

Spring 2016

Distributed Multimedia Service

470410-1
Spring 2016
3/3/2016
Kyoung Shin Park
Multimedia Engineering
Dankook University

Course Information

- Course
 - Distributed Multimedia Service (470410-1)
 - Spring 2016, 3 credits, 3 hours
 - Course hour: Thursday 9:30-12:30
 - <http://dis.dankook.ac.kr/lectures/dms16/>
- Instructor
 - Kyoung Shin Park
 - kpark@dankook.ac.kr
 - 010-8636-1960 (mobile)
 - The Third Science Hall, Room 417
 - Office hour: Tuesday 1:00-2:00
- Prerequisites
 - Multimedia systems, Internet protocols, Multimedia network programming, and Graphics programming

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Purpose

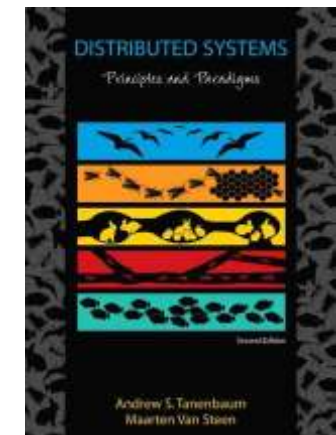
- This course covers the design and implementation of network and software architectures for distributed systems and networked applications.
- Topics include distributed systems, architectures, processes, networking, communication architectures, synchronization, consistency and replication, fault tolerance, distributed file systems, cloud computing.
- Students will read and present research papers on specific areas, study existing tools for building distributed systems and networked applications and work in teams to develop a term project.

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Text Book

- Reference Book
 - Distributed Systems: Principles and Paradigms, Second Edition
Andrew S. Tanenbaum and Marten Van Steen
Prentice Hall

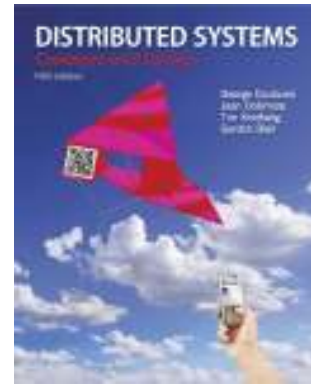
[https://vowi.fsinf.at/images/b/bc/TU_Wien-Verteilte_Systeme_VO_\(G%C3%B6schka\)-_Tannenbaum-distributed_systems_principles_and_paradigms_2nd_edition.pdf](https://vowi.fsinf.at/images/b/bc/TU_Wien-Verteilte_Systeme_VO_(G%C3%B6schka)-_Tannenbaum-distributed_systems_principles_and_paradigms_2nd_edition.pdf)



Text Book

□ Reference Book

- Distributed Systems: Concepts and Design, Fifth Edition
George Coulouris, Jean Dollimore, Tim Kindberg and Gordon Blair
Addison Wesley



<http://www.cdk5.net/wp/>

Text Book

□ Reference Book

- Understanding Virtual Reality: Interface, Application, and Design, W. Sherman and A. Crag, Morgan Kaufmann
- Open Scene Graph Quick Start Guide, P. Martz
- Open Scene Graph Reference Manual, B. Kuehne and P. Martz



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Evaluation

- Attendance: 20%
- Midterm Exam: 20 %
 - There will be a midterm exam that covers all the subjects discussed in the classroom.
- Individual Assignment: 30%
 - Individual class assignment 10%
 - Paper presentation 10%
 - Paper reading & summary report 10%
- Term Project: 30 %
 - Proposal 5%
 - Midterm progress report & presentation 10%
 - Implementation 5%
 - Final report & presentation 10%
- **Class Participation & Attitude: extra 10 %**

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Topics

- Overview
- Distributed systems
- Process
- Communication
- Synchronization
- Consistency and replication
- Fault Tolerance
- Cloud computing

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Schedule

- 3/03 : Course Overview
- 3/10 : Introduction to Distributed Systems
Term Project Group Formation
- 3/17 : Networking & Socket Programming
Term Project Proposal Presentation
- 3/24 : Communication
- 3/31 : Process
- 4/07 : Synchronization
- 4/14 : Shared State & Dead Reckoning
- 4/21 : Midterm Exam

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Schedule

- 4/28 : Term Project Midterm Progress Presentation
- 5/12 : Consistency
- 5/19 : Replication
- 5/26 : Fault Tolerance
- 6/02 : Paper Presentation
- 6/09 : Paper Presentation
- 6/16 : Term Project Final Presentation

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Paper Presentation

- The paper presentations will be done individually
- 20 minutes for presentation & 10 minutes for questions at the end
- Every student is expected to read the paper before coming to class – Submit the 1-page long paper summary report at the beginning of the class
- Every Student bring at least one question so that we can have a good discussion on the material
- Depending on the classroom size, students will present 1~2 papers
- You can find a paper of your interest from the reading list (which will be provided later)

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Term Project

- Students are developing a new networked game, or a N-device content.
- Students will work on a semester-long project that will comprise a major part of the class grade.
- Students are encouraged to work on a project related to your own area of interest.
- Projects can be done as groups of two or three.
- Also, the project report should indicate to which portions of the project each member contributed.
- You group project blog will also help monitor your steady progress across the semester.
- Also, the final project report should indicate to which portions of the project each member contributed.

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Term Project

- Project proposal & 5-min presentation (3/17)
 - Project groups will form (3~5 students in each group)
 - Once a group is form, send me email
 - 2-page long report of single-spaced, 10-point font (5%)
- Project progress report & presentation (4/21)
 - 10 minutes presentation (5%)
 - 4-page long progress report for the project (5%)
- Project implementation
 - Groups will develop the tabletop tiled display app, necessary on your chosen topic. (5%)
- Project final report (6/16)
 - 10-20 minutes in-class presentation & demo (5%)
 - 10-page long final report for the project will be in the style of a technical conference paper (5%)

Term Project

- Networked game
- Shared Whiteboard
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Term Project Groups

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Paper Presentation Schedule

- 6/02 –
- 6/09 –

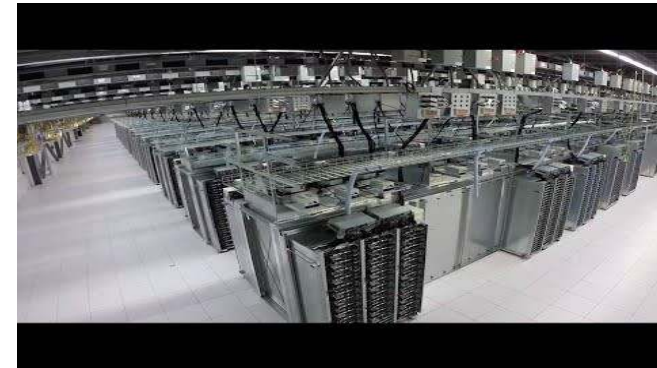
CAVE2



CAVE2

<https://youtu.be/H89ByPI2v7w?list=PL4071582316A3714C>

Google Data Center



Google Data Center

<https://youtu.be/XZmGGAhHqa0>

Internet

- Underlies many distributed systems.
- A vast interconnected collection of computer networks of many types.
- **Intranets** – subnetworks operated by companies and organizations. Intranets contain subnets and LANs.
- **WAN** – wide area networks, consists of LANs
- **ISPs** – companies that provide modem links and other types of connections to users.
- Intranets (actually the ISPs' core routers) are linked by **backbones** – network links of large bandwidth, such as satellite connections, fiber optic cables, and other high-bandwidth circuits.

Online Resources

- Open Scene Graph <http://www.openscenegraph.org/>
- QUANTA <http://www.evl.uic.edu/cavern/quanta/>
- ACM SIGGRAPH <http://www.siggraph.org/>
- IEEE Visualization <http://vis.computer.org/>

Announcement

- Group formation on March 10th
- Group project proposal & presentation on March 17th
- Class blog: <http://dis.dankook.ac.kr/lectures/dms16/>

