## Invited Session (IS30):

**Machine Learning and Knowledge Representation in Epidemic Modeling**

(part of 25th International Conference on Knowledge-Based and Intelligent Information & Engineering Systems: http://kes2021.kesinternational.org/index.php)

**Co-chairs:** prof. Marek Niezgódka, prof. Hung Son Nguyen, prof. Andrzej Szałas

## Aims of the session:

Epidemic modeling became a vital area since its origin in the early 20th century, when the compartmental SIR model has been proposed. Since then, epidemic modeling evolved and many models have been introduced and studied. After the Covid-19 outbreak, the research on such models has been immensely intensified. The research involving big heterogeneous datasets on population and pandemics dynamics has become one of the most important research topics. Forecasting and decision support systems based on huge amounts of data call for the use of Machine Learning and Knowledge Representation techniques for tuning models and their further use. The session will focus on epidemic modeling and forecasting with the special emphasis on self-adaptive models and systems, and their relation to real-world data.

We welcome papers on modeling population-level processes related to Covid-19 pandemy, as well as on general models that can be adapted to other infectious diseases spreading, forecasting and solutions for the associated decision making support.

## Topics include (but are not limited to):

Machine learning in epidemic models.
Knowledge representation and reasoning in epidemic modeling.
Graph-based models of population dynamics.
Automata-based models for epidemic modeling.
Multi-agent simulation models.
Models of the impact of epidemics on the health system.
Decision support systems supporting epidemic management.
Situational monitoring for decision support.
Spatial and seasonal aspects of epidemics.
Big data in epidemic modeling.
Statistical epidemic models.
Qualitative dynamical system theory in epidemic modeling.
Game theoretical models in epidemiology,
Multiscale complex population dynamics modeling.

## Publication:

The conference proceedings will be published in Elsevier's Procedia Computer Science open access journal, available in ScienceDirect and submitted to be indexed/abstracted in CPCi (ISI conferences and part of Web of Science), Engineering Index, and Scopus.

KES Conference is indexed in CORE (cat. B) and MNISW List in Poland (item 841, 70 points).

## Dates and deadlines:

Submission of Papers: **30 April 2021**
Notification of Acceptance: **15 May 2021**
Final paper publication files to be received by: **28 May 2021**