Tárgy neve: Data mining and cloud-based solutions

Tárgyfelelős neve: Dr. Gede Mátyás
Tárgyfelelős tudományos fokozata: PhD
Tárgyfelelős MAB szerinti akkreditációs státusza: AT

Az oktatás célja:
a, knowledge
- Comprehensive knowledge of the problem-solving principles, methodology and processes of the planning, development and operation processes of the geoinformatics field, especially in the following areas: database management, Big Data data-mining, primary and secondary data collection, Earth observation, spatial and temporal data analysis, modelling and simulation of processes, network analysis, 3-dimensional modelling, geovisualization, geostatistical solutions, web-based geoinformatics services, spatial services development, geoinformatics programming, development of geospatial applications, open-source geoinformatics.
- Understandings, knowledge and application of mobile field, laboratory and practical materials, tools and methods of geoinformatics.
b, abilities
- Ability to collect data independently and organize spatial data into a database, as well as to organize the data with the tools of geoinformatics. Ability to perform operations and models with independently organized databases.
- Ability to recognize and apply new problem-solving methods and procedures in his/her field and apply what he/she has learnt in a diverse, multidisciplinary environment.
c, attitude
- Accepts and adheres to the ethical principles of work and organizational culture, especially with regard to the copyright related to geoinformatics.
- Open to professional cooperation with professionals working in related fields.
- Committed to adhering to and making others adhere to quality requirements.
d, autonomy and responsibility
- Independence regarding the thorough examination and elaboration of professional issues and processes.
- Feels responsible for meeting and making others meet the deadlines. He/she is responsible for his/her work and for his/her co-workers' work in projects.
- With his/her knowledge and skills of geoinformatics, he/she cooperates responsibly with professionals in other fields.

Az oktatás tartalma:
Main topics:

1. Crowdsourcing in spatial data. Data quality, evaluation. Comparing crowdsourced data with national databases. Data protection.
2. Tools and techniques in Data Mining.
3. The OpenStreetMap database. Copyright and licenses. Editing OSM data in the web with JOSM. Downloading data from the OSM with Overpass Turbo API.
4. Usage and import of spatial data in geoinformatics software (QGIS, ArcGIS). Building databases from downloaded data.
5. Geocoder applications in the web. Getting data from web with scripts.
6. Automations in data mining.
7. Cloud-based solutions in spatial data science.
8. Free and open databases: SRTM, ETOPO1, Corine, statistical data, etc. WMS and WFS services.

A számonkérés és értékelés rendszere: practical course mark based on course work.

Kötelező irodalom:

- Pang-Ning Tan, Michael Steinbach, Vipin Kumar: Introduction to Data Mining. Pearson Education Inc., 2019 ISBN: 9780133128901, 0133128903
  https://www-users.cs.umn.edu/~kumar001/dmbook/index.php#chapters
- OpenStreetMap WIKI: https://wiki.openstreetmap.org/wiki/Main_Page., 2020

Ajánlott irodalom:

- Arsanjani, Zipf, Mooney, Helbich (eds.): OpenStreetMap in GIScience: Experiences, Research, and Applications. Springer, 2015. ISBN: 9783319142807
- Ian H. Witten, Eibe Frank, Mark A. Hall, Christopher J. Pal: Data mining. Practical Machine Learning Tools and Techniques. ELSEVIER SCIENCE & TECHNOLOGY. 2017. ISBN 9780128042915
  https://www.cs.waikato.ac.nz/~ml/weka/book.html