Computing in Communication Networks – From Theory to Applications

By Alexie Roy

Online Course: Computing in Communication Networks – From Theory to Applications

- The course is called Computing in Communication Networks – From Theory to Applications
- The instructors of this course were Fabrizio Granelli and Frank Fitzek
- The date of the the online course was October 28, 2020
- The course took place online

Why did this course interest me?

This course interested me because I wanted to learn more about communication networks. I wanted to learn about how communication networks compute and the purpose of computation. Before I applied to this course, I read about the topic of enabling virtualization to the future of communication networks and it caught my interest. In addition, I wanted to learn about how both softwarization and virtualization are applied to 5G networks and how it is important to communication networks.

What was in the presentation?

- The instructors of this course discussed the protocols and architectures of 5G mobile networks
    - The concepts of softwarization and virtualization are important for the future of communication networks
    - **Softwarization**: It is the paradigm where a given functionality runs in software instead of hardware
    - **Virtualization**: It's based on cloud computing technologies, which offers on-demand access to different applications and services by sharing pool of configurable computing resources
    - This was taken from the example of 5G's framework of standardization being moved from the New Radio to infrastructure and management aspects

What was in the presentation continued...

- The computing in technology is part of the communication network, in which it's categorized as an infrastructure (wired) and wireless networks, or an ADHOC network
- **Standardization internal ring**:
  - Consensus, development, implementation, bringing uniformity, exemplar unit, and distinctive ensign
- **Standardization external ring**:
  - Governments, users, interest groups, standard organizations, firms, and universities. In addition, there are procedures for standardization
- The procedures to standardization include:
  - Emergence of the de facto standard that depends on either tradition or dominance in the market
  - Standards based on how Standard organizations or governments wrote it

What was in the presentation continued...

- In accordance to the Computing in Communication Networks – From Theory to Applications course, a part of it included Mobile Edge Cloud, Network Coding, Machine Learning, and Compressed Sensing applications
    - **Mobile Edge Cloud**: it consists of multiple mobile and stationary devices that are interconnected through the wireless local area networks which is created for a small cloud infrastructure at a local physical area such as at home
    - **Network Coding**: the method to optimize the flow of data in a network through transmitting digital evidence of messages (bits of data).
    - **Machine learning**: it is what makes computers go into a self-learning mode without having explicit programming
    - **Compressed Sensing Applications**: it's used to compress the signal that is acquired when it is being sensed

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