

## Conference overview

The conference "Theoretical and Foundational Problems in Information Studies" (TFP) had participants from 6 continents, that is, from **all inhabited continents**. They came from **33 countries** and made many interesting talks.

The conference had 7 special sessions:

Special Session *New Directions in Information Processing*

Session organizer: **Rao Mikkilineni**

Special Session *Neosentience, Biomimetics, and the Insight Engine 2.0*

Session organizer: **Bill Seaman**

Special Session *Information in Natural Sciences*

Session organizer: **Annette Grathoff**

Special Session *Information in Social Sciences*

Session organizer: **Peter Carr**

Special Session *Information, Knowledge, and Meaning*

Session organizer: **Rafal Maciag**

Special Session *Information Phenomenon*

Session organizer: **Krassimir Markov**

Special Session *Information in Practical Problems*

Session organizer: **Arkadiy Dantsker**

The Special Session *New Directions in Information Processing* united presentations on the role of information theory in the development of information technology. Researchers suggested and considered various innovative machines, methods, and ideas in the area of information processing such as the design of autopoietic machines, quantum computing, data streaming in natural and artificial neural networks, the principles of knowledge and database creation, the temporal theory of the brain, processing Information by molecules, the evolution of the extended mind, consciousness, machines, and ethics.

The main goal of the Special Session *Neosentience, Biomimetics, and the Insight Engine 2.0* was to present diverse ideas and research results related to an intelligent autonomous learning robotic system via transdisciplinary information processes and information exchanges enabling Neosentience to arise via the system's functionality in the form of **The Insight Engine 2.0 (I\_E)**.

The presenters in the Special Session *Information in Natural Sciences* discussed the role of information in natural sciences and the essence of information in nature considering quantum

information, negative probability, impact of arithmetic on physics and cryptography, topological quantum theory, biomathics, and nonlinear phenomena in physics and biology.

The presenters in the Special Session *Information in Social Sciences* talked about the role and essence of information in society considering synergy in scientific collaboration, fake news, pricing theory, aboriginal ontology, self-learning, COVID models, legal information, and human values.

The Special Session *Information, Knowledge, and Meaning* dealt with problems of the theory of meaning, conceptual spaces, NLP procedures, vagueness, and errors. In addition, it included an interesting group of presentations that discussed how numbers and arithmetic convey information about the multitude of things reflecting on the new advancements in the domain of numbers and arithmetic.

The Special Session *Information Phenomenon* was dedicated to the foundational problems in information studies. The presentations in this Session treated problems of information definition, information quality, hilomorphic theory, structural analysis, the paradigm of the information discipline, probability, phenomenology, and ontology of information.

Finally, the Special Session *Information in Practical Problems* is dedicated to the applications of information theory to practical problems such as pollution, thermal processes, the recovery of blurred images, and renewable energy.