ISTITUTE FOR COMPUTER SCIENCE AND CONTROL

www.sztaki.hu/en

- **Located in Budapest**
- **Founded in 1964**
- **Member of the Eötvös Loránd Research Network**
- **Hungarian Academy of Sciences Centre of Excellence**
- **Institutional memberships in 3 international organizations**
- **230 employees of which 112 researchers**
- **181 publications (2020)**
- **4284 citations (2019)**
- **Impact Factor: 145.053**

The fundamental task of the **Institute for Computer Science and Control (SZTAKI)** is to perform basic and application-oriented research in an interdisciplinary setting in the fields of computer science, engineering, information technology, intelligent systems, process control, wide-area networking and multimedia. Contract-based target research, development, training and expert support for domestic and foreign industrial, governmental and other partners are important activities at the Institute.

In the EU the concept of supporting the collaboration of research groups working at different institutions on specific subjects is a new emphasis, called virtual research centers. SZTAKI has joined forces in this pioneering endeavour with a number of research establishments in Hungary, as well as in the EU.

The Institute's research and development activity aims primarily at generating custom-designed computer-based applications, implementing the related software and providing turn-key systems. Our scientists and engineers have the necessary field-specific expertise (theoretical, technological and methodological experience) by which they can complete - in close co-operation with potential users - the functional plan of the system to be implemented, followed by software design and system development.

The Institute for Computer Science and Control (SZTAKI) is open to further joint research activities at the international level.

For any additional information on possible international cooperation please contact Ms. Éva FEUER at feuer.eva@sztaki.hu or Ms. Angyalka ILIE-ZUDOR at ilie@sztaki.hu.

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SZTAKI

The main fields of research and development

- Basic research – main domains:
  - Computer Science
  - Systems- and control theory
  - Engineering and business intelligence
  - Machine perception and human-computer interaction
- R&D Activities:
  - Vehicles and transportation systems
  - Production informatics and logistics
  - Energy and sustainable development
  - Security and surveillance
  - Networks, networking systems and services, distributed computing

Human resources

In the **Institute for Computer Science and Control**, the average number of employees was 230 in 2020, of which the number of researchers was 112. 12% of the researchers were women. 6 researchers were Full or Corresponding Members of the Hungarian Academy of Sciences, 12 scientists held the title of Doctor of the Hungarian Academy of Sciences, and 58 co-workers had a PhD or were doctoral candidates. The rate of young researchers (under 35) was 30%.

Researchers of SZTAKI contribute extensively to European scientific co-operation projects. Different groups within our Institute work on projects for international and Hungarian companies: GE, Knorr-Bremse, T-com, MOL, RICOH, NASA, ONR, and Paks - the Hungarian Nuclear Power Station.

Institutional memberships

- European Research Consortium for Informatics and Mathematics (ERCIM)
- World Wide Web Consortium (W3C)
- International Federation of Automatic Control (IFAC NMO)

List of articles on the main achievements

- Comparison of fault detection and isolation methods for a small unmanned aircraft (link)
- Three dimensional intruder closest point of approach estimation based-on monocular image parameters in aircraft sense and avoid (link)
- Real flight application of a monocular image-based aircraft collision decision method (link)
- A novel fluid architecture for cyber-physical production systems (link)
- A constraint model for assembly planning (link)
- Symbiotic human-robot collaborative assembly (link)
- Joint optimization of product tolerance design, process plan, and production plan in high-precision multi-product assembly (link)
- Digital twin assisted human-robot collaborative workcell control (link)
- Cloud-based manufacturing (CBM) interoperability in Industry 4.0 (link)
- Determining stable equilibria of spatial objects and validating the results with drop simulation (link)
- Example of a problem-to-course life cycle in layout and process planning at the SZTAKI learning factories (link)
- Assembly of hydraulic cylinders in collaborative human robot environment
- AGV with robotic arm for internal logistics
- Efficient collision detection for path planning for industrial robots (link)
- Disjunctive programming in assembly planning
- Robotic assembly with three-finger gripper
- Ball-valve assembly in human-robot cooperation

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