Big Data

Big data offers opportunities and risks; these in turn require deep technical knowledge as well as critical skills to analyse the quality and expected impact of any solution. Making sense of data is a key interdisciplinary challenge for many organisations, institutions and governments so they can understand and adapt quickly to changing conditions. For instance, a hospital can incorporate GPS data about the location of its ambulances and helicopters with data about the mission, the emergency calls, and the current status in various emergency rooms in order to take decisions in real-time when faced with an emergency call. Or for instance, step counters and mobile phones can be connected with Amazon Echo voice-activated assistant to help manage family life while potentially allowing a range of vendors to ensure availability of groceries and other products the family might need. While both these scenarios evoke a future of efficiency and convenience, they also raise issues about privacy and the influence such data services might have on work practices and everyday lives.

Extracting value from big data depends in part on solving engineering challenges and hiring data scientists, but the key lies in interdisciplinary and critical analyses of big data processes and solutions. The courses in this specialisation offer an opportunity for you to engage with technical challenges, organisational processes and societal concerns around big data. Most importantly, you will learn how to translate critical and theoretical tools you have gained throughout the program into practice and application.

Spring semester

Big Data Processes (7.5 ECTS)

Organizations increasingly employ processes for collecting, generating, storing, governing and analysing large amounts of data. Such Big Data Processes, based on the discovery of meaningful patterns and insights in large datasets, can be used to explain and predict complex phenomena. In this class we will engage hands-on with all of the stages of a typical big data project around a specific case. This includes the collection and generation of data, as well as its visualisation and analysis for critical insights. This course presents you with opportunities to engage technically with data using state-of-the-art tools, in reflecting on the technological and societal implications, and limitations, at every relevant stage of the process. This includes discussions of how to derive value from big data processes as well as ethical and legal issues such as the use of personal data.

Autumn semester

Managing Business and Data-Driven Decision-Making (15 ECTS)

There is no longer one approach that can fit all data management problems. For each problem, big data managers have to decide on appropriate models and systems to handle the relevant data. In this course, you will be introduced to a variety of methods in big data analytics and machine learning, and, using the skills acquired in the first part of the specialisation, will apply this to solve a specific business related problem. Based on the specific data analysis, you will reflect on its operational, legal, and ethical implications.