

電気工学特別講義

2021年6月22日分

イントロダクション

OU EE ES Lecture Series

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Lecture introduction

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On the internet

@jj1bdx

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COVID-19
has changed
everything
... and is still there!

The Digital Divide has become irrelevant
The Physical Divide

The Physical Divide ¹

Digital is now cheap, it's physical that is expensive.

70 years ago the cost of putting a bunch of transistors on a chip was astronomical. Now that's cheap. What's expensive is putting a bunch of people in a room.

– *Balaji S. Srinivasan*

¹ <https://twitter.com/balajis/status/1247518697385684992?lang=en>

Digital-first society has come
Internet is infrastructure
Software builds the world

In the meanwhile:
Oppressions everywhere
by people with power
to enslave oppressed people





2020

Black Lives Matter



A photograph of a protest against Asian hate. In the foreground, a man wearing a black mask holds up a purple sign that reads "PROTECT ASIAN LIVES". Behind him, another person holds a yellow sign that says "STOP ASIAN HATE". Other protest signs are visible in the background. Large, white, outlined numbers "2021" are superimposed over the top half of the image.

2021

StopAsianHate

Safety first

Stay alive

Get out of slavery

Who | am



Professional Internet Engineer

技術士（情報工学部門）
力武健次技術士事務所 所長
情報処理安全確保支援士

Guest Researcher
Pepabo R&D Institute
GMO Pepabo, Inc.
GMOペパボ株式会社
ペパボ研究所 客員研究員



ペパボ研究所

Pepabo R&D Institute, GMO Pepabo, Inc.

My career

Erlang, Elixir, C, FreeBSD, Linux, TCP/IP, PHP, mruby, Lua, C++, C#, Visual Studio, Moodle, macOS, Windows, Vim, Emacs, VS Code, Arduino, AVR, radio engineering, music, distributed systems, fault tolerance, software defined radio, whatever.

31 years in Computer Science, 16 years since PhD, 45 years of ham radio op as @jj1wdx, 2010-2012: Professor, ACCMS/IIMC, Kyoto University, whatever.

Past records are meaningless, unless:
you work on what you really want to do now

Ignore past achievements
Focus on now

Ignore everybody
to stay creative and maintain originality

Lecture theme:
Information delivery on internet
In other words:
How internet works

容錯設計

Fault-tolerant design

Modern life is full of failures
How internet works under failures?

Technology 1: Packet switching

Technology 2: Flexible packet routing

Technology 3: Centralization, and: decentralization

Topic sections (1/3)

- Latency and Laws of Physics
- Centralized communication
- Multiplexing
- Packet switching
- Routing basics

Topic sections (2/3)

- IP addresses
- Routing in details
- Network transports
- Cloud computing basics
- Social implication of cloud computing

Topic sections (3/3)

- Network fault-tolerance
- Network services and programming trends
- Wireless/radio and internet
- Reference books
- Career choice

Summary:

Divide data into packets
Route flexibly and wisely
Decentralize and distribute

OK let's get down to business!

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