

Network Application Studio

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Today's Agenda

1. Introductions
2. Contents of the class
3. Coding demo
4. Pick papers to present
5. Meet teammates

Introductions

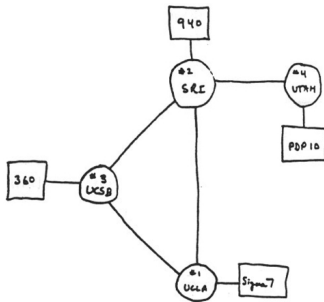
My Interest in Networking



In the last 25 years, advances in networking and communications have produced huge societal changes.

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the Internet



THE ARPA NETWORK

DEC 1969

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the World-Wide Web



(Stanford Physics Information Retrieval System,
first website outside Europe)

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Wi-Fi

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Skype

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Facetime

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Google Hangouts

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Netflix

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YouTube



The image shows a screenshot of a YouTube video player. At the top left is the YouTube logo. A search bar is located at the top right. The video frame shows a man with glasses and a white t-shirt, identified as Tay Zonday, performing. He is wearing a large, circular, over-the-ear headset microphone and is positioned in front of a professional studio microphone on a stand. The background is a plain, light-colored wall. A green text overlay at the bottom of the video frame reads "Get The Remix! -WWW.PLAYTAY.COM". Below the video frame is a dark control bar with a play button, a progress indicator showing 0:11 / 4:52, and various settings icons. Below the video player, the video title is displayed: "'Chocolate Rain' Original Song by Tay Zonday". Underneath the title is the channel name "TayZonday" with a profile picture and a red "Subscribe" button next to the number "940,253". In the bottom right corner of the video player area, the view count "101,177,860" is shown.

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Bitcoin



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Google search



Computer Networks and ISDN Systems 30 (1998) 107–117

**COMPUTER
NETWORKS
and
ISDN SYSTEMS**

The anatomy of a large-scale hypertextual Web search engine ¹

Sergey Brin ², Lawrence Page ^{*,2}

Computer Science Department, Stanford University, Stanford, CA 94305, USA

Abstract

In this paper, we present Google, a prototype of a large-scale search engine which makes heavy use of the structure present in hypertext. Google is designed to crawl and index the Web efficiently and produce much more satisfying search

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Napster

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BitTorrent

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Dropbox

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Tor

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MapReduce, Hadoop, Spark

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Meteor, Derby, React

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Bolo



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World of Warcraft

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Snapchat

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Wi-Fi, LTE, SDN, BGP, MIMO,
mesh-networking, full-duplex, medical
devices, undersea, deep space...

This class

1. My goal: Help **you** realize a great project
2. Teams of 2–3
3. Two-page proposal by January 13
4. Present in last week of class
5. Writeup

Some ideas

1. Filesystem that stores everything in pings in flight
2. Solve the Emoji Crisis
3. sshfs, but keeps connection across change of IP address or loss of connection
4. ISP in the sky: share multiple connections
5. Connect to every node in the Bitcoin network and...

Also...

1. Reading group
2. Congestion-control “contest” (in February)
3. Office hours: Wed., 3–4 p.m., Gates 282
4. Questions on Piazza
5. I am here to help you!

Coding demo (sourdough)

Paper captains

Team discussions