Advanced Decision Analysis, Game Theory

ECTS : 3

Description du contenu de l'enseignement :

A first part is devoted to problems related to social networks and information diffusion manipulation. The course will introduce simple models and measures related to echo chambers, and filter bubbles. We will see that these phenomena have a tendency to increase polarization or fragmentation and make the network more vulnerable to misinformation. The course then discusses how one can model information diffusion on a network in different ways, and see how these models can be used to strategically manipulate information, e.g., to perform inference between countries, or for propaganda purposes. This will also draw connections with issues in control and strategic voting and on the different king of social-bot attacks.

A second part of the course brings a positive view on these issues exploring digital tools, which can be used to foster stronger and more resilient democracies and solve conflicts. We will notably explore in a simple formal way participatory budgeting campaigns and sortition processes.

Compétence à acquérir :

This course aims to study through the lenses of formal models several issues related to digital tools, democracy, and conflicts. We will see basic formal tools from decision theory, game theory, and agent systems to study topics as echo-chambers, polarization effects, filter-bubbles, opinion-manipulation, or bot-attacks and illustrate how they can play a role in modern conflicts. We will also study how these tools can be leveraged to build stronger and more resilient democracies.

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