

SEP545: Database Design

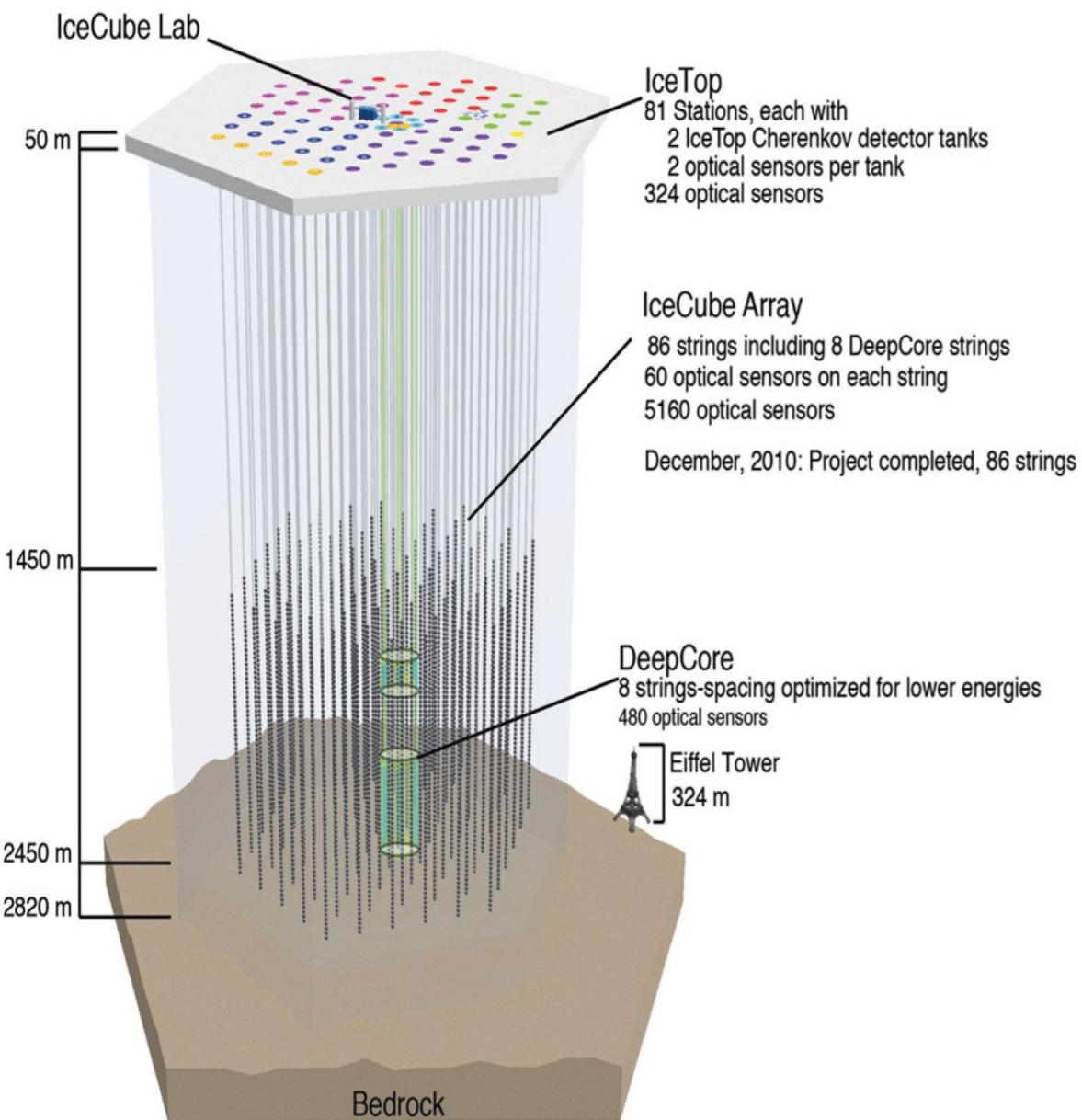
YoonJoon Lee
SoC KAIST

Course Overview

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“Data is the Future”

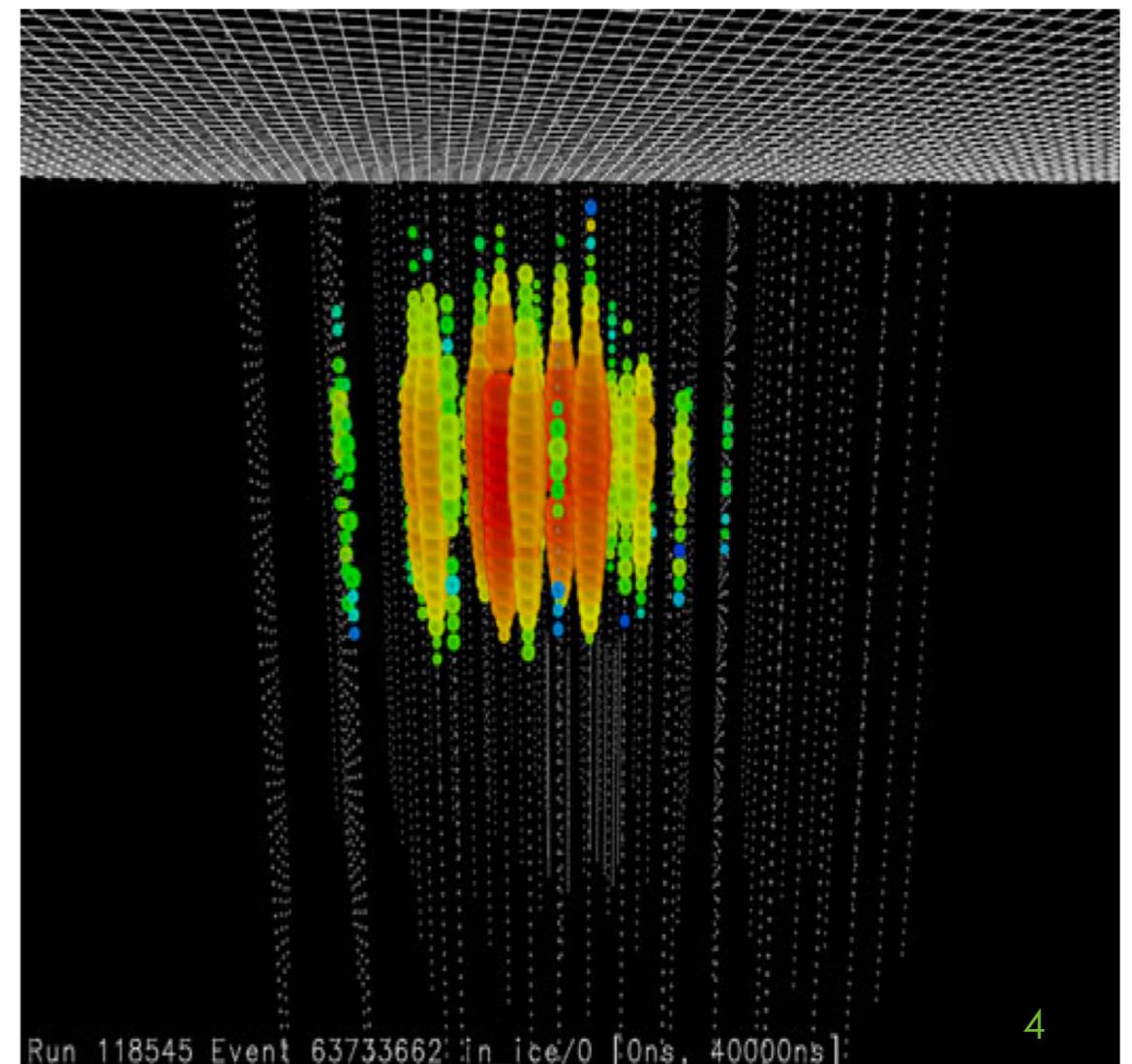
- Chris Ré



Big science is data driven.

IceCube Neutrino Observatory.

https://www.youtube.com/watch?v=xUi5_B9k-U





All of society is online.



Data analysis in the fight
against human trafficking.

*New York DA use MEMEX
Data for all trafficking
investigations this year.*



Google



Microsoft

Increasingly many companies see
themselves as data driven.

Even more “traditional” companies...



The world is increasingly
driven by data...

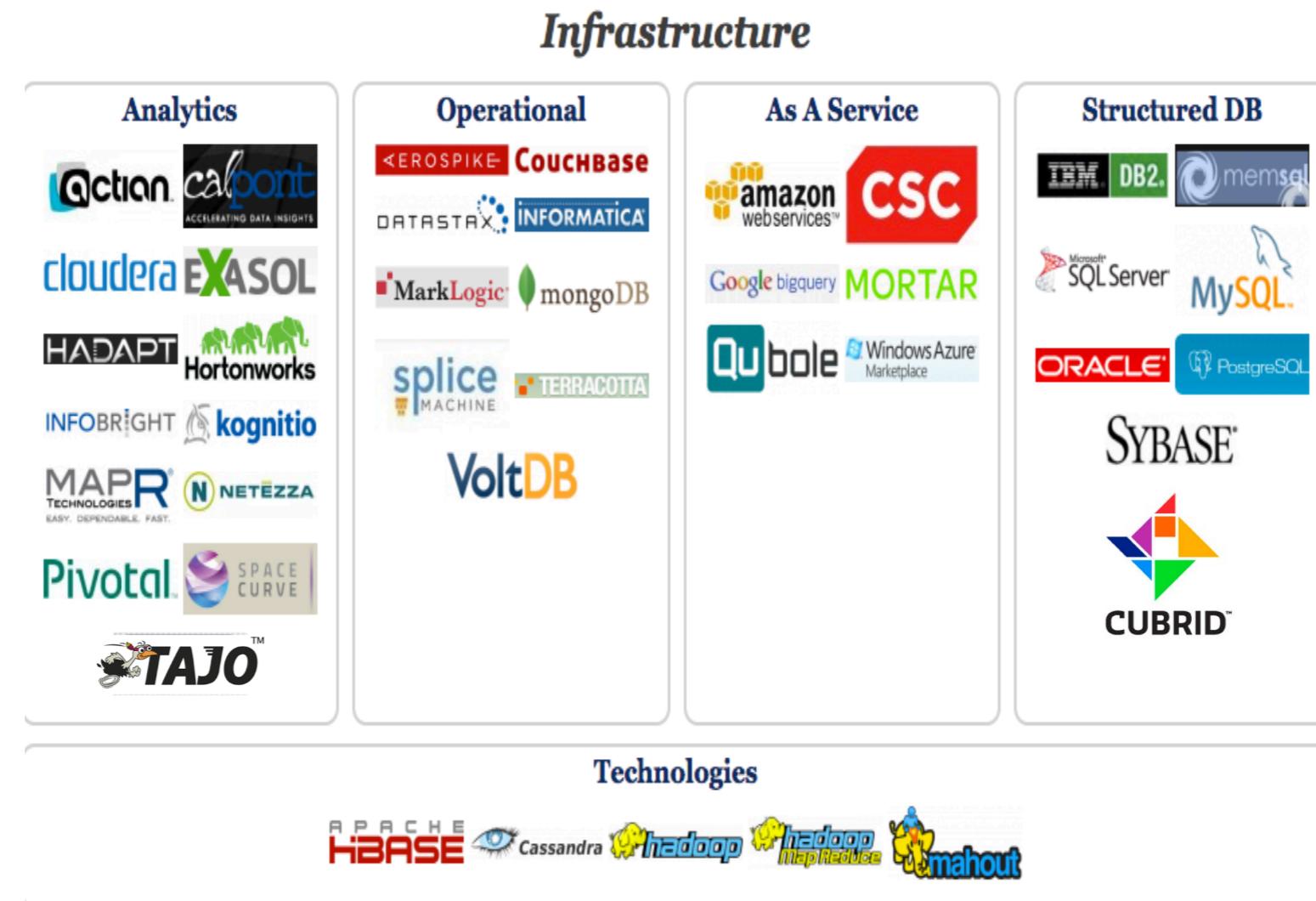
This class teaches the basics
to store & manage data.

Introduction, admin & setup

What you will learn about in this section

1. Motivation for studying DBs
2. Administrative structure
3. Course logistics
4. Overview of lecture coverage

Big Data Landscape... Infrastructure is Changing



New tech. Same Principles.

Why should **you** study databases?

Mercenary- make more \$\$\$:

- Startups need DB talent right away = low employee #
- Massive industry...



Intellectual:

- Science: data poor to data rich
 - No idea how to handle the data!
- Fundamental ideas to/from all of CS:
 - Systems, theory, AI, logic, stats, analysis....

Many great computer systems ideas started in DB.

What this course is (and is not)

- Discuss **fundamentals of database design**
 - How to design databases, query databases, build applications with them.
 - How to debug them when they go wrong!
 - Not how to be a DBA or how to tune Oracle 12g.
- We'll neither cover **how database management systems work**
- Nor **the principles of how to build** them ☹

Schedule*

Lecture: Thu 9:30~12:00

Session	Subject	Session	Subject
1 (Aug. 30)	Course Overview & Overview of the Relational Data Model	9 (Oct. 25)	Conceptual Data Model
2 (Sep. 6)	Introduction to SQL	10 (Jul. 18)	Generalization & Specialization
3 (Sep. 13)	SQL Advanced	11 (Nov. 1)	Relational Database Design
4 (Sep. 20)	Why DB Design?	12 (Nov. 8)	Reserved
5 (Sep. 27)	Reserved for Thanks giving	13 (Nov. 15)	Normalization
6 (Oct. 4)	Development Process	14 (Nov. 22)	Keys and Constraints
7 (Oct. 11)	Requirements	15 (Nov. 29)	User Interface
8 (Oct. 18)	Reserved	16 (Dec. 6)	Review
		17 (Dec. 13)	Project Demo

*subject to change without notification

Lectures: user's perspective

1. Foundations: Relational data models & SQL

- Session 1-3
- How to manipulate data with SQL, a declarative language
 - *reduced expressive power but the system can do more for you*

2. Database Design: Design theory and constraints

- Session 4-14
- Designing relational schema to keep your data from getting corrupted

Who I am ...



Instructor (me) YoonJoon Lee

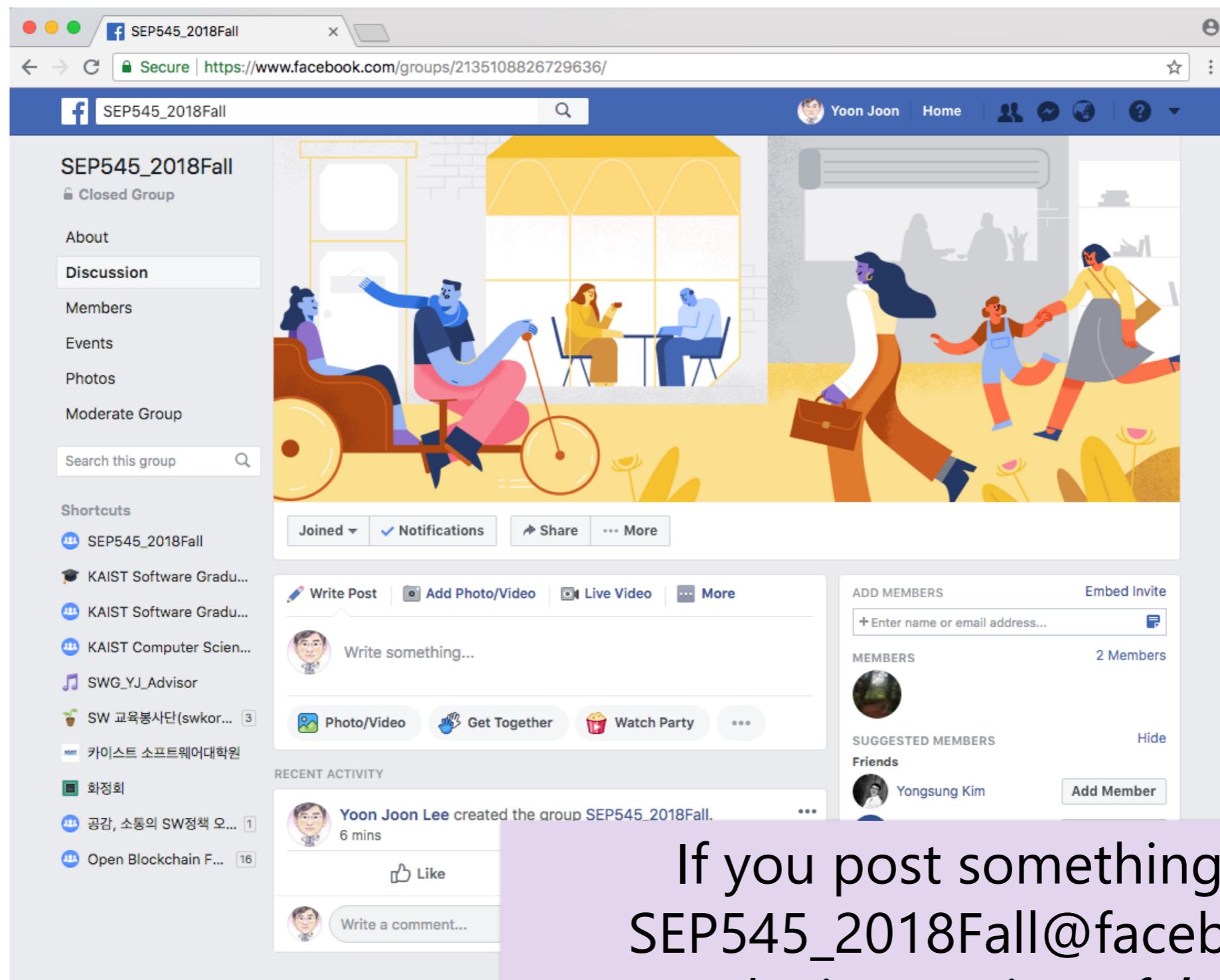
- Professor, School of Computing affiliated with Database Lab.
- **Research:** database system, big data and data science
- yoonjoon.lee@kaist.ac.kr, x3523, 이윤준@facebook

Communication w/ Course Staff

SEP545_2018Fall@facebook

By appointment!

SEP545_2017Summer@facebook

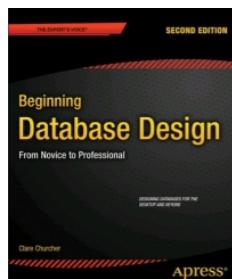


If you post something on
SEP545_2018Fall@facebook ,
take it as a sign of *love*.

Lectures

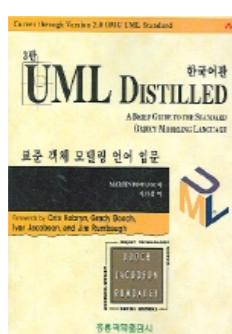
Lecture slides cover **essential material**

- This is your best reference.
- But, you have to read the textbook.



Beginning Database Design from Novice to Professional,
2nd ed.,
Clare Chursher, Apress

Free e-book downloaded from <http://it-ebooks.info/book/5174/>



UML Distilled 3판 - 한국어판 - 표준 객체 모델링 언어 입문

마틴 폴러 (지은이), 이인섭 (옮긴이) | 홍릉과학출판사

Sessions

- Schedule
 - Refer to the Course Overview
- Please, read the corresponding chapter of textbook before assisting.
- In each session, you have
 - lecture (about 1 hr),
 - practice (about 1 hr) to solve exercises in text, and
 - presentation (about 1 hr) depending on the subject.
- At the end of each session, the practice result should be uploaded to and the presentation assessment should be submitted to SEP545_2018Fall@Facebook and Google Forms.

Attendance

You must attend at least 10 lectures.

- You're free to skip 2 lectures. You don't need any notice.
- But, more, it's your own peril!

I dislike mandatory attendance... but we noticed...

- People who did not attend did worse ☹
- People who did not attend used more course resources ☹
- People who did not attend were less happy with the course ☹

How it works:

- We let you know how to do.

Graded Elements*

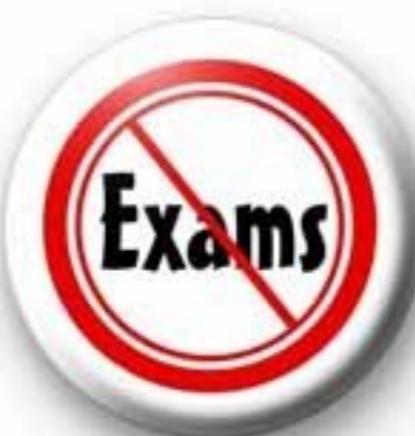
Attendance (10%)

Practice & Recitation(40%)

Project (50%)

- Experience with a database application.

Assignments



What is expected from you

Attend class

- 1 hour lecture, 1 hour practice & 1 hour presentation for a session

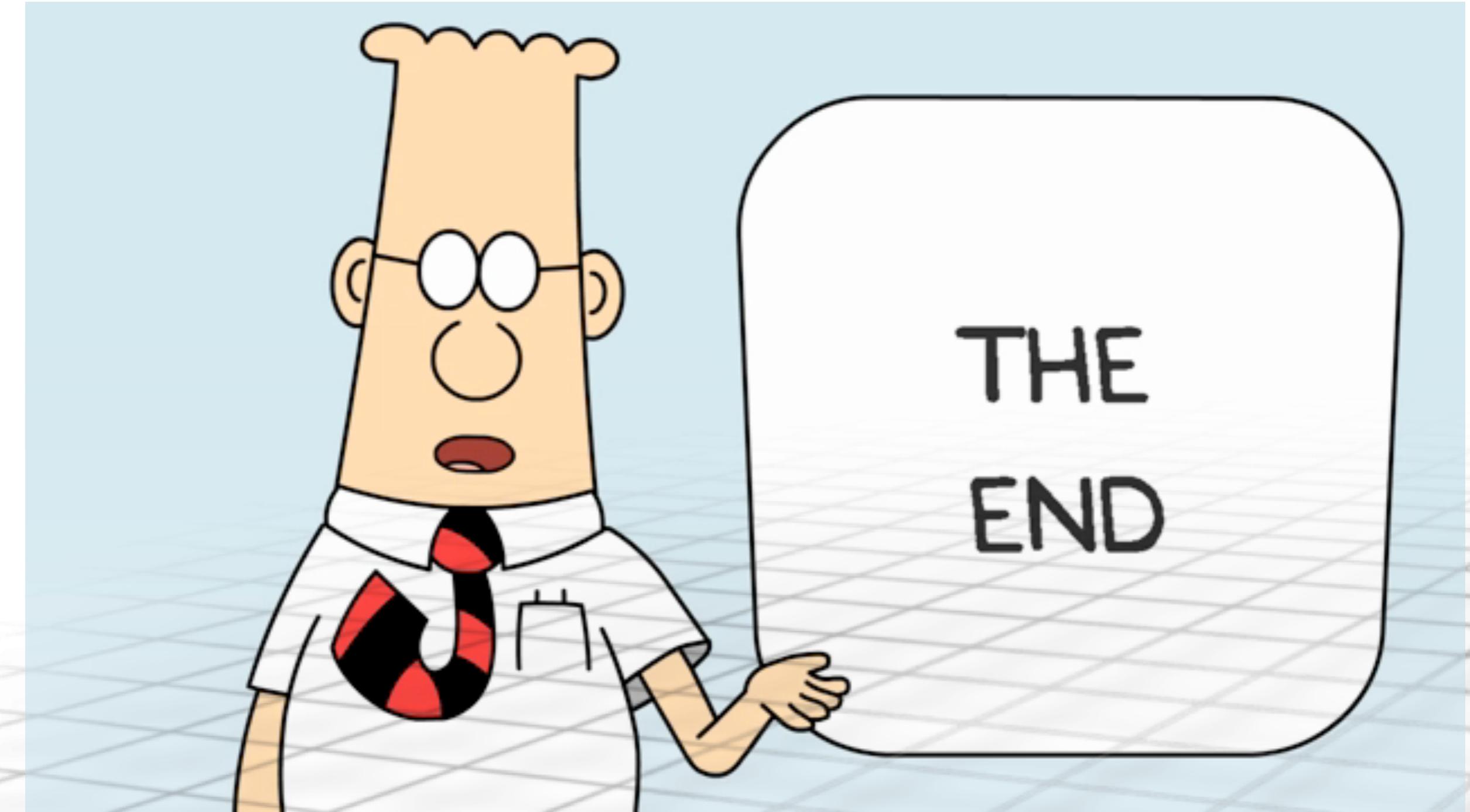
Be active and think critically

- Ask questions, post comments on facebook
SEP545_2018Fall

Enjoy sessions and a project !

- Start early and be honest

Going beyond the
requirements...



감사합니다

출처: metachannels.com