IEEE Geoscience and Remote Sensing Society

University of Maribor

Faculty of Electrical Engineering and Computer Science

https://events.vtools.ieee.org/m/388485

VABILO

na dogodek

Dan Slovenskega oddelka IEEE GRSS 2023

Gostujoči predavatelj:

Prof. Dr. Mihai Datcu,

ugledni predavatelj IEEE GRSS

11. december 2023

Fakulteta za elektrotehniko, računalništvo in informatiko, Univerza v Mariboru,

Koroška cesta 46, predavalnica G2-Beta

Vabimo vas na dogodek Dan Slovenskega oddelka EEE GRSS, v ponedeljek, 11. decembra 2023, na Fakulteti za elektrotehniko, računalništvo in informatiko, Koroška cesta 46, Maribor, Slovenija. Pokrovitelja in organizatorja dogodka sta slovenski oddelek IEEE GRSS in Laboratorij za obdelavo signalov in daljinsko vodenje Fakultete za elektrotehniko, računalništvo in informatiko, Univerze v Mariboru.

Glavni del dogodka bo osrednji govor, ki ga bo imel prof. dr. Mihai Datcu, pomemben sodelavec IEEE, ugledni predavatelj IEEE GRSS.

http://www.ieee.si/

http://www.ieee.si/section-team/

https://feri.um.si/en/

https://au.feri.um.si/losdv/en/

Dnevni red

12:00 Otvoritev prireditve (Peter Planinšič, Dušan Gleich)

12:05 Nagovor predstavnika vodstva UM FERI

12:10: Uvodni pozdrav predstavnika slovenske sekcije IEEE

12:15 Predstavitev IEEE GRSS in slovenskega oddelka EEE GRSS

12:20 Predstavitev gosta, pomembnega sodelavca IEEE, prof. dr. Mihai Datcu, uglednega predavatelja IEEE GRSS

12:30 **Osrednje predavanje:**

Digital Twin Earth for climate change adaptation: from AI to Quantum Machine Learning based solutions

prof. dr. Mihaj Datcu, ugledni predavatelj IEEE GRSS

13:30 Razprava in vizija prihodnosti

13:45 Družabno srečanje

Peter Planinšič

Vodja slovenskega oddelka IEEE GRSS

Dušan Gleich

Vodja Laboratorija za obdelavo signalov in daljinsko vodenje,

Fakulteta za elektrotehniko, računalništvo in informatiko Univerze v Mariboru

Vabljeno predavanje :

Digital Twin Earth for climate change adaptation: from AI to Quantum Machine Learning based solutions

Prof. Dr. Mihai Datcu, IEEE Fellow, IEEE GRSS Distinguish Lecturer

German Aerospace Technology (DLR), Romanian Space Agency

Despite the permanent effort to reduce emissions and achieve carbon neutrality a warmer climate is no longer to be avoided. The adaptation to climate change should build resilience in the next decades at global scale. Satellite remote sensing is the only global and continuous Earth Observation (EO) technology presently contributing to the elaboration of climate models describing and predicting changes at scales of hundreds of kilometres for periods of months to years. However, the adaptation measures shall be applied at human activities scales, from 10m to 1km and from periods of days to months. The new problematic is the elaboration of coupled models across spatio-temporal scales, therefore involving the use of very high spatial resolution and dense time series from multiple EO missions. This is the new challenge of Big EO Data.

The digital and sensing technologies, i.e. Big Data, are revolutionary developments massively impacting the Earth Observation (EO) domains. While, Artificial Intelligence (AI) is providing now the methods to valorize the Big Data. Today the accepted trends assume more data we analyze, the smarter the analysis paradigms will perform. However, the data deluge, diversity, or the broad range of specialized applications are posing new major challenges. From the methodological side the challenges are related to, the reproducibility, the trustworthiness, physics awareness, and over all, the explainability of the methods and results. At present, quantum computing and AI are the key technologies in the digital era. The progress and transfer of quantum resources for use in practical applications is in constant acceleration. Quantum computing, quantum annealing, quantum circuits, or simulators for quantum computing are currently easily accessible. In this context the presentation will address aspects of quantum machine learning for EO, with the goal to identify if a quantum algorithm may bring any advantage compared with classical methods.

The presentation covers the major developments, of hybrid, physics aware AI paradigms, at the convergence of forward modelling, inverse problem and machine learning, to discover causalities and make prediction for maximization of the information extracted from EO and related non-EO data. The majority of EO applications or services require the complementary EO multi-sensor and non-EO data, i.e., sensor fusion and multitemporal observations.