beginning,
- Make new friends,
- Learn to cooperate,

Team Project for CD

Team Project (4 per team)	Working as A TEAM	PLAN…
Do Project Write Poster Present Project	Identify Strengths and Weaknesses Decompose Proj Tasks	Assign Roles Assign Tasks Communicate Progress Help Each Other

When you FAIL to PLAN,
Then you PLAN to FAIL.

Good vs Bad Teamwork

Good Teamwork:
1 + 1 + 1 + 1 > 4

BAD or NO Teamwork:
1 + 1 + 1 + 1 < 1

Role of Project Leader

Project Planning

- Understand Project Details
- Decompose into Tasks

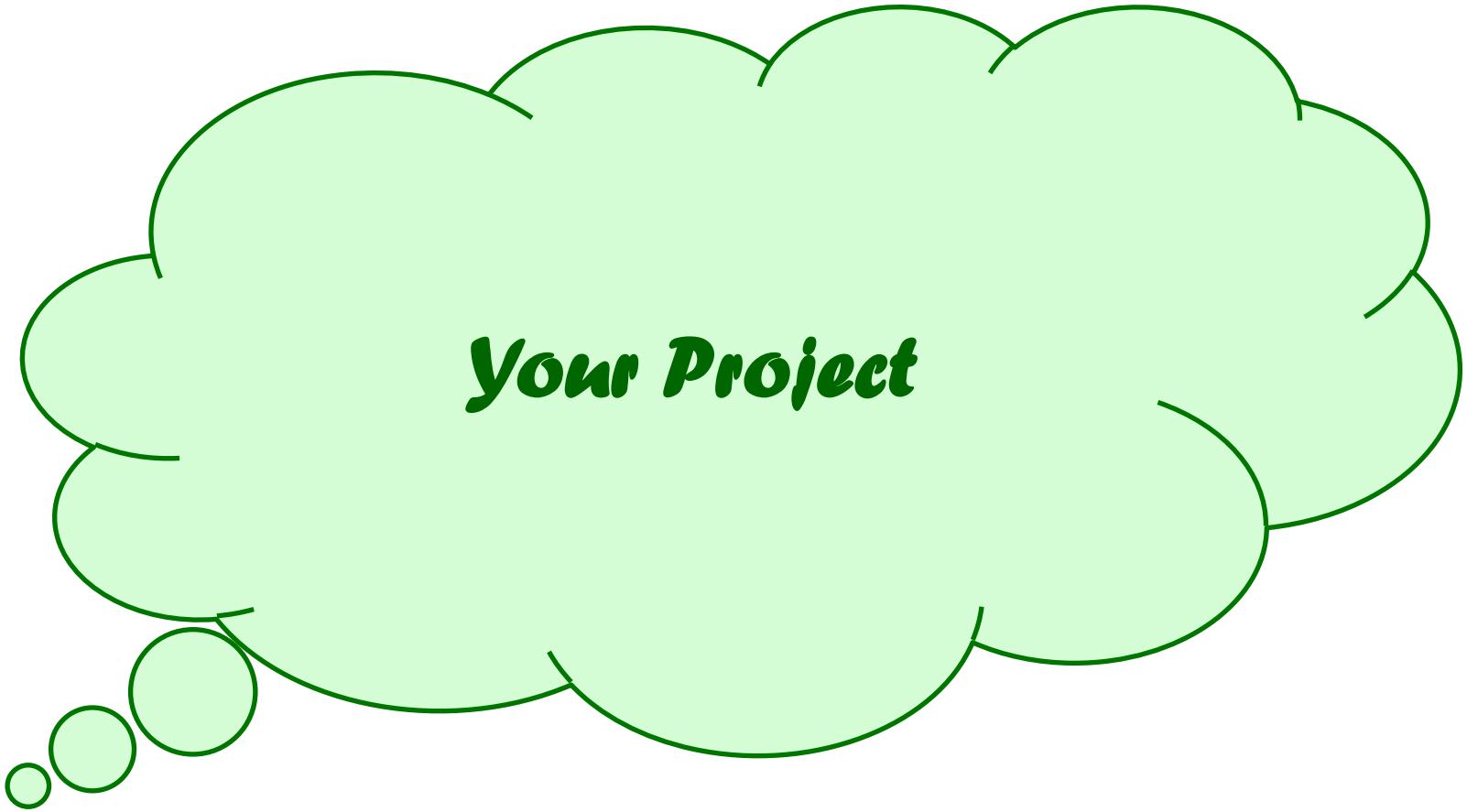
Project Execution

- Assign Tasks
- Track progress
- Encourage Team Members

Being a Good Team Member…

Responsibility as a Team Member

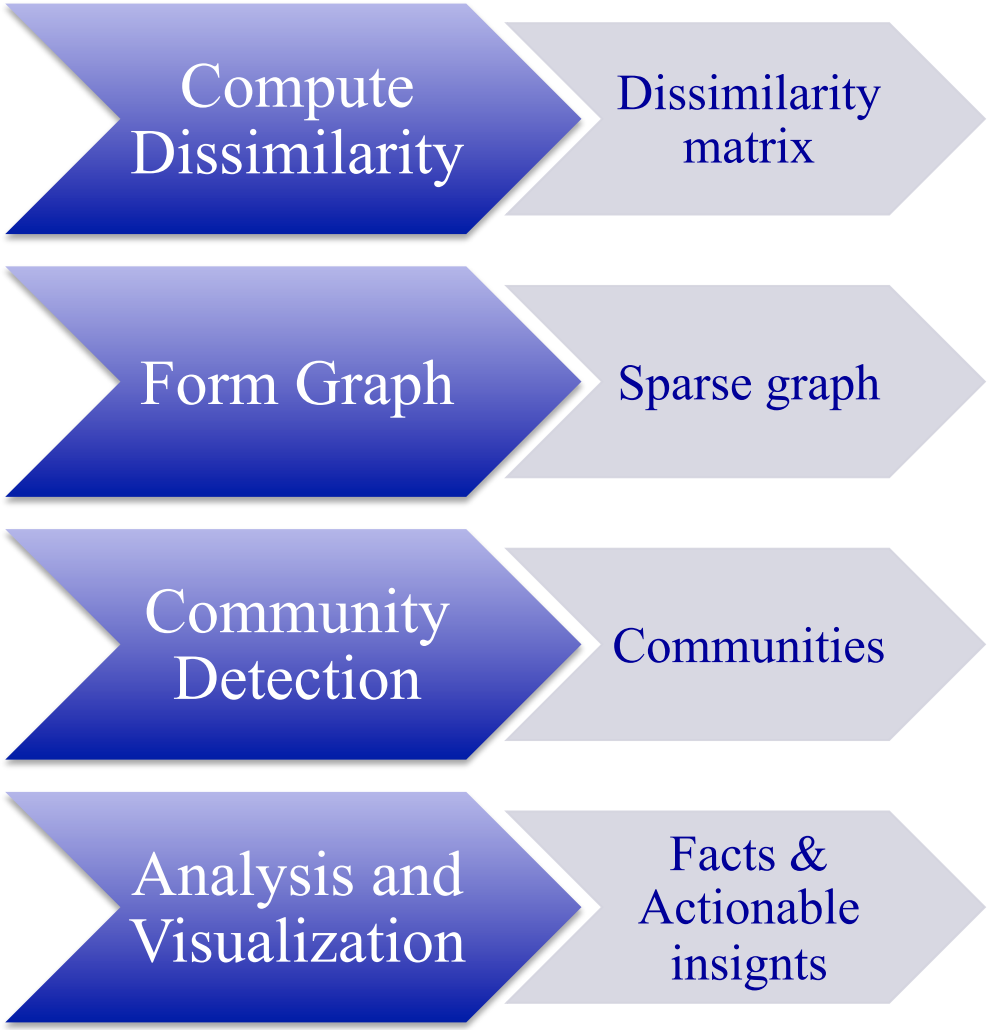
- Understand Assigned Task (*if not, ASK*)
- Communicate Progress,
- Finish Assigned Task on time,
- If late, ASK for help,
- If early, offer help to others.



Your Project Details…

- No Project List
- Find your own Project
  - Learn to propose your own project
  - This is HARD (but a valuable lesson)
- Follow same workflow as CD-Lab?
- Do your own workflow…

CD-Lab Workflow…



Some Guidelines…(1)

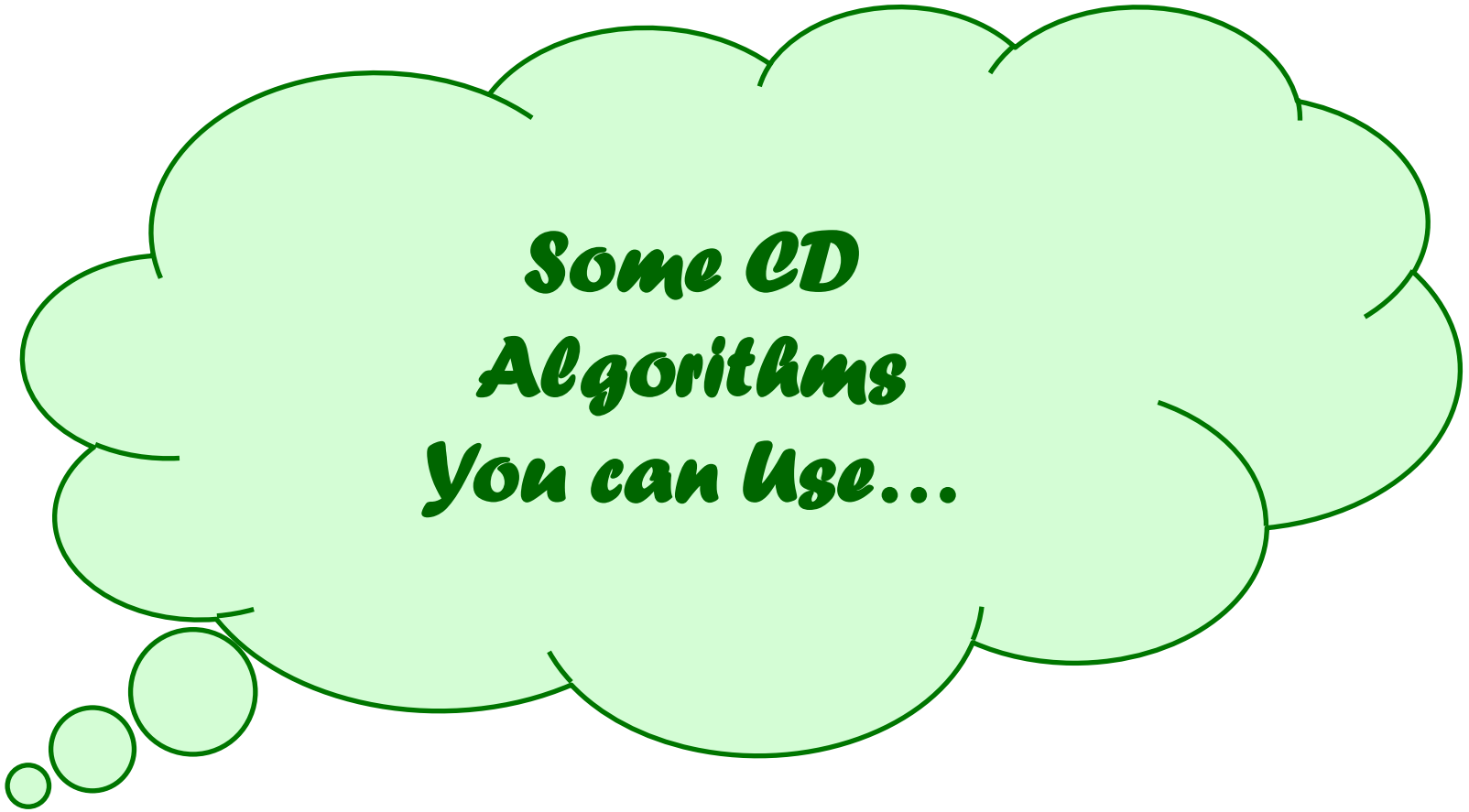
- **Choose Project Data**
  - What class of images
  - What are the sub-classes
  - How many images per sub-class?
- **The dissimilarity matrix**
  - What will it be like?
  - How will histogram be like?
  - What cut-off is appropriate?

Some Guidelines…(2)

- **Forming the Graph**
  - **What is the density of the graph?**
  - **How to change the density?**
- **The communities computed**
  - **What CD algorithm**
  - **What are the communities/clusters?**
  - **How many communities do you expect?**

Some Guidelines…(3)

- **Community Analysis & Visualization**
  - **How good are the communities? measures?**
  - **Will visualization help? How will it help?**
- **Deeper analysis**
  - **What else do you expect to see?**
  - **How to analyze communities deeper?**
  - **What other data can you use?**
  - **How to mine unexpected insights?**



CD Algorithms:

- **SL** (Single-Link cluster algorithm)
- **GN** (Girvan-Newman algorithm)
- **MCL** (Markov Clustering)
- CPM (Clique Percolation Method)
- Spectral Methods **Optional**

Many more with (source) code online

CD Algorithms (Assigned + other)

- **Project Groups (4 students per group)**
  - **Group 01, 02, … 11**
- **CD Algorithm (Assigned)**
  - **Groups 01, 04, 07, 10:** ***SL & related***
  - **Groups 02, 05, 08, 11:** ***GN***
  - **Groups 03, 06, 09:** ***MCL***
- **Also use *another* CD algorithm(s)**
  - **for comparison**

Visualization of Communities…

- **Many visualization software around**
  - **Refer to Prof Kal's notes**
  - **Go search online too**

- **You can also use Pals**
  - **Written by Yao Yujian; *Enhanced by Kal***

Thank you.

Q & A

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