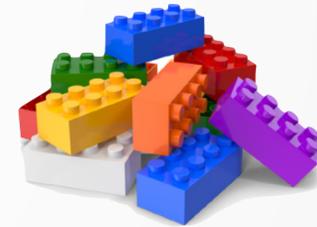


**Advanced Course**

# **Distributed Systems**

**Course Introduction**



# PEOPLE

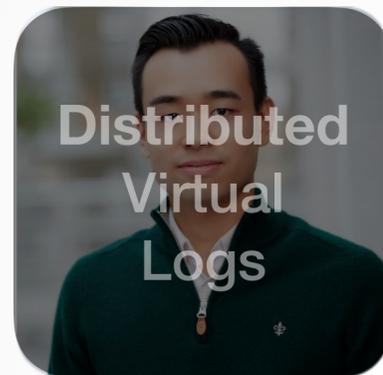
## Teachers



**Paris  
Carbone**  
(examiner)



## TAs



**Harald  
Ng**

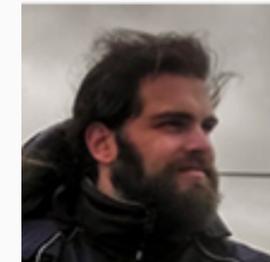


**Sonia  
Horchidan**



**Max  
Meldrum**

## Alumni - Hall of Fame



**Lars  
Kroll**



**Cosmin  
Arad**



**Tallat  
Shafaat**



**Niklas  
Ekström**



**Seif  
Haridi**

(previous teacher)



**Ali  
Ghodsi**

ID2203



KTH-2022

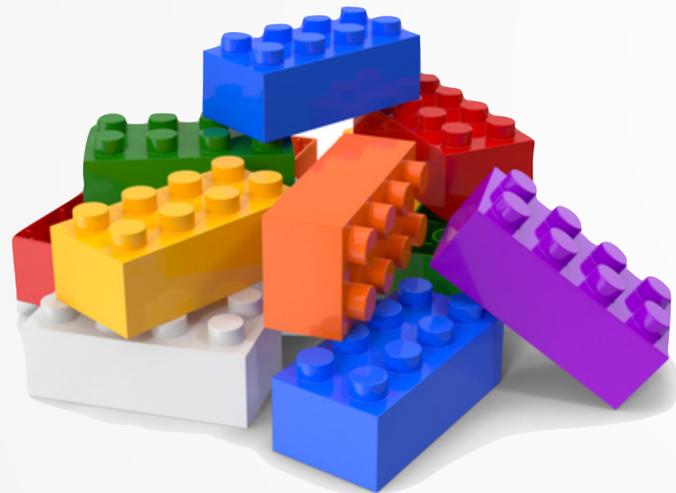
# KEY APPLICATIONS

---

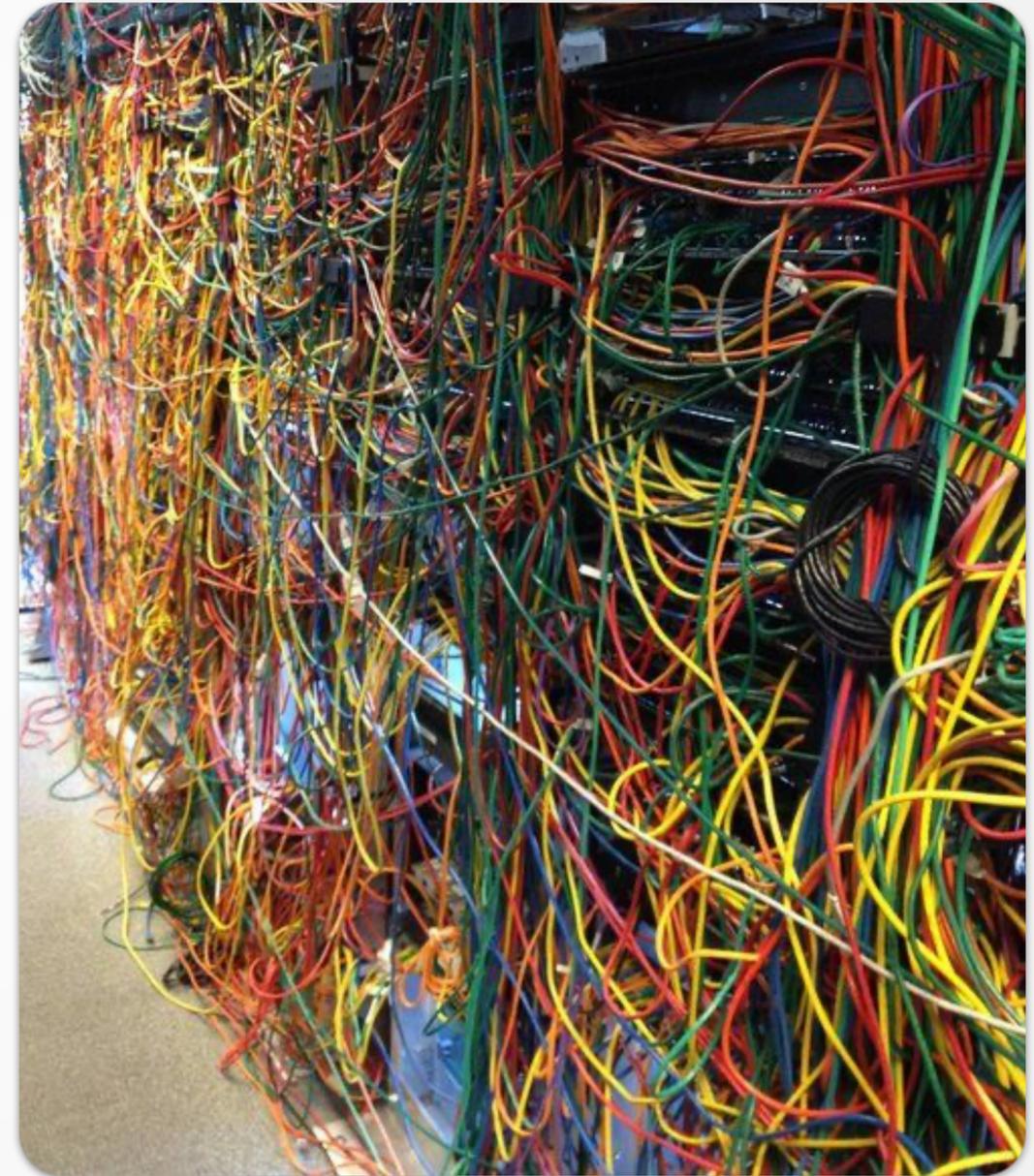
- ▶ Distributed Data Systems
- ▶ Cloud Computing
- ▶ Edge Computing
- ▶ Data Management

# WAY OF THINKING

---



**VS**



# COURSE TOPICS

---



- ▶ Intro to Distributed Systems
  - ▶ Basic Abstractions and Failure Detectors
  - ▶ Reliable and Causal Order Broadcast
  - ▶ Distributed Shared Memory
  - ▶ Consensus (Paxos, Raft, etc.)
  - ▶ Dynamic Reconfiguration
  - ▶ Time Abstractions and Interval Clocks (Spanner etc.)
  - ▶ Consistent Snapshotting (Stream Data Management)
  - ▶ Distributed ACID Transactions (Cloud DBs)
- ▶ Basic Components
- ▶ Advanced Systems

# COURSE CONTENT

---

**Canvas - <https://canvas.kth.se/courses/31583>**

- ▶ Zoom & Video Lectures
- ▶ Textbook & Algorithms
- ▶ Quizzes
- ▶ Labs & Tutorials
- ▶ Course Forum (Piazza)
- ▶ Assignments & Project
- ▶ Final Exam

# LECTURES

---

## 1. Live (Zoom) Lectures

- Presentation and Live Discussions
- Recorded Video Uploads in Canvas

## 2. Video Series by Seif Haridi

- Covers most content
- Optimal for self-paced study in the beginning of the course

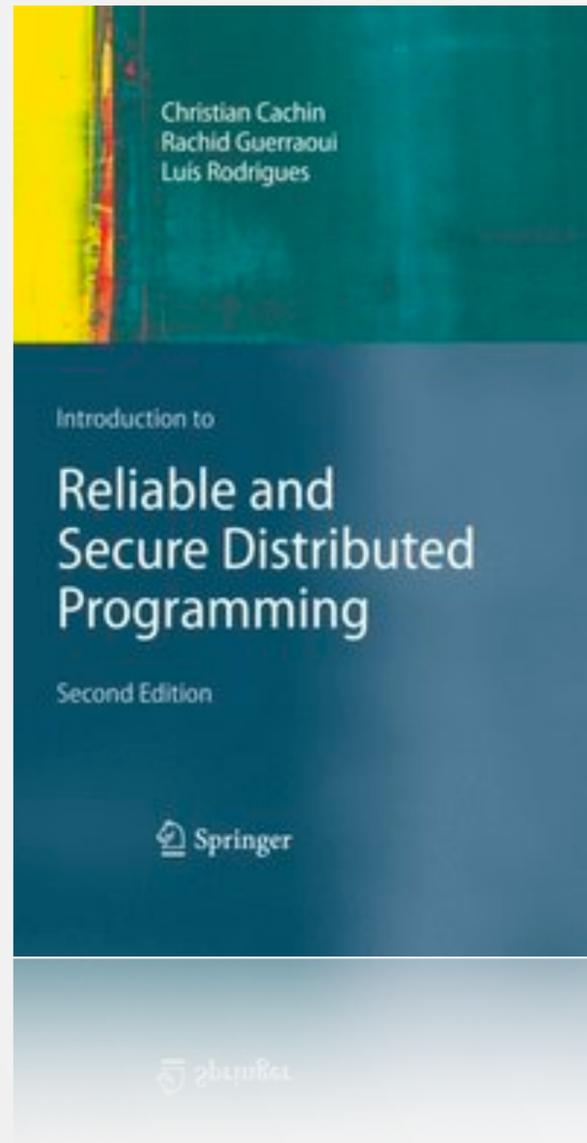
# TEXTBOOK

---

## “Reliable and Secure Distributed Programming”

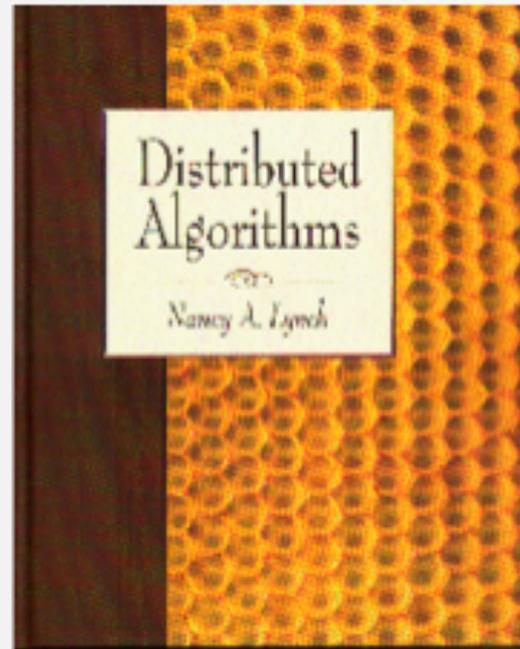
Cachin, Guerraoui, Rodrigues

- Main textbook of the course
- Covers most of the content presented
- Complements lectures but doesn't replace them
- E-book available at KTH Library & Canvas



# TEXTBOOK

---



## “Distributed Algorithms” by Nancy Lynch

- Recommended Reading
- Covers Input-Output Automata

# QUIZZES

---

## 1. Non-Graded

- Complement each lecture
- Crucial for assessing understanding

## 2. Graded

- Graded after each module
- **13P** of the final grade

# PIAZZA FORUM

---

- [piazza.com/kth.se/winter2022/id2203/home](https://piazza.com/kth.se/winter2022/id2203/home)
  - Questions & Discussions
  - Anonymous posting
- All registered students will be automatically added
- Notify us if you cannot access it

# LABS & TUTORIALS

---

- Live Zoom Sessions with TAs / Guests
- Recorded Uploads in Canvas
- Topics
  - Distributed Programming Frameworks (Kompics)
  - Model Checkers (TLA+)
  - Refreshers for Math/Proof Systems
  - Exercise & Project Q&A
  - Guest lectures on specific system areas

# ASSIGNMENTS & PROJECT

---

1. Programming Exercises - **7P**
  - Algorithm Implementations
  - Kompics (Scala) environment
  
2. Project - **30P + 10P (Bonus)**
  - Individual - no group projects
  - Intermediate reports might be peer reviewed
  - **15P** requirement to **pass**

# FINAL EXAM

---

- **Up to 50P**
- Similar style as the graded quizzes
- Tests knowledge of course topics with emphasis in reasoning
- Multiple Choice & Explanation/Proof Questions
- **Pass : 25/50P** for A-F course graded part

# GRADING SCHEME

---

For the 4.5 credit A-F graded part the grade is calculated as follows:

**Graded Quizzes (max 13P)**

**+ Programming Exercises (max 7P)**

**+ Project (max 40P)**

**+ Exam (max 50P)**

**= max 110P**

**where 90+ A, 80+ B, 70+ C, 60+ D, 50+ E, <50 F**