CS-234

Technologies of societal self-organization

Cursus	Sem.	Type
Communication systems	BA3	Opt.
Computer science	BA3	Opt.

Language of teaching	English
Credits	5
Session	Winter
Semester	Fall
Exam	Written
Workload	150h
Weeks	14
Hours	**5 weekly**
Courses	2 weekly
Exercises	1 weekly
TP	2 weekly
Number of positions	

Remark

pas donné en 2018-19

Summary

This course will offer students a broad but hands-on introduction to technologies of human self-organization.

Content

The course will present students with a view of self-organization technologies set in a long-term historical perspective, extending from their roots in ancients principles of democracy and governance, up to recent high-tech innovation such as social networking, e-voting, blockchains, and delegative democracy. The course will cover the many fundamental organization challenges these technologies attempt to address, such as :

- Coordination : do participants communicate in person, electronically, or by passing secret notes ?
- Membership : who has the right to participate as a member or citizen ? Can membership be faked ?
- Equity or fairness : how much power or weight does each participant have ? Can weight be hacked ?
- Filtering : how to separate signal from noise, real expertise from appealing bluster ?
- Scalability : does the self-organizing technology work for only 10 members, or 100? 1000 ? 1 M ? 1 B ?
- Integrity : how does self-organizing technology prevent hacking or tampering by malicious parties ?
- Self-determination : does the technology protect freedoms such as expression and association ?
- Privacy : what acts of participation does the technology keep private, and what are considered public?
- Representation : is participation direct or representative ? How are representatives chosen ?
- Accountability : how are participants and/or representatives kept accountable for their actions ?
- Transparency : does the technology allow participants to verify that it is operating correctly ? How ?
- Incentives : how does the technology encourage or incentivize people to use it, for good or ill ?
- Psychology : how does the technology interplay with the unique properties of the human mind ?

Learning Prerequisites

Important concepts to start the course

Basic computing and programming skills

Teaching methods

The course will lead students through an exploration of the vast number of different technological approaches to these challenges and issues, from extremely low-tech (e.g., picking representatives by drawing straws) to the latest

experimentatl technologies. In different weeks the students will explore hands-on the architecture, design, practical use, and strenghts and weaknesses of different self-organization technologies, such as :

- Social networking systems such as Twitter and Reddit
- Community self-organization systems such as Loomio
- Peer review systems such as HotCRP
- E-voting systems in use in around the world (especially the US and Switzerland)
- Experimental participatory delegative democracy systems such as LiquidFeedback
- Cryptocurrencies and smart contract systems such as Bitcoin and Ethereum

Expected student activities

In general, the course will encourage students to "learn by doing" through exercises with practical systems. Students will be required to use some of these systems in groups in "hands-on" self-organization exericses, to get firsthand comparative experience of how they work, and in what ways they succeed and fail.

Assessment methods

Students will be assessed through regular exercises and mini-quizzes, participation in "peer review" activities, a small project in the second half of the semester on which the students must report, and a written final exam.

Supervision

Office hours	Yes
Assistants	Yes
Forum	Yes

Resources

Ressources en bibliothèque

- Citizens without shelter : homelessness, democracy, and political exclusion
- Who governs? : democracy and power in an American city
- The Death of Money
- The master switch : the rise and fall of information empires