PROGRAM

GIS WORKSHOP pro SMART REGION

20.3.2019 VŠB-TU Ostrava, aula, místnost NA4
  15:30-17:00 M. Tennekes: Statistical inference in mobile phone network data

21.3.2019 VŠB-TU Ostrava, aula, místnost NA3
  10:30-12:30 G.Navratil: Geographical data through augmented reality technology
  13:30-17:00 B.Zupan: Gentle introduction to data science: a hands-on workshop

Počet účastníků je omezen podle kapacity místnosti.
Registrace na http://gisak.vsb.cz/gws2019/

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ABSTRAKTY:

Statistical inference in mobile phone network data

The network of mobile phone antennas generate a massive amount of data. Events related to mobile phone and movement are logged in what is called Call Detail Records (CDR) or signalling data. The former is used for billing customers, the latter for network analysis. These data can be also used for statistical purposes, for example statistics on daytime population, tourism, commuting patterns, and social networks. During this workshop, you will

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learn how to process mobile phone network data, and how to use them for statistical purposes. An important aspect is deriving the geographic location of devices. Typically, only the connected antenna (cell) is known. We introduce a Bayesian approach to estimate a geospatial probability distribution per antenna. Next, we will describe techniques to aggregate and calibrate mobile phone network data in order to estimate population counts. This is needed since all statistical output is based on persons rather than mobile phones.

Geographical data through augmented reality technology

Augmented Reality (AR) is a novel technology that allows to connect data and the real world. In Hollywood productions, AR and similar technologies are frequently used, e.g., in Iron Man, Bones, and CSI:Cyber are just a few of them. AR is also used to visualize various aspects in sports broadcasting, e.g., offsides in soccer, the first down line in American football, the jump length in ski jumping, time and intermediates in skiing, etc. In principle, the technology is applicable to geographical data as well to support space related decisions. However, a number of questions immediately arises when thinking about implementation:

  - How can we use AR for geographic information?
  - What kind of interaction is necessary, what is already implemented in AR
    hardware?
  - What are the challenges to bring AR from the lab into the real world?
  - What are scenarios where AR could be used?

After a brief introduction of the technology and the presentation of videos showing current experiments in Vienna, the participants will discuss ideas around the technology.
Target audience are master students and PhD candidates looking for thesis topics, PhD students and PostDocs looking for ideas in relation to their research interests, and practitioners who want to see opportunities and challenges.

Gentle introduction to data science: a hands-on workshop

Useful data is all around us, and capturing vast amounts of data is easier than ever. Skilled data scientists are less ubiquitous than data. Data science has become increasingly challenging, and to master it, one needs a deep understanding of math, statistics and computer science. This complexity drives away many potential data explorers and consumers, leaving the joy of data-based discovery to a few enlightened gurus. In this workshop, we will argue that -- after a few hours of training -- virtually anyone can do data exploration and machine learning. Besides curiosity and a good mentor, though, an essential part of such endeavor is the right tool. We will claim that interactive visualizations, visual programming for construction of workflows, and linking-and-brushing type of interactivity can empower anyone curious about their data. We will show how we can employ a small number of components -- the Lego bricks of explorative data analysis -- to construct powerful workflows to solve them all. We will go through cases of clustering, data projection, and supervised learning. The workshop will use Orange, a data mining framework, and participants are welcome to download and install it from http://orange.biolab.si to follow along. The presented practical cases from will, among other, include geo data mining and image analytics.