Image Processing Systems Institute of the RAS: 25 years in existence

151 Molodogvardeiskaya, Samara
BACKGROUND

• In the late 70s of the past century, a research team of Kuibyshev Aviation Institute headed by Professor V. A. Soifer involved in active collaboration with partners from the Institute of Information Transmission Problems of the USSR Academy of Sciences and Department A of the P. Lebedev Physical Institute of the USSR Academy of Sciences. In the early 80s, fundamental works in the field of image processing and diffractive optics were published:
  


Thus, in the 80s of the past century, a new research field of Computer Optics emerged at the interface of quantum electronics, information technologies, and microelectronics.

In 1987, academicians A.M.Prokhorov and Ye.P.Velikhov, professors I.N.Sisakian and V.A.Soifer initiated the publication of an international scientific periodical of Computer Optics.

In 1988, the research group led by V.A.Soifer formed the core of the newly established Kuibyshev Branch of the Central Design Bureau of Unique Instrumentation of the USSR Academy of Sciences with a staff of 60 employees, with Computer Optics approved as research direction.
CDB UI Branch (1988-1993)

- The core of the KB of CDU IU of the USSR AS’s research team was formed by young Candidates of Science Ye.Yu. Arefiev, M. A. Golub, N. L. Kazanskiy, V. V. Kotlyar, O. V. Prisekina, A. G. Khramov; with V. A. Soifer appointed the CDB UI’s director. Credit for large efforts associated with the CDB UI Branch establishment goes to Yu. N. Boyarkin, L. F. Egorova, Yu. A. Runkov, L. P. Chepurnova, and G. G. Yamovich.


- Articles with high citation index are published:
  - Infra-red radiation focusators // Optics and Lasers in Engineering. -1991;
  - The phase rotor filter // J. Modern Optics. -1992;
  - Trochoson // Optics Communications. -1992;

- External scientific links developed, e.g. with academician Zhuravlev’s team; first international contracts concluded (FIAT Research Center).

- Advanced Doctor’s degrees awarded (M. A. Golub, 1990, V. V. Kotlyar, 1992).

- State Prize of the RF in Science and Engineering (I. N. Sisakian, V. A. Soifer, V. P. Shorin et al., 1992).
Establishment of IPSI RAS

- 1993: Image Processing Systems Institute of the RAS stems from the SB CDB UI RAS with support from academicians S. V. Emelyanov, Yu. I. Zhuravlev, and V. P. Shorin.

- 1998: IPSI RAS awarded a “basis” budget funding from the RAS for a staff of 50 people.

- Currently (autumn 2013), IPSI RAS has 44 budget-funded positions, with the total number of employees, including part-timers, reaching 100 people.
Integration of research and education

- 1988: by a joint order of the Ministry of Education and the USSR Academy of Sciences a Research & Education Center “Spectrum” is established jointly with Kuibyshev Aviation Institute (currently, SSAU).
- 2002-2012: establishment and development of a Research & Education Center of Mathematical Principles of Diffractive Optics and Image Processing as part of the Russian-American program “Basic Research and Higher Education”.
- 2006-2007: participation in the SSAU’s innovative educational program.
- Since 2009, IPSI RAS has participated in the program of SSAU’s development as a National Research University.
- Participation in the RAS’ Presidium program “Support for Young Researchers”.
IPSI RAS publications dynamics

- 1993-1997: 172 publications
- 2008-2012: 480 publications
### Books

<table>
<thead>
<tr>
<th>Title</th>
<th>Publisher</th>
<th>Location</th>
<th>Year</th>
<th>Pages</th>
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<tbody>
<tr>
<td>Computer Image Processing, Part I: Basic concepts and theory</td>
<td>VDM Verlag</td>
<td>2009</td>
<td>296</td>
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<td>Computer Image Processing, Part II: Methods and algorithms</td>
<td>VDM Verlag</td>
<td>2009</td>
<td>584</td>
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RFBR grants and RF Presidential grants

- RFBR grants
- RF Presidential grants

1993 to 2012 data shown in the graph.
Commercial agreements and contracts

- third-party agreements
- international contracts

Yearly breakdown from 2000 to 2012:
- 2000: 3
- 2001: 2
- 2002: 1
- 2003: 1
- 2004: 4
- 2005: 5
- 2006: 6
- 2007: 11
- 2008: 10
- 2009: 13
- 2010: 10
- 2011: 5
- 2012: 4
Major awards (1994-2013)

- 1999: Title of “Honored worker of science” (V. A. Soifer).
- 2006: Order “For Services to Motherland”, IV degree (V. A. Soifer).
- 2010: Order “For Services to Motherland”, III degree (V.A. Soifer).
- 2010: RF Government Prize in Education (V. A. Soifer).
- 2011: RAS medal for Young Researchers (V. A. Kolpakov).
- 2012: Gold medal of the International Invention Show in Geneva (A.G.Khramov).
- Two laureates of Samara Governor’s Prize for Outstanding Achievements in Science and Engineering: V. A. Soifer, 2007; V.V.Kotlyar, 2012.
IPSİ RAS’ research areas

As defined by the #37 Resolution of the RAS Presidium of 12 February 2008, key areas of the Institute’s research activities include:

• Computer Optics
• Nanophotonics
• Optical Information Technologies and Systems
• Systems for Image Analysis and Pattern Recognition
• Geo-information Technologies

http://www.ipsi.smr.ru
### IPSI RAS research staff

<table>
<thead>
<tr>
<th></th>
<th>Full-time Doctors of Science</th>
<th>Full-time Candidates of Science</th>
<th>Young researchers under 35</th>
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<tr>
<td>Employees</td>
<td>15</td>
<td>17</td>
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<td>Staff average age</td>
<td>50</td>
<td>35</td>
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<td>Proportion of salary in the general wage-fund in 2012</td>
<td>-</td>
<td>-</td>
<td>48%</td>
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### Number of IPSI RAS’ results included in the list of annual research achievements of the Russian Academy of Sciences (RAS Reports)

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## Russian Citation index of IPSI RAS’ researchers

<table>
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<tr>
<td>1</td>
<td>V. A. Soifer</td>
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<td>V. V. Sergeev</td>
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Scientific Journal of Computer Optics published jointly with SSAU and IPSI RAS marked 25 years of publication 37 volumes appeared in print

Computer Optics is abstracted and indexed in Scopus & Compendex

http://www.computeroptics.smr.ru/
Thank you for your attention!