

Dear colleagues,

It is a great pleasure for me to welcome you all
on behalf of the programming committee!

Our conference on Intelligent Data Processing traditionally covers the fundamentals, algorithms and applications of machine learning, pattern recognition, computer vision, statistics and optimization. Here I listed the main sections in near-chronological order, how they will go in the following days.

Our conference originated in the Soviet Union -- the state, which doesn't exist anymore.

At those times, there were several strong scientific schools
little known worldwide because of the Iron Curtain.

That's why I decided to give you

a brief historical introduction to the Soviet and Russian developments in the field.

This will clarify the origin and the background of our conference.

In nineteen-fifties, Michael Bongard and his laboratory in Moscow developed
the foundations of pattern recognition and rule induction algorithms.

His research group has pioneered the induction of conjunction rules, cross-validation and voting principles.

They were first who applied non-visual pattern recognition
for determining the oil-water boundary in the well in 1966.

In nineteen-sixties, Mark Aizerman and Emmanuel Braverman were developing
distance-based approaches and the method of potential functions inspired by electrostatics.
Today we know this as kernel-based approaches in machine learning.

In Glushkov Institute, located in Kiev, Alexey Ivakhnenko worked on 8-layer neural network in 1965,
forty years before the current Deep Learning revolution,
and even before the famous book "Perceptrons" of Minsky and Papert,
which slowed down the development of neural networks for the next fifteen years.
Ivakhnenko proposed to learn complicated structures of mathematical models from data
using self-organization principle and multiple external criteria,
cross-validation being only one of them.

In the same time, in 1965, and in the same Glushkov Institute in Kiev,
Michael Schlesinger developed mixture models and structural analysis of images.
Twelve years later, a similar approach was re-invented by Dempster, Laird, and Rubin.
Today we know it as Expectation Maximization (or EM) algorithm.

Vladimir Vapnik and Alexey Chervonenkis from Institute of Control Sciences in Moscow
introduced the Generalized Portrait algorithm in 1963, that was reconsidered in nineteen-nineties.
After rebranding we know it as Support Vector Machine, SVM.

Apart from that, Vapnik and Chervonenkis co-founded Statistical Learning Theory
and first obtained complexity-based generalization bounds, thus starting
one of the most fundamental research directions in statistical machine learning.

In the late nineteen-seventies Yuri Zhuravlev introduced algebraic approach to pattern recognition,
which gives a common theory of ensemble learning and compositions of classifiers,
including later voting techniques like bagging and boosting.

Before this, he introduced the Test Algorithm and the Algorithm of Estimates Evaluation
with a series of extremely successful applications in geology and medicine.

In particular, these algorithms helped to find several gold deposits in the territory of the former USSR.

In the Soviet Union, many applied tasks of pattern recognition and forecasting were solved for both civilian and military use.

All these accomplishments have formed the scientific community who needed regular scientific conferences. Yuri Zhuravlev and his research group organized the first Russian conference “Mathematical methods of pattern recognition” in 1983.

This conference is held biannually until now.

The second biannual conference IDP was initiated in 1989 by two professors from Zhuravlev’s group: my advisor Konstantin Rudakov from Computing Center of RAS in Moscow and his friend Vladimir Donskoy from Simferopol University in Crimea.

From the beginning, the goal of IDP conference is to combine theory and applications and to wider the geography of participants.

Many researchers from Ukraine and Belarus participated in first IDP conferences.

Yury Zhuravlev remains the main inspirer for both conferences and makes a lot to maintain their high mathematical level.

A big part of the Russian mathematical school inherits from the classical German school, namely from Karl Weierstraß and Joseph Liouville.

In the middle of the 20th century, a group of mathematicians Lyapunov, Yablonskii, and Zhuravlev started their work in discrete mathematics and in a new science named cybernetics.

The organizers of IDP conference are the followers of this branch of the Russian mathematical school.

In 1989, the same year, as the first IDP conference was held, the notion “Data Mining” was for the first time mentioned on the international conference on Knowledge Discovery in Databases, KDD.

The wide spread of computers and huge amounts of data gave a common feeling that in the areas of Computer Science and Artificial Intelligence a new discipline was about to be born.

Now we call it Data Science.

But at those times we used the term Pattern Recognition, and even the term Machine Learning was not so common in the Russian community. However, the notions of Data Analysis and Data Processing were well-known and widely adopted.

So the name of the conference **Intelligent Data Processing** reflects the global goal to make statistical data analysis more intelligent, and bridge the gaps between Mathematics, Artificial Intelligence and Information Technologies.

Today science and technology unite people creating innovations that changes the World.

The goal of our conference is breaking down communication barriers between theoreticians and practitioners, mathematicians and IT-engineers, scientists and entrepreneurs, Russian and European communities.

For the first time we have both English and Russian as working languages of IDP conference. Before, it was held only in Russian.

Harbour.Space University of Barcelona pursue similar objectives, so we decided to join our efforts.

We don’t know yet how it works out, it is an experiment.

We will do everything we can to make this experiment successful.

I wish having a good time to all of us.