Modelling Contagion Processes on Social Networks

Thu 10th – Fri 11th January

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Nowadays more than 3 billion of people had access to the Internet. About 7 billion phone subscriptions have been activated, and more than 20% of them are associated to smartphones. As result a large fraction of our activities is digital, often online. Think about the way we communicate using social networks, emails, blog posts etc. Or about the way we access information via countless online resources that we can efficiently mine using search engines. Furthermore, the miniaturisation of devices created a wide range of wearables able to measure our interactions, movements, as well as vital signs.

As result, the large amount of data we generate, or that we can collect, can be used to study fundamental societal processes such as the spreading of ideas, memes, innovations and diseases. These phenomena can be naturally described as contagion processes on social networks. The course will provide an introduction of Network and Data Science approaches to model such phenomena.

Learning outcomes

The course will provide a basic introduction to Python that will be used throughout the module. The course will also offer a theoretical introduction to processes on networks. Furthermore, the students will be guided through two "hands on" case studies. In the first, participants will learn how to use real data of face-to-face interactions to model the spreading of infectious diseases. In the second students, will learn how to use data from online interactions on Twitter to model the spreading of ideas/memes.