



MACHINE LEARNING & RISK ASSESSMENT IN GEOENGINEERING

Joint International Symposium
of Two Events

3ISMLG & TCWW

25-27 OCTOBER 2021



Wrocław University
of Science and Technology

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Technical Committee “**Machine Learning and BigData TC309**” together with “**Engineering Practice of Risk Assessment & Management TC304**” of the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) are pleased to invite to

Machine Learning & Risk Assessment in Geoengineering

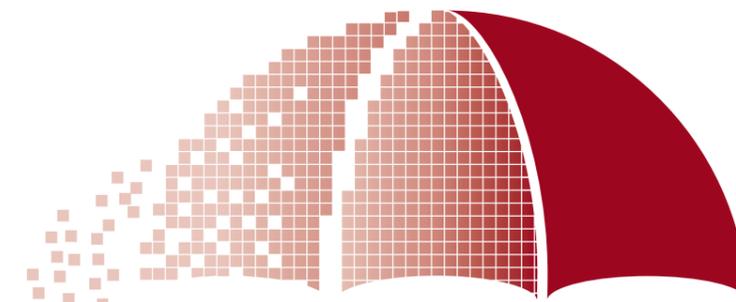
Geotechnical engineering deals with more uncertainties (due to nature of materials, e.g. soil and rock) than other areas of civil and mechanical engineering. Modeling the behavior of such materials in geotechnical engineering applications is complex and sometimes beyond the ability of most traditional forms of physically-based engineering methods. In recent years, the application of statistical and machine learning (ML) techniques in a wide range of geotechnical engineering has grown rapidly, such as site characterization, geo-structure design and construction. The **MLRA2021** joint conference under one umbrella aims to bring together researchers and engineers working in the field of Information Technology and Risk Assessment in Geosciences to discuss how progresses in the field of Big-Data and Machine Learning could impact engineering and research practices related to the natural hazards' assessment and the quantification of variabilities and uncertainties.

IMPORTANT DATES

Abstract Submission - **31 May 2021**

Abstract Acceptance - **7 June 2021**

Full Paper Submission - **18 July 2021**



3ISMLG

3rd International Symposium

on Machine Learning and Big Data in Geosciences

TC²⁰²¹WW

TC304 Workshop

on Risk Assessment in Geoengineering

The **MLRA2021** symposium will focus on, but not limited to, the following topics:

According to ISMLG:

- Role of data science in solving traditional and emergent problems in geosciences.
- Progresses in data collection in geoscience (remote sensing, smart sensors, open data, social media and mobiles applications).
- Combination of geoscience scientific-based design methods with Artificial Intelligence methods (Machine Learning and Deep Learning).
- Role of visualization and visual analytics in geosciences.
- Needs and perspectives for the use of data in geosciences.
- Specificities and patterns of data in geosciences, data cleaning.

According to TCWW:

- Modeling of transformation uncertainty and effects on geotechnical design.
- Geostatistical methods for site characterization.
- Hydraulic subsoil parametrization to define groundwater flow and contaminants' transport in subsoil: stochastic approach vs. numerical modeling.
- Landslide risk and urban development: from engineering geology knowledge to geotechnical design.
- Geotechnical and environmental monitoring to reduce risk in sites exposed to natural and anthropogenic hazards.
- Reliability-based geotechnical design codes and cost-performance optimization.

SPECIAL SESSION:

MRLA2021 will be the first opportunity for exploring cooperation between TC304, TC309 and ELGIPwgTI (European Large Geotechnical Institutes Platform working group on Transport Infrastructure). The special session during MRLA2021 aims to serve as a forum for researchers and practitioners that are interested in applications of their methods in probabilistic site characterization as well as in risk assessment applied to transport infrastructure.

SPECIAL MEETINGS:

During the MRLA2021 separate and joint meetings of the TC304 and TC309 and ELGIP are going to be held.

PhD SUMMER SCHOOL:

Parallel to the MLRA2021 is going to be held the PhD summer school, which concerns the use of Big Data and Machine Learning in geosciences. It will include lectures concerning: role of data in engineering and research practices in geosciences, progresses used in data collection in geosciences, use of Big-Data and Machine Learning in problem solving, application of Big-Data and Machine Learning in geosciences. The summer school is based on lectures and discussions supported by movies and data concerning real smart infrastructures projects. Participants will work on group projects for the design of a “smart solution” for an urban infrastructure.

VENUE:

Wrocław is the main city of the historical region of Silesia in south-western Poland, situated on the Odra River. With a population of 650 000 Wrocław is the fourth largest city in Poland, the capital of the Lower Silesian Region.

With its history of more than 1000 years, Wrocław is a beautiful city full of monuments of the past. After Warsaw and Cracow, Wrocław is the third largest educational centre of Poland, with 135 000 students in 30 universities and colleges.

Wrocław Copernicus Airport offers direct international connection to Barcelona, Brussels, Copenhagen, Dusseldorf, Frankfurt, Liverpool, London, Milan, Munich, Oslo, Rome and Stockholm as well as domestic flights to Warsaw.

MRLA2021 will be hosted in Conference Centre of Wrocław University of Science and Technology, one of the best technical universities in Poland.

