ARTIFICIAL INTELLIGENCE National Laboratory

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FUTURE IS AI

The Artificial Intelligence National Laboratory (MILAB) aims to strengthen Hungary's role in the field of artificial intelligence. In response to the international and domestic challenges, the Laboratory was established in 2020 to maximise the competitive advantage of Hungary in one of the most important RDI fields of our time, strengthening both basic and applied research and innovation activities, and promoting Hungary's chances of participation in transnational megaprojects.

MAIN RESEARCH AREAS

- Theoretical foundations of mathematics and machine learning
- Security and protection of personal data
- Machine vision and perception
- Machine learning-based smart manufacturing, logistics,
- telecommunications, IoT
- Language technology
- Medical, healthcare applications

CONSORTIUM LEADER:
HUN-REN Institute for Computer Science and Control

CONSORTIUM PARTNERS:
Budapest University of Technology and Economics
Eötvös Loránd University
HUN-REN Alfréd Rényi Institute of Mathematics
HUN-REN Centre for Social Sciences
HUN-REN Institute of Experimental Medicine
KINCSINFO Nonprofit Ltd.
Semmelweis University
Special Service for National Security
Széchenyi István University
University of Szeged

PROJECT NUMBER: RRF-2.3.1-21-2022-00004

FUNDING PERIOD: 20.09.2021 - 31.12.2025

OVERALL BUDGET: 9.439.666.600 HUF

HUNGARIAN NATIONAL LABORATORY

BENEFITS TO BE EXPECTED FROM LABORATORY RESEARCH

- New basic and applied research results, innovation in strategic areas: artificial intelligence, mathematical foundations of deep learning, machine vision, natural language processing, security and privacy-enhancing computing technologies, and industrial research in medical diagnostics and biometrics, agri-food, transport, manufacturing and processing, telecommunications.
- Funding for priority basic and applied themes (publications, patents, new industrial relations, technology transfer).
- Networking, building synergies between actors, representing competences in market and international projects.
- Internationalisation, an interconnected research ecosystem.
- Source multiplication, research with high risk or high social utility.
- Organising demos and conferences.

THE PROFESSIONAL TEAM

The Consortium is led by the **HUN-REN Institute for Computer Science and Control (SZTAKI),** the country's largest IT research institute. Its mission is to carry out basic and applied research in selected areas of computer and related sciences, to transfer knowledge and technology, and to contribute to the innovation of their research results. The MILAB Project Office, run by SZTAKI, coordinates relations between internal and external partners, channels industrial, social and governmental needs, monitors funding sources, seeks EU and international cooperation opportunities and organises professional days and demonstrations. SZTAKI coordinates the collaboration with several large scale projects (healthcare, manufacturing, logistics, IoT, utilisation of public data), Research Centers and National Laboratories (autonomous systems, health care, Industry 4.0).

The **HUN-REN Alfréd Rényi Institute of Mathematics**, leader of the „Mathematical Foundations" workpackage, is a major international centre of mathematical research, and is responsible for coordinating the work on the mathematical foundations of deep learning, optimisation, personal data management, data security and anonymisation within the MILAB framework.

The **HUN-REN Budapest University of Technology and Economics**, one of the country's leading research universities, manages the „Sensor, IoT, Telecommunications" workpackage, and is responsible for leading applied research projects in manufacturing, logistics, telecommunications, information security and software engineering, as well as for building industrial and international partnerships.

Eötvös Loránd University, leader of the „Machine Vision and Perception" workpackage, is one of the oldest and largest universities in Hungary. As a member of MILAB, it conducts basic research projects in the fields of network research, graph theory, health data processing, and is cooperating with European and other international artificial intelligence networks.

The **University of Szeged** is one of the country's most prestigious educational and scientific RDI laboratories. Its most important research activities include software engineering, trusted AI methods, machine learning and natural language processing. The university coordinates the „Language Technology" and the „Security, Privacy and Infrastructure" workpackages.

As the leading medical higher education institution in the Central Europe, **Semmelweis University** is responsible for leading the „Healthcare" workpackage, which researches the potential application of artificial intelligence for medical sciences and healthcare, e.g. in telemedicine, diagnostic image processing, big data-based approaches to heart attack care, sports cardiology.

As the leading neuroscience research institute in Central Europe, the **HUN-REN Institute of Experimental Medicine** is conducting basic neuroscientific research in the fields of neurotransmission, learning and memory, behaviour and ageing, among others, in the framework of the „Mathematical Foundations" workpackage.

The **HUN-REN Centre for Social Sciences** is one of the country's leading social science research centres, carrying out basic and applied research in the fields of law, sociology, political science and minority studies, and is involved in MILAB's work through three workpackages.

The **Vehicle Industry Research Center of Széchenyi István University** provides a modern innovation platform for corporate partners, contributing to the development of the university and of entrepreneurial and sustainable competitiveness in the university's key competence areas, to which it is linked through its research activities carried out in three MILAB workpackages.

The tasks of the **Special Service for National Security** within the MILAB project include research related to the control of processes in cyberspace and the protection against malicious behaviour that may be a threat from cyberspace to public, municipal or economic actors, or even to citizens.

Kincsinfo Nonprofit Ltd., founded by the Hungarian State Treasury, is responsible for analysing, modelling and optimising data on financial processes and public services using artificial intelligence methods, with the involvement of MILAB partners.

POSSIBLE PARTNERSHIPS

Partnership with flagship projects, industry partners (e.g. Health, Telecommunications, Industry 4.0).

Involvement of industry partners for applied research projects in priority areas, in which MILAB can offer research resources in an integrated way.

Internationally, our primary partner is the European Union, which developed a Coordinated Plan on Artificial Intelligence in 2018-2019, outlining how the EU intends to contribute to the AI developments of Member States in relation to individual components of the AI value chain. In the 2021-2027 budget cycle of the Union, in order to support successful grant applications in the field of artificial intelligence, a Hungarian AI Strategy has designated MILAB to carry out project activities.

TARGET GROUP

- Researchers working on AI
- Industry professionals
- Policy makers
- Public administration
- Corporate and SME users of AI

PLACES OF IMPLEMENTATION:

- Budapest
- Győr
- Kecskemét
- Szeged
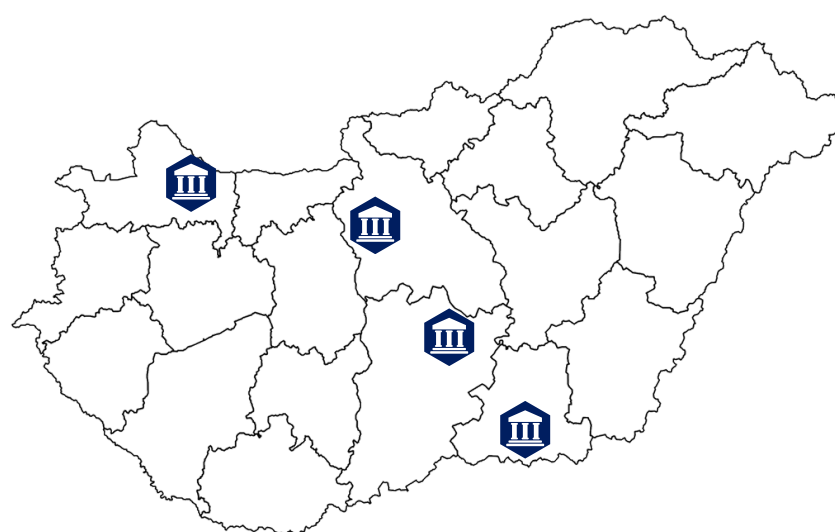
PROFESSIONAL CONTACT

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