**Assignment III – Paper Review**

# Purpose

This reading assignment intends to have you experience the very initial step of research activity, i.e., reading research papers. Unlike reading textbooks, you are not required to acquire well-known facts but expected to summarize the key idea of each paper you have read and to discuss the

contribution/drawback of the research presented in the paper. Submit by 2nd April 2024

***Each student is expected to review one or more related papers, and to present his/her understanding of the research paper he/she has chosen.***

# Reading Assignment

The following shows the list of possible topics you should search/read (any one).

* 1. Process Migration
  2. Communication
  3. Synchronization
  4. Distributed File Systems
  5. Grid Computing
  6. Replication and Fault Tolerance

Or any related topic of your choice

Decide one research project you are interested in, and review one or more readings related to the project. Some of them may be research papers published through IEEE or ACM, the others from a textbook section. Review the papers timely and get prepared for your presentation.

# Peer Evaluation

**Peer Evaluation will be done for this assignment**

An Evaluation sheet will be provided for each student. Several student presentations categorized in the same research topic can be evaluated by that group.

The peer group is expected to evaluate each student presentation according to the evaluation sheet. This sheet includes the following criteria:

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| --- | --- |
| **Item 1** | Did he/she well understand the paper he/she reviewed? |
| **Item 2** | Did he/she well summarized the main idea of papers? |
| **Item 3** | Did he/she give clear answers to questions asked by the group/peer? |
| **Item 4** | Did he/she properly point out the contribution of the papers? |
| **Item 5** | Did he/she mention about any drawbacks of the ideas introduced in the papers? |
| **Item 6** | Did he/she express his/her own opinions to improve the quality of the papers, research, and projects he/she reviewed? |

## Title: Improving Consistency Models in Distributed Systems

**Introduction:**

The paper "How Do You Tube? Reverse Engineering the YouTube Video Delivery Cloud" explores the intricate design features of YouTube's video delivery system. By conducting extensive data analysis and experiments, the researchers aimed to uncover the underlying principles that make YouTube's content distribution system scalable and efficient.

## Paper Selection:

The researchers wanted to understand how YouTube manages to deliver videos to millions of users worldwide efficiently. They set out to investigate the design elements of YouTube's video delivery cloud by creating a global measurement infrastructure to collect data and analyze the system's performance.

## Paper Summary:

The study reveals that YouTube's video delivery cloud comprises a flat video id space, multiple DNS namespaces, and a 3-tier physical cache hierarchy. By using consistent hashing and clever DNS and HTTP redirection mechanisms, YouTube has built a scalable and flexible content distribution system. The research involved analyzing data from over 1000 vantage points across five continents to gain insights into YouTube's video delivery infrastructure.

## Contributions:

1. Revealed key design features of YouTube's video delivery cloud.

2. Demonstrated the use of consistent hashing for mapping video ids to logical servers.

3. Highlighted the importance of DNS and HTTP redirection mechanisms in content distribution.

4. Provided insights into the scalability and flexibility of YouTube's system.

5. Developed a globally distributed measurement platform for data collection.

6. Contributed to understanding large-scale content delivery systems.

7. Shed light on the future of Internet architecture designs.

8. Addressed challenges in video distribution and cloud computing.

9. Identified research questions for further exploration.

10. Offered valuable insights for the development of content delivery systems.

## Drawbacks:

1. Lack of detailed analysis on the impact of user location on content delivery.

2. Limited discussion on the energy efficiency of YouTube's video delivery cloud.

3. Potential bias in the collected dataset due to crawling process.

4. Incompleteness in the list of videos collected for analysis.

5. Unclear explanation on the handling of less popular videos.

6. Limited focus on the cost implications of YouTube's content replication strategies.

7. Absence of real-time performance evaluation of the system.

8. Minimal discussion on the security aspects of the video delivery cloud.

9. Scope for further exploration on load balancing strategies.

10. Limited comparison with other large-scale content delivery systems.

## Conclusion:

In conclusion, the study on reverse engineering the YouTube video delivery cloud provides valuable insights into the design principles that make YouTube's content distribution system efficient and scalable. By uncovering key features and challenges, the research contributes to the advancement of large-scale content delivery systems and offers directions for future Internet architecture designs.

**Ref :**

Paper: How Do You “Tube”? Reverse Engineering the YouTube Video Delivery Cloud

Link : https://www.workgroup.com.ar/website/images/Contenido/How\_Do\_You\_Tube\_-\_youtube-tech-report.pdf