"Pattern recognition and information processing": 30 years and 15 conferences

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BACKGROUND

In the mid-50s of the twentieth century, a new scientific direction began to take shape within the framework of cybernetics, related to the development of theoretical foundations and practical implementation of devices and systems designed to recognize objects, phenomena and processes. This direction is called "Pattern Recognition". The first applications were devoted to problems in astronomy, nuclear physics, biophysics and character recognition.

In the Soviet Union, this direction began to develop intensively from the beginning of the 60s at the Computing Center of the USSR Academy of Sciences under the leadership of Yu.I. Zhuravlev. In 1976-1978, he published a series of papers on the soon-to-be-famous algebraic approach to the problem of synthesizing correct algorithms. These works made a significant contribution to the formation and current state of the entire problem of pattern recognition and many related areas of applied mathematics and computer science. This direction has given rise to a whole range of world-class research within the scientific school of Yu.I. Zhuravlev in the field of mathematical methods of pattern recognition. Among the students of Yu.I. Zhuravlev more than 120 candidates and 30 doctors of science, including 4 academicians of the Russian Academy of Sciences.

In the 60s, theoretical research in the field of pattern recognition and signal and image processing began at the Institute of Mathematics and the Institute of Engineering Cybernetics (IEC) of the Academy of Sciences of the BSSR, and the Belarusian State University (BSU). Practical applications of this work include areas such as fingerprint recognition, graph recognition, and some others.

As the power of computers increased and cybernetics developed, from the second half of the 70s, research in the field of image processing with applications to the processing of cartographic information began to intensively develop in the IEK. By the end of the 80s, Belarusian scientists, along with their Russian and Ukrainian colleagues, took leading positions in the USSR in the field of image processing and digital cartography.

In the 80s, thematic conferences in the field of pattern recognition and image processing began to be held in the Soviet Union. All work was coordinated by the Computing Center of the USSR Academy of Sciences. Scientific leadership was carried out by Yu.I. Zhuravlev, and I.B. Gurevich took on the main organizational work. In 1988, the Soviet Association for Pattern Recognition and Image Analysis was admitted to the International Association for Pattern Recognition (IAPR). In 1991, it was decided to hold the first all-Union conference in the USSR "Pattern Recognition and Image Analysis" at the Institute of Engineering Cybernetics of the Academy of Sciences of the BSSR.

First All-Union Conference "Pattern Recognition and Image Analysis"

The first all-Union conference in the USSR "Pattern Recognition and Image Analysis" (ROAI) was held in October 1991 at the Institute of Technical Cybernetics of the Academy of Sciences of the BSSR. 171 reports by specialists from scientific centers of the USSR were presented at the conference. In total, more than 300 Soviet scientists took part in the conference. The proceedings of the conference were published in three volumes by the Institute of Engineering Cybernetics of the Academy of Sciences of the BSSR.

Creation of BAARI

After the collapse of the USSR in 1991, we, Belarusian scientists, were faced with the task of presenting ourselves on the international stage. It was necessary to show the world our scientists working in many fields of science, as well as demonstrate their individual results and publications.

Major scientific research and organizational and technical activities in the field of image processing are carried out under the auspices of the International Association for Pattern Recognition (IAPR), which unites researchers from more than 40 countries, including all developed countries. In addition to the IAPR, there is the European Association for Machine Vision and many others (on artificial intelligence, neural networks, etc.) that address image processing issues.

In the fall of 1992, my friends and colleagues V. Krasnoproshin, V. Shmerko, A. Semashko and N. Paramonov decided to create a Belarusian association. Preparatory work began, collecting the necessary documents. On December 14, 1992, the founding meeting of Belarusian scientists took place and the Belarusian Association for Image Analysis and Recognition (BAARI) was created. In January 1993, BAARI was approved by the Ministry of Justice of the Republic of Belarus, and in February 1993 it was accepted into the IAPR. Belarus became the first CIS country to join this international association. S. Ablameyko was elected head of BAARI, V. Krasnoproshin, A. Semashko and V. Shmerko - deputy heads, and V. Starovoitov - secretary.

Conference "Pattern Recognition and Information Processing"

In 1993, something had to be decided about holding the second conference on pattern recognition. At this time, all scientific and organizational activity in the CIS almost ceased. BAARI decides that we should hold a second

conference, and instructs me to do this on the basis of the ITK of the Academy of Sciences of the BSSR.

During this difficult and incomprehensible time, we began to organize a conference, information letters were sent out, abstracts of reports were received, papers were published, and in October 1993 the second conference "Pattern Recognition and Image Analysis" was held in Belarus. It featured 85 reports from 4 countries, which was very good.

In 1995, the conference became international and began to be held jointly with the Szczecin Technical University (Poland), since Professor V. Shmerko began working there in 1994. During the conference, one volume of her works was published in Szczecin, the other in Minsk. This continued until 1999 inclusive.

Since 1995 In the Republic of Belarus, our conference began to be held independently of the Russian Academy of Sciences, slightly changed the name: "Pattern Recognition and Information Processing" (PRIP) and was held for the first time in 2 languages - Russian and English. One volume of the three conference proceedings was published in English.

Since 1997, it was held under the auspices of the IAPR and was the first conference of this level in the CIS.

At the beginning, the conferences were led by: S. Ablameyko (UIIP NAS of Belarus), V. Krasnoproshin (BSU), R. Sadykhov (BSUIR). V. Szmerko (Szczecin Technical University, Poland) helped a lot until 2001. Since 2007, A. Tuzikov (UIIP NAS of Belarus) joined us.

Fig. 1. Conference PRIP 2009. BSU.

Below is a list of all conferences, number of papers, countries and conference chairs.

PRIP 1991-2021: number of papers, countries and conference chairs.

	PRIP	Number of papers	Number of countries	Language	Chairman
1	1991	171	1	Russian	Yu.I. Zhuravlev (Computing Center of the USSR Academy of Sciences, Moscow, USSR)
2	1993	85	4	Russian	S.V.Ablameyko (Institute of Engineering Cybernetics of the National Academy of Sciences of Belarus)
3	1995	107	7	Russian English	S.V.Ablameyko (Institute of Engineering Cybernetics of the National Academy of Sciences of Belarus)
4	1997	130	16	Russian English	V.V. Krasnoproshin (Belarusian State University)
5	1999	113	22	Russian English	R.H. Sadykhov (Belarusian State University of Informatics and Radioelectronics)
6	2001	74	22	English	S.V.Ablameyko (Institute of Engineering Cybernetics of the National Academy of Sciences of Belarus)
7	2003	95	24	English	V.V. Krasnoproshin (Belarusian State University)

| 8	2005	125	28	English	R.H. Sadykhov (Belarusian State University of Informatics and Radioelectronics)
9	2007	93	18	English	A.V.Tuzikov (United Institute of Informatics Problems of National Academy of Sciences of Belarus)
10	2009	126	30	English	V.V. Krasnoproshin (Belarusian State University)
11	2011	115	26	English	R.H. Sadykhov (Belarusian State University of Informatics and Radioelectronics)
12	2014	106	10	English	A.V.Tuzikov (United Institute of Informatics Problems of National Academy of Sciences of Belarus)
13	2016	82	14	English	V.V. Krasnoproshin (Belarusian State University)
14	2019	98	22	English	M.M.Lukashevich (Belarusian State University of Informatics and Radioelectronics)
15	2021	75	18	English	A.V.Tuzikov (United Institute of Informatics Problems of National Academy of Sciences of Belarus)
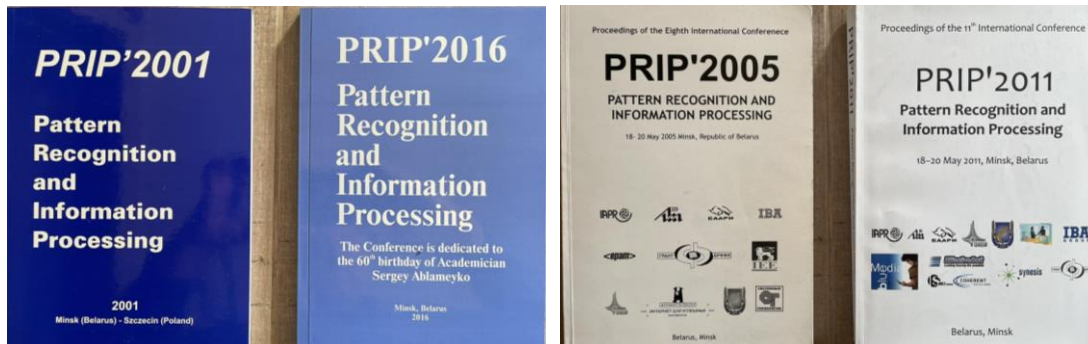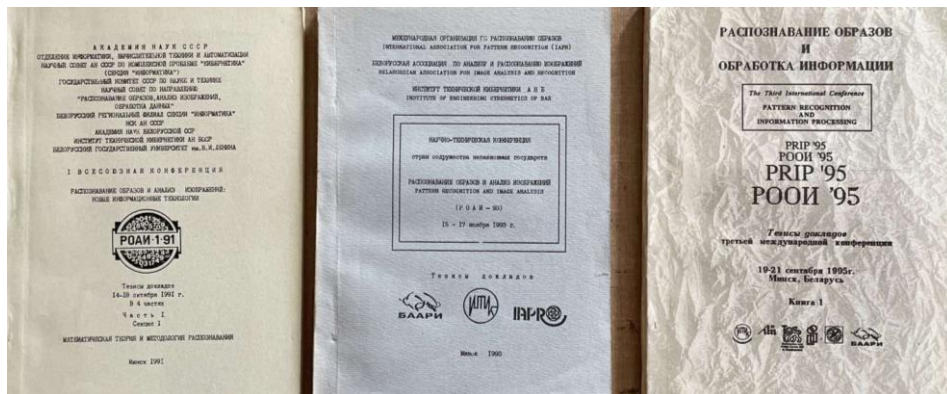
Figure 2. Proceedings of some PRIP conferences.

Fig.3. Opening of the 15th PRIP in 2021. IUIIP NAS of Belarus.

PRIP is carried out in turn by three leading scientific institutions in Belarus: the Belarusian State University, the Belarusian State University of Informatics and Radio Electronics and the Joint Institute for Informatics Problems of the National Academy of Sciences of Belarus.

The conference was supported at various stages by the following organizations:

- International Association for Pattern Recognition (1997 - ongoing)
- IEE Belarus Center (1993-1999)
- IEEE Computer Society Belarus Sub-Committee 1999
- INTAS 2001
- Belarusian Informatization Foundation 1995
- Belarusian Republican Foundation for Basic Research 1999, 2001
- Ministry of Education - permanent
- National Academy of Sciences of Belarus - permanently

PRIP conferences have become famous and generally recognized in the scientific world. PRIP information is included in all major international image analysis and pattern recognition databases. Currently, the PRIP conference is the leading international conference on image analysis and pattern recognition in central and eastern Europe and the former USSR, with international recognition and a high scientific reputation.

In recent years, extended articles prepared on the basis of selected conference reports have been published in the international journal of the Russian Academy of Sciences "Pattern Recognition and Image Analysis. Advances in Mathematical Theory and Applications" (indexed in Web of Science (Emerging Sources Citation Index), Scopus, Russian Science Citation Index on the Web of Science platform)), and are also published as a separate book by Springer in the series "Lecture Notes in Computer Science".

CONCLUSION

During its work, BAARI has done a lot to support and develop this scientific direction in Belarus, coordinating the research of Belarusian scientists, facilitating the establishment of contacts with Western colleagues and participation in international symposia and other forums.

We want to acknowledge our colleagues who started this work with us. This is Professor A.N. Semashko, Professor R.H. Sadykhov, Ph.D. N.N.Paramonov. Unfortunately, they have already left us. May their memory be blessed!

To summarize, we can say that over the years a strong Belarusian school has been created in the field of image recognition and processing, which is widely recognized by the world scientific community. Made a significant contribution to the development of applied mathematics and

computer science in terms of pattern recognition, data analysis and image processing. Profound fundamental results, which at the same time have important applied significance, were obtained.