



Rzeczpospolita
Polska



Narodowe Centrum
Badań i Rozwoju



NARODOWE CENTRUM NAUKI

artiq

ARTIQ - AI Centres of Excellence

Application for a Host Institution

Institution National Centre for Research and Development,
National Science Centre

Project Joint National Project: ARTIQ – AI Centres of Excellence

Deadline for the submission of applications 8th of April-11th of May 2021

I. HOST INSTITUTION DATA

Identification data of the Host Institution

Name (full)	<i>Silesian University of Technology</i>
Name (short)	<i>SUT</i>
Name of the main organisational unit (where applicable)	
Address of the registered office	
Street	Akademicka
Building No.	2A
Office No.	-
Postal code	44-100
City/district	Gliwice
Post office	Gliwice
Municipality	Gliwice
County	Gliwice
Province	Gliwice
Correspondence address (if different than the address of the registered office)	

Street	-
Building No.	-
Office No.	-
Postal code	-
City/district	-
Post office	-
Municipality	-
County	-
Province	-
EPUAP [Electronic Platform for Public Administration Services] mailbox	<i>/PolSlaska/SkrytkaESP</i>
Legal form	<i>basic: legal person specific: Higher education establishment</i>
The person appointed for contact with NCBR and with the potential Leader/Project Manager	
First name	<i>Paweł</i>
Last name	<i>Kasprowski</i>
Position	<i>Associate Professor of the SUT/Coordinator of the Priority Research Area 2 – Artificial Intelligence and Data Processing</i>
Phone number	<i>+48 32 237 1339 / +48 601 411 611</i>
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The person authorised to represent the applicant	
First name	<i>Marek</i>
Last name	<i>Pawelczyk</i>
Function/Position	<i>Vice Rector for Science and Development</i>

II. CAPACITY OF THE HOST INSTITUTION TO PERFORM THE PROJECT

1. Description of major research achievements in the scope of implementation of R&D projects, as well as the commercialization of deliverables of such projects regarding artificial intelligence for the last 5 years prior to or in the year of the application along with a list of the most important publications and patents of the applicant (max. 1 A4 page).

The Silesian University of Technology is involved in many R&D projects related to artificial intelligence, funded by national or international competitions. Some examples will be presented in the next section. At the same time, the employees of our University actively participate in research and development projects commissioned by the economic environment. The location of the University in one of the largest industrial centres in Poland allows for quick commercialisation of research results. Researchers from our University conduct many scientific and research works on commission and in cooperation with enterprises. Three representative example projects using artificial intelligence in various fields, are presented below:

- "Decision support and business knowledge management system for the retail industry (DSS-RETAIL)" conducted jointly with 3-Soft company, project worth 480 thousand PLN (head: prof. Marek Sikora)
- "System for supporting maintenance and monitoring the operation of tractor-trailers using advanced artificial intelligence methods" jointly with Pivotal Polska Sp. z o.o., project value: PLN 1.2 million (head: dr Adam Cholewa)
- "Intelligent, efficient system for conducting specialised underwater works" with a value of PLN 500 thousand carried out jointly with SR Robotics Sp. z o.o. (head: prof. Krzysztof Jaskot)

In 2015-2020, employees of the Silesian University of Technology published more than 200 innovative models and solutions in the field of artificial intelligence in the most prestigious TOP1 and TOP10 journals according to Scopus rankings. Some examples are presented below:

- Woźniak M., Zielonka A., Sikora A., Piran J., Alamri A., 6G-enabled IoT home environment control using fuzzy rules, *IEEE Internet Things J.* 2021, vol. 8, iss. 7, s. 5442 – 5452.
- Capizzi G., Lo Sciuto G., Napoli C., Połap D., Woźniak M., Small lung nodules detection based on fuzzy-logic and probabilistic neural network with bio-inspired reinforcement learning, *IEEE Trans. Fuzzy Syst.*, 2020 vol. 28 iss. 6 s. 1178-11891.
- Mrozek D., Tokarz K., Pankowski D., Małysiak-Mrozek B., A hopping umbrella for fuzzy joining data streams from IoT devices in the cloud and on the edge, *IEEE Trans. Fuzzy Syst.*, 2020 vol. 28 iss. 5 s. 916-928.
- Łęski J., Czabański R., Jeżewski M., Jeżewski J., Fuzzy ordered c-means clustering and least angle regression for fuzzy rule-based classifier: study for imbalanced data, *IEEE Trans. Fuzzy Syst.*, 2020 vol. 28 iss. 11 s. 2799-2813.
- Woźniak M., Siłka J., Wieczorek M., Alrashoud M., Recurrent neural network model for IoT and networking malware threads detection, *IEEE Trans. Ind. Informat.*, 2021 vol. 17 iss. 3 s. 5583-5594.
- Woźniak M., Wieczorek M., Siłka J., Połap D., Body pose prediction based on motion sensor data and recurrent neural network, *IEEE Trans. Ind. Informat.*, 2021 vol. 17 iss. 3 s. 2101-2111.
- Zielonka A., Sikora A., Woźniak M., Wei W., Ke Q., Bai Z., Intelligent Internet of Things system for smart home optimal convection, *IEEE Trans. Ind. Informat.*, 2021 vol. 17 iss. 6 s. 4308 – 4317.
- Gaj P., Scanzio S., Wiśniewski Ł., Heterogeneous industrial networks of the current and next-generation factories, *IEEE Trans. Ind. Informat.*, 2020 vol. 16 iss. 8 s. 5539 - 5542.
- Woźniak M., Połap D., Intelligent home systems for ubiquitous user support by using neural networks and rule-based approach, *IEEE Trans. Ind. Informat.*, 2020 vol. 16 iss. 4 s. 2651-2658.
- Mrozek D., Koczur A., Małysiak-Mrozek B., Fall detection in older adults with mobile IoT devices and machine learning in the cloud and on the edge, *Inf. Sci.*, 2020 vol. 537 s. 132-147.
- Gudyś A., Sikora M., Wróbel Ł., RuleKit: a comprehensive suite for rule-based learning, *Knowl.-Based Syst.*, 2020 vol. 194 (art. no. 105480).
- Sikora M., Wróbel Ł., Gudyś A., GuideR: a guided separate-and-conquer rule learning in classification, regression, and survival settings, *Knowl.-Based Syst.*, 2019 vol. 173 s. 1-14.
- Deorowicz S., Gudyś A., Długosz M., Kokot M., Danek A., Kmer-db: instant evolutionary distance estimation, *Bioinformatics*, 2019 vol. 36 iss. 1 s. 133-136.
- Deorowicz S., Danek A., GTShark: genotype compression in large projects, *Bioinformatics*, 2019 vol. 35 iss. 22 s. 4791-4793.
- Orujov F., Maskeliunas R., Damasevicius R., Wei W., Fuzzy based image edge detection algorithm for blood vessel detection in retinal images, *Appl. Soft Comput.*, 2020 vol. 94 s. 1-10 (art. no. 106452)

2. A list of 5 research and development projects within national and international competitions in the area of artificial intelligence and implemented within the last 5 years prior to or in the year of the application (title, manager, source of financing, amount of financing) (max. 1 A4 page).

The Silesian University of Technology is carrying out a large number of research and development projects on artificial intelligence, below are five examples from different fields:

(1) Development and demonstration of a computer system for operation control and management of availability and reliability of industrial infrastructure based on artificial intelligence algorithms OPTI_AI_UNIT, head: Prof. Wojciech Adamczyk, source: NCBiR, funding: PLN 21 million (including PLN 3.8 million for the Silesian University of Technology).

The project concerns the creation of a prototype modular system based on artificial intelligence algorithms to increase the reliability of an enterprise. The objective will be achieved by creating a hybrid IT infrastructure consisting of adaptive prediction-prescription models cooperating with control systems, optimization algorithms, with numerical models of selected critical devices (digital twins), databases, and algorithms controlling the health status of power devices.

(2) New molecular diagnostic and imaging tools for individualized therapy of breast, thyroid and prostate cancer STRATEGMED2/267398/4/NCBR/2015, head: Prof. Krzysztof Fajarewicz, Source: NCBiR, Funding: PLN 22 million (including PLN 3.5 million for the Silesian University of Technology)

The aim of the project was to improve the quality of oncological treatment by reducing the adverse effects of overly aggressive therapy in the treatment of three very common cancers. The results obtained by machine learning methods were: (1) creation of a thyroid nodule classifier algorithm using ultrasounds residual biopsy examination. The classifier is built based on selected gene expressions (patent pending), (2) Construction of different classifiers for thyroid nodule diagnosis based on gene expression data and clinical data (two patents pending) and (3) Advanced breast cancer subtype classifier into 3 subtypes: LUMB HER2, HER2+ nonLUM, TNBC (two patent applications)

(3) Development of a modern model of life-threatening patient management based on self-learning algorithm of decision-making processes and analysis of data from therapeutic processes DOB-BIO10/19/02/2020, head: Prof. Aleksander Nawrat, source: NCBiR, funding: PLN 47 million (including PLN 2.9 million for the Silesian University of Technology)

As a result of this R&D work, a comprehensive ED management model will be developed based on artificial intelligence algorithms using monitoring of vital signs of patients. The innovative system at IX PGT will allow to: increase the efficiency of medical facility operations, reduce the costs of ED operations, optimize the use of medical facility resources, increase the level of patient and staff satisfaction, increase the capacity of the ED, improve patient safety and improve the functionality of the unit.

(4) Autonomous microbus with electric drive adapted to travel in platooning mode together with an intelligent passenger information system, head: Prof. Piotr Przyszałka, source: European Regional Development Fund under the Regional Operational Programme of the Silesia Voivodeship, funding: PLN 11.4 million (including PLN 1.1 million for the Silesian University of Technology)

The main objective of the project is to develop an autonomous electric-powered minibus capable of platooning with an intelligent passenger information system. The vehicle will provide a comprehensive solution to the First Mile - Last Mile challenge, especially: 1. in places with lower population density (mainly outskirts of large cities or small towns) and at night, where cars dominate the choice of transport mode and the cost of providing public transport is high (and under current economic conditions highly unprofitable); 2. within large enclosed facilities (such as factories, airports, university campuses, etc.) which need to have their own public transport systems.

(5) Intelligent Cluster of Cells if Automated Storehouse System (iZMS), manager: prof. Wojciech Moczulski, source: POIR, funding: 9.7 mln PLN (including 0.9 mln PLN for the Silesian University of Technology)

The aim of the project is to develop an intelligent Automated Storehouse System (iZMS) to be used for automated sales of goods in retail chains and e-commerce. Configuration and use of iZMS Cell Clusters will be supported by artificial intelligence methods. The result of the project will be a prototype iZMS, which will be a comprehensive solution that eliminates the limitations of currently used or implemented solutions (vending machines, self-service stores).

3. Available research equipment, apparatus/infrastructure and intangible assets held in the context of implementation of a project regarding artificial intelligence (max. 1 A4 page).

The Silesian University of Technology has a comprehensive research and development infrastructure which includes over 280 specialized laboratories and workshops covering various areas of industry (<https://euslugi.polsl.pl/EUsluga/Laboratorium>). Laboratory stations and apparatus are used to acquire relevant data, which are very often needed to develop methods and techniques of artificial intelligence. Available research instrumentation is also used for verification of developed AI-based technologies in laboratory conditions replicating real-world conditions with high fidelity. The following laboratories are particularly useful: Process Diagnostics Laboratory; Mobile Systems Laboratory; Robotics Laboratory; Vehicle Motion Simulation Laboratory; Virtual Flying Laboratory; Vision and Thermal Measurements Laboratory; Computer Control Systems Laboratory; Microrobots in Biotechnology Laboratory; Pneumatic Processes Laboratory; Wireless Systems Laboratory; Control Systems Prototyping Laboratory; Virtual Reality Technology Laboratory, etc. Many of these laboratories have their own computing stations equipped with high-performance GPUs and software to perform artificial intelligence work.

A very important element of the research infrastructure are laboratories dedicated, among others, to problems related to the construction and application of simulators (hardware and software), which are used to generate training data. The equipment includes, among others, a vehicle simulator dedicated to people with disabilities who want to learn how to drive a car, flight simulators, various simulators of industrial facilities (e.g. a seat assembly line in a car factory, a blast furnace, a sugar factory, a sewage treatment plant, a dairy, a coal mine - coal processing, a zinc and lead smelter, a nuclear power plant, a coal-fired power plant, a fuel terminal, a fruit juice production plant, a smart home), simulators for mobile vehicles - cars and autonomous robots, a solar radiation simulator, a Gleeble 3800 thermo-plastic processing simulator, a work under stress simulator, etc.

Upper Silesian Centre for Scientific and Engineering Computing (GeCoNil) has a Laboratory of High Performance Computing, which deals with interdisciplinary research, where calculations used for artificial intelligence models can be performed. The Laboratory of Parallel Computing of the Biotechnology Center provides large computational resources (clusters, storage, networks, GPU gas pedals) for research tasks performed at the University. The laboratory is equipped with a high-performance computing cluster based on IBM blade servers with Hitachi disk arrays. The laboratory is used to solve problems that require long computation time, and the processed data are of terabytes size.

Scientific computations that exceed the capacity of our Centers is moved to the cloud. The University provides qualified experts and know-how in leveraging cloud resources to store, compute, develop and deploy cloud-based AI solutions for various purposes. The certified and accredited experts have over 10 years of experience working with various cloud platforms including Amazon Web Services (AWS), Google Cloud Platform and Microsoft Azure. The cloud lab spectrum is developed and maintained by subject matter experts from the cloud providers, ensuring that it reflects current services and current best practices. This also allows the University's ongoing research projects to remain at the forefront of global innovation and gain the capabilities they need to become globally recognized in one of the fastest growing technology industries.

Researchers and students of Silesian University of Technology have comprehensive access to specialized scientific and engineering software resources, i.e. MATLAB, LabVIEW, Statistica, Protege-OWL, PCPack for KBE, R, Orange, RapidMiner, as well as to systems facilitating research and development work, e.g. group work systems such as OneDrive, SharePoint, Office 365, Teams, source code repositories SVN, Git, and many others.

The Silesian University of Technology possesses specialized know-how in the form of a generated pool of knowledge accumulated during the implementation of innovative R&D projects in which AI-related issues were particularly important. This way the know-how was accumulated in the field of e.g. building intelligent monitoring and diagnostic systems and decision support systems, building autonomous mobile systems and their control systems (e.g. electric cars and mobile robots). The Silesian University of Technology is the owner or co-owner of many patents (<https://euslugi.polsl.pl/EUsluga/Patent>) in which artificial intelligence techniques are used directly or indirectly.

4. Facilities or incentives to establish an AI Centre of Excellence in the entity (max. 1 A4 page).

Artificial Intelligence and Data Processing is one of the six Priority Research Areas of the Silesian University of Technology. Therefore, the Authorities of the University pay particular attention to the development of research related to broadly defined machine learning. Within the project Excellence Initiative - Research University, a system of incentives is being developed, which allows to subsidize innovative works connected with artificial intelligence, both in the form of scholarships and funding of equipment. Great importance is attached to increasing the internationalization of research by employing outstanding foreign scientists within the framework of cyclically organized competitions for employing an outstanding experienced scientist and an outstanding young scientist.

An important advantage of our University is its excellent location in a dynamically developing industrial area. Upper Silesia is currently undergoing a transformation from a region associated so far with heavy industry into a region focused on modern technologies and development of Industry 4.0. The most innovative companies located in Katowice Special Economic Zone are leading in this transformation. Researchers from the Silesian University of Technology take an active part in this transformation and the existing infrastructure gives a chance to find many potential applications for research related to artificial intelligence. The Silesian University of Technology cooperates with many innovative companies located in the immediate vicinity of the university or having long-term cooperation with our university, e.g. Apa Group, AIUT, Future Processing, Autonomous Systems, Bles, KP Labs, HemiTech, Wasko, ING, IBM, Microsoft, Thales, Bombardier, Draexlmaier, and many others. A number of joint AI projects are underway to further enhance the capabilities of these companies. There is also extensive cooperation with medical institutions, including the National Institute of Oncology in Gliwice, a large research and development center with modern equipment and an experienced research team, and cooperating with many research institutions in Poland and abroad. Another important advantage of the region is its excellent road, rail and air transport infrastructure (two international airports in the immediate vicinity).

In the area of development of artificial intelligence methods and their implementation, the long-term cooperation with universities and scientific units located in the region, such as: the University of Silesia in Katowice, the Medical University of Silesia, the University of Economics in Katowice, the Central Mining Institute, the Institute of Innovative Technologies EMAG, the Institute of Theoretical and Applied Informatics of the Polish Academy of Sciences in Gliwice, the Institute of Medical Technology and Equipment in Zabrze, the Polish-Japanese Academy of Information Technology - Research and Development Centre in Bytom, and many others, is particularly important.

The Centre of New Technologies (CNT) of the Silesian University of Technology is a place where innovative solutions are created, in which AI methods play a significant role. In total, CNT has an area of four thousand square meters, of which more than one third is occupied by laboratories. The task of the center is to serve other organizational units of the Silesian University of Technology conducting didactic or scientific-research activities, especially in the field of practical applications of artificial intelligence methods.

The Silesian University of Technology cooperates with the Science and Technology Park "TECHNOPARK GLIWICE" Sp. z o.o. where activities aimed at mobilizing scientific communities and people developing innovative solutions for establishing companies using new technologies, including those based on AI, are carried out. Many companies located in the Technopark, including spin-outs established by employees, doctoral students and students of the Silesian University of Technology, closely cooperate with the university in preparing applications for innovative R&D projects using artificial intelligence methods. These companies also provide internships for university employees, doctoral students and students, as well as implementation and commercialization of solutions developed at the university and in mixed university-enterprise teams.

In addition, the AssistMed Sport Silesia center conducts research and development work on computer-aided medical diagnosis modules using artificial intelligence. They are being developed at the Silesian University of Technology in cooperation with national and international medical centers, in the field of diagnostics such as Covid 19, lung cancer, liver cancer, bone cancer, focal lesions, dementia diseases, as well as movement therapy, wound analysis, aphasia, evaluation of histopathological samples, etc. This cluster includes Philips IntelliSpace medical software, which, in terms of installed modules (e.g. IntelliSpace Portal, Intellispace Cardiovascular), enables automated processing of medical images and biosignals for diagnostic and reference purposes. With the IntelliSpace Discovery platform, it is also possible to develop and evaluate new AI modules for this platform.

5. Other information concerning internationalization of the entity, foreign scientists employed in this institution, availability of seminars in English, etc. (max. 1 A4 page).

The Silesian University of Technology systematically increases its internationalization every year. This is reflected in many areas of the university's activities as a research and teaching unit. In relation to 2018, a 50% increase in the number of employed academic teachers from abroad has been achieved in recent years, which resulted in an increase in the internationalization of the staff by 44%. Currently, the university employs 21 foreign academic teachers, of which 6 in the research staff group and 15 in the research and teaching group. The university plans to increase the staff internationalization rate to 5% by 2026, mainly due to the cumulative investment in internationalization development carried out under the "Excellence Initiative - Research University" program, including the program to hire outstanding young and experienced researchers from abroad.

The university also favors inviting foreign visiting professors. In this regard, the teaching process has been organized in a block manner so that the foreign professors can come in large numbers and complete their teaching activities within a short period of a few weeks. This leads to a doubling of the number of visiting professors at the university within one year. With more than 30 fields of study pursued exclusively in English, the number of international students, not only from Europe, but also from Asia, Africa and the Americas, has steadily increased year after year, resulting in a 200% increase in the number of these students compared to 2018. The internationalization rate has increased by 80% compared to 2018. The university plans to increase the internationalization rate of studies to just under 10% in 2026. In order to achieve such an indicator, the Development Strategy and the Internationalization Strategy have been implemented, as well as programs for double diplomas and active foreign promotion in markets with a strong investment in education. Currently, the Silesian University of Technology has over 250 bilateral agreements signed within the Erasmus+ programme. Academic teachers of the university teach students at the Chinese Yanshan University, and the new course Cognitive technologies in English, opened in 2019 in cooperation with Kiev National University of Construction and Architecture in Ukraine, has been recognized as a "study of the future".

The goal of increasing the internationalization of the Joint Doctoral School at the Silesian University of Technology is being dynamically implemented. Currently there are 343 doctoral students in this school, 40 of whom are foreigners. The internationalization rate of the school is currently 11.6%. This means a more than threefold increase with respect to 2019, at the same time a fivefold increase in the number of doctoral students from abroad. Researchers of our university actively cooperate with the staff of foreign institutions. Numerous conferences and seminars are organized - both in the framework of cooperation in joint projects (including European projects) and in the framework of the development of the six Priority Research Areas of the university. One of these areas is Artificial Intelligence and Data Processing, in the advisory committee of which sit well-known scientists from foreign universities, such as Professor Witold Pedrycz from the University of Alberta in Canada, Professor Jean-Charles Lamirel from the Université de Strasbourg in France, or Professor Zbigniew Raś from the University of North Carolina at Charlotte, USA.

The University is constantly developing scientific cooperation with foreign entities. Recently, the Silesian University of Technology has signed an agreement to establish a Sino-Polish College of Artificial Intelligence with Yanshan University in China. It also has a cooperation agreement with Lviv Polytechnic National University in Ukraine, where joint conferences are organized and double doctorates are realized. In the scientific field, a joint scientific seminar in the area of computer science and artificial intelligence is organized with several universities in Taiwan (e.g. National Yang Ming Chiao Tung University, Providence University, Chang Gung University).

For many years the university has also organized several major conferences in the area of artificial intelligence and data processing, e.g. Artificial Intelligence Methods (AI-METH) and Beyond Databases, Architectures and Structures (BDAS), with the support of worldwide organizations IFIP and IEEE. The Silesian University of Technology is also involved in many international projects related to artificial intelligence, e.g. under the European projects Horizon 2020 (e.g. WrightBroS project for development of a prototype professional flight simulator using augmented reality (AR), or ReACTIVE Too project for creation and reliability testing of systems based on electronics with embedded artificial intelligence, introducing agile hardware development cycles with virtual techniques) or Polish-Norwegian projects (e.g. the CoBotAGV project on the creation of autonomous transport vehicles operating in Industry 4.0 smart factories, or the Long-endurance UAV project on the development of an autonomous stratospheric drone to collect air quality data). The potential of the university has been recognized by well-known IT companies - Microsoft Research located one of its 45 projects for prototype cloud solutions related to the application of Data Science and Artificial Intelligence technologies there in 2017. Professors of the university sit on the editorial boards of various JCR-listed scientific journals related to the areas of artificial intelligence - Prof. Wojciech Moczulski was a board member of the journal Engineering Applications of Artificial Intelligence (Elsevier) from 2006 to 2019, and Prof. Dariusz Mrozek is a board member of the journal Information Sciences (Elsevier).

6. Other significant information confirming the experience and resources of the institution (max. 1 A4 page).

Researchers from the Silesian University of Technology have a special merit in popularization and implementation of artificial intelligence methods. An example is the textbook "Systemy doradcze" ("Expert Systems") by W. Cholewa and W. Pedrycz (1987) - the first book in Polish to popularize the subject of advisory and expert systems.

The Silesian University of Technology is the place of origin of many world-rank scientists - precursors of issues related to artificial intelligence, such as late Prof. Ernest Czogała - the world authority in the field of knowledge processing and fuzzy sets. One should also mention Prof. Witold Pedrycz - one of the most quoted Polish scientists, Prof. Andrzej Bargieła or Prof. Marek Kimmel. All of them are alumni of our University and are still associated with it.

The Silesian University of Technology together with the GZM Metropolis, the city of Katowice and the University of Silesia, the University of Economics in Katowice and the Silesian Medical University are preparing a concept for the creation of the Science Zone in Katowice, the aim of which would be to support the transformation of the region towards a hub for artificial intelligence and cyber security. One of the elements of the Zone is to be the Supercomputing Centre, for which the universities intend to strive together, with the support of the Marshal's Office.

Two projects are being implemented at the Silesian University of Technology starting in 2019 under the program "Implementation PhD II - Artificial Intelligence". The program supports the preparation of doctoral dissertations by doctoral students conducting scientific activity in the use of artificial intelligence in technological or social processes, including those related to cyber security, the results of which may be applicable to the activities of entities employing these students. The 2019 edition includes 10 PhDs, the 2020 edition includes 8 PhDs.

Our scientists are counted among the world elite. In 2020 Stanford University included 15 scientists of the Silesian University of Technology into the group of "Top 2% Scientists in the World", where in the field of artificial intelligence and computer science applications Prof. Jacek Leski, Prof. Bogdan Smolka, Prof. Marcin Woźniak were listed. In 2020 the Ministry of Science and Education awarded Prof. Marcin Woźniak for significant achievements in scientific activities aimed at the acquisition of new knowledge and its direct commercial application, conducting development work and leading research teams. The Committee of Informatics of the Polish Academy of Sciences awarded an outstanding monograph on computer science written by Prof. Dariusz Mrozek. The Italian society C.I.M.A.T. awarded scientific monographs by Prof. Marcin Woźniak and Dr. Zbigniew Marszałek. In the period 2015-2020, students and PhD students of the Silesian University of Technology working scientifically in the field of artificial intelligence have been awarded multiple Ministry of Science and Higher Education scholarships, IBM awards, Siemens award and student Nobel Prize.

The university also has a modern congress infrastructure. The Educational and Congress Centre of the Silesian University of Technology, due to its equipment and location, is a perfect facility for the organization of any celebrations, conferences and congresses. It is a three-storey, air-conditioned building, equipped with a public Internet connection. The usable area is over 6,000 m², and includes, among others: lecture halls, buffet, checkroom and spacious lobbies, which can be successfully used for exhibitions, reception or catering purposes. There are ten teaching and conference rooms in the building.

The Centre for Incubation and Technology Transfer (CITT) is also an important element of the university structure. Since 2008, CITT has played an important role in improving the implementation of scientific research results into economic practice. It focuses its activities on promoting the use of scientific research results in modern economy. It creates and supports widely understood entrepreneurship, mainly academic one. The Centre's services are directed both to scientists and entrepreneurs. CITT also assists in developing international cooperation, both economic and scientific.