UNIVERSITY OF SILESIA
FACULTY OF SCIENCE AND TECHNOLOGY

The **Institute of Computer Science**

operates within the structure of

the **Faculty of Science and Technology**

University of Silesia in Katowice.

Będzińska 39, st.
41-205 Sosnowiec

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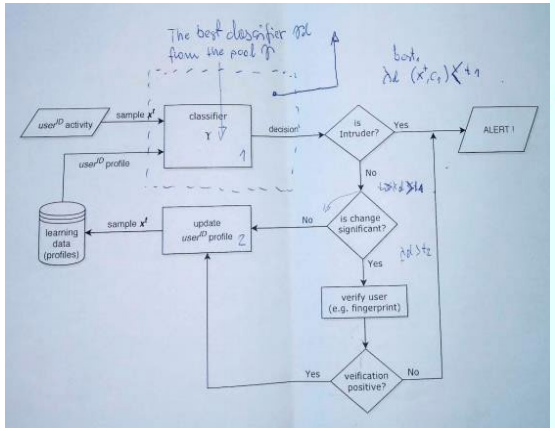
Education – Computer Science with AI elements

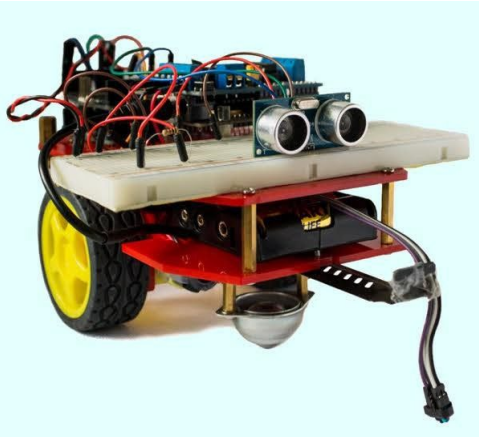
Computer Science programmes:

- **Engineer's Degree** – 7 terms, full time & part time
- **Master's Degree** (for BEng holders) – 3 terms, full time & part time
- **Doctoral Degree** – Doctoral School University of Sielesia in Katowice

Opportunities for students:

- Microsoft Academy
- Oracle Academy
- CISCO Academy





Education & Science coope

Education – program of studies

The program of studies in Computer Science contains the following groups of courses:

General education courses
- mathematics
- physics
- electronics

Courses in the field of artificial intelligence
- algorithms and data structures
- data pre-processing
- supervised and unsupervised machine learning
- data analysis

Courses in the field of information systems
- introduction to computer science
- databases
- programming languagesl
- software engineering

Other and facultative courses
- legal problems
- management
- foreign languages

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The scientific activity of the Institute of Computer Science focuses on many research areas provided by research teams

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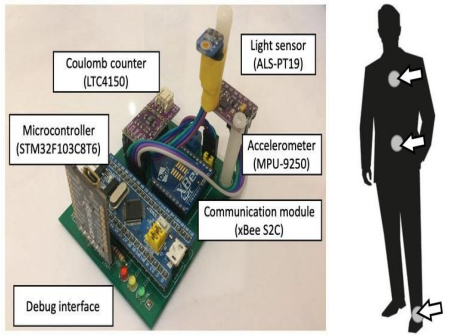
Main areas of research at the Institu

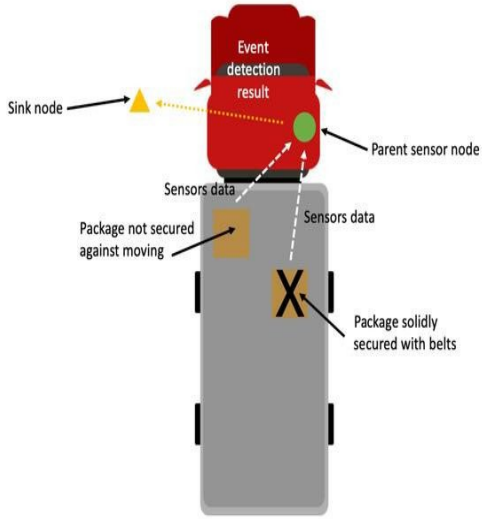
Artificial intelligence

The Institute develops advanced artificial intelligence methods, including machine learning and deep models. Research is conducted on rule-based algorithms, model explainability, data drift, and feature selection. Teams also create solutions based on federated and distributed learning.

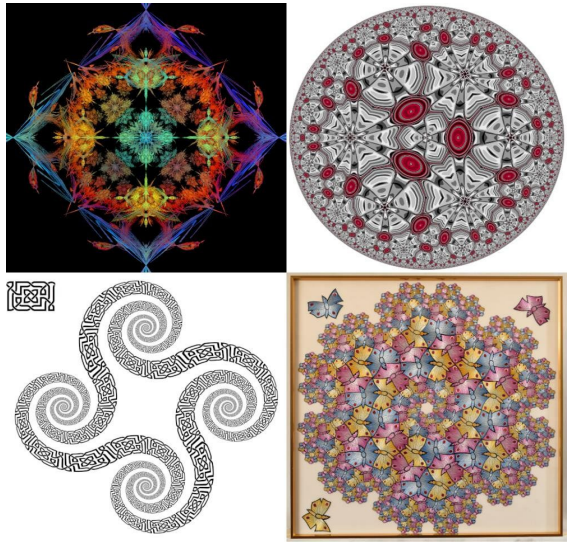
Internet of Things

The institute conducts research on sensor networks and the Internet of Things, focusing on algorithms that extend node lifetime, reduce data transmission, and enable intelligent information sampling.





Main areas of research at Institute

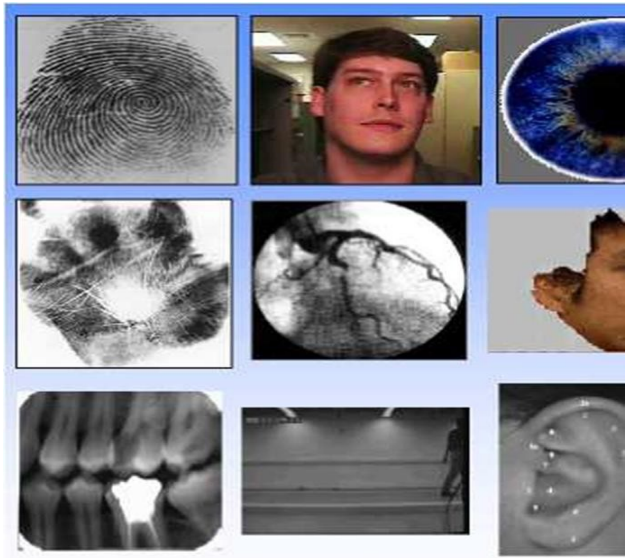


Computer Graphics

The institute creates patterns and images based on fractals and studies how simple repetition rules can lead to complex shapes, such as spirals, mosaics, and Escher-inspired structures.

Biometrics

Effective methods of user identification and verification are being developed. Systems based on fingerprints, gait, and lip images, among other things, are being developed.



Research in the Institute of Computer Science

Research teams operating at the Institute of Computer Science Focus on related work with the practical use of modern technologies and inteligent systems.

The research results are used, among others, in:

- Medicine to support inteligent diagnostics,
- Industry for optimal control of production lines,
- Computer games industry and mapping real objects
- Transport and logistics for the design and optimization of supplychains and autonomous transport systems, as well as in the energy sector for the design and management of transmission networks and Smart City systems.

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Research topics – Institute of Computer Science

- **Hybridization of modern metaheuristics with machine learning algorithms** – prof. Urszula Boryczka
- **Biometric methods of identification and verification of persons** – dr hab. Rafał Doroz, prof. UŚ
- **Computer graphics** – prof. Krzysztof Gdawiec
- **Exploration of the rule-based knowledge bases** – dr hab. Agnieszka Nowak-Brzezińska, prof. UŚ
- **Computer systems** – sensor networks & IoT – dr hab. Bartłomiej Płaczek, prof. UŚ
- **Complex decision systems and applications** – dr hab. Małgorzata Przybyła-Kasperek, prof. UŚ
- **Rules-based systems in knowledge discovery and representation** – dr hab. Beata Zielosko, prof. UŚ

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IN KATOWICE

PP-RAI 2025

Polish Artificial Intelligence Society

Educational projects

- T4EU Stronger Together – summer school and Data Science course

- Spinaker – interdisciplinary summer school

- Fitped - Work-based Learning in Future IT Professionals Education

- Universities of the Future - NCBiR

- Education for green transition and preservation of mining culture in the region

Fundusze Europejskie dla Śląskiego | Rzeczpospolita Polska | Dofinansowane przez Unię Europejską | Województwo Śląskie

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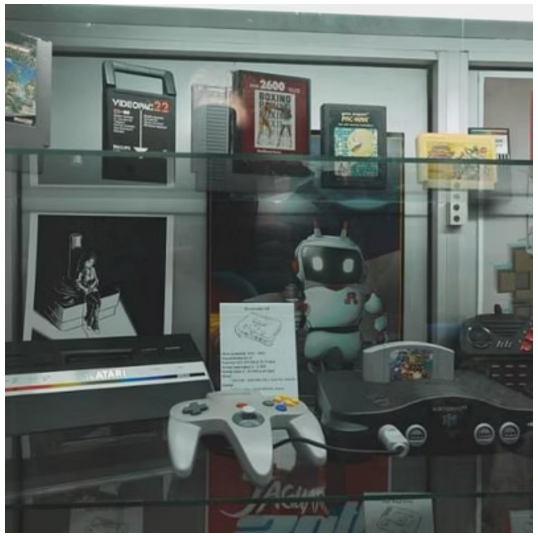
Activities of students at the computer science programme



Retro Computer Museum

Hacker Escape Room

Patronage laboratory of Keywords Studios

HackEmotions with Keywords

Cybersecurity with 1753c

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Mondays with IT

Online industry lectures in the field of IT. The hosts are experts from leading software development companies, who improve existing solutions and create new trends and directions on a daily basis

- NASK / CERT Polska
- Citi Solutions Center
- eq system
- Google
- Keywords Studios
- Nvidia
- Samsung
- sekurak.pl
- sii
- Software Mind
- sopra steria
- Vattenfall

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Thank You!

You are welcome to contact us:

D.Sc. Eng. Rafał Doroz, Professor of the University of Silesia

rafal.doroz@us.edu.pl

D.Sc. Beata Zielosko, Professor of the University of Silesia

beata.zielosko@us.edu.pl