DATA MANAGEMENT AND VISUALIZATION

This course will provide a hands-on approach to the process of transforming data into knowledge, including an overview of modern visual methods for working with large datasets and of simple statistical tools such as clustering / PCA analysis.

We will work with 2D data (maps and overlays from various data sources), 3D / 4D spatial survey, and virtual / augmented reality tools. Each course day is structured around a specific theme and case, and based on either scientific data or datasets from the outside world.
KEY BENEFITS
After the course, you will have gained hands-on experience of specific tools and methods that can be applied in daily operations.

You will
– use modern visualization methods and tools to gain a deeper insight into data management and to formulate hypotheses based on patterns in large data sets
– plan and structure the collection and fusion of data sets from multiple sources
– be able to apply simple statistical tools to unstructured and high-dimensional data sets

COURSE CONTENT
This course will consist of a mixture of introductions to specific techniques followed by case-based applications based on a number of exercises. We will use large data sets from a range of areas. Participants will be able to interact with the teachers and discuss
– data cleaning and detection and removal of possible outliers
– dataset fusion
– graphical tools to describe data sets quantitatively (box plots, variance, trends)
– simple statistical tools including clustering and principal component analysis
– visualization and inspection of 3D and 4D datasets. Slicing and rendering. Overlay of multiple sources.
– application of virtual and augmented reality for understanding and examining spatial data

Tools will include:
– data handling, plotting, and analysis in Python
– 3D visualization in Paraview

PARTICIPANT PROFILE
This course requires only a basic mathematical background. Participants should have a good understanding of at least one domain where data analysis and data-driven decision-making is relevant. Examples of such areas include but are not limited to the financial sector, public sector institutions, logistics, engineering, and medicine. Participants should be comfortable working with computers. Prior programming experience is an advantage but not a prerequisite.

COURSE DATES
17-21 August at the University of Copenhagen, South Campus.

COURSE DIRECTORS
Brian Vinter, Professor, Niels Bohr Institute, University of Copenhagen
Troels Haugbølle, Assistant Professor, Niels Bohr Institute, University of Copenhagen

COURSE FEE
EUR 2,680 / DKK 19,900 excl. Danish VAT. Fee includes teaching, course materials and all meals during the course.

For more information and registration
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“I have over the years participated in numerous courses at different universities and venues. The service, faculty, catering and facilities at “Copenhagen Summer University” stand out as the best of them all”

Kreesten Madsen, Senior Director, LEO Pharma, participant about Copenhagen Summer University 2019