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Message from the President of the Foundation Council


Anne-Laure Couchepin

The ongoing transformation of daily life by artificial intelligence (AI) is affecting every sector of society.

Its undeniable benefits, such as task simplification, healthcare advancements and innovative assistive technologies, are driving widespread adoption. Businesses are actively integrating it to their advantage, while navigating essential ethical considerations.

As the world undergoes digital transformation, Switzerland's financial landscape faces increasing complexity. The Confederation, as part of a reassessment of public fund allocation, has announced budget cuts. This situation demands increased efforts to optimize resources and demonstrate the importance of the Institute's research, which was recognized at the end of 2024.

At the same time, the creation of new AI-focused chairs in higher education institutions and universities implies a competitive dynamic. For Idiap, this represents an opportunity to strengthen its position by attracting top talent and forging strategic partnerships. This will accelerate technology and knowledge transfer to industry and society, maximizing research impact. I invite you to explore these developments further in this report.

On behalf of the Foundation Council, I extend my deepest gratitude to all Idiap teams for their dedication and daily commitment. It is thanks to their work that we can continue to meet challenges and contribute to shaping a future where AI benefits society.

Message from the Director


Andrea Cavallaro

This year marked the launch of the Institute's 2024-2028 strategy – Artificial Intelligence (AI) for Society – and the continued designation of Idiap as a Research Institute of National Importance, following a review by the Swiss Science Council for the State Secretariat for Education, Research and Innovation.

With the rapid pace of progress and intense competition in our field, we work to ensure that the transformative potential of AI benefits everyone. This report reflects the excellence of our staff in fulfilling this objective.

I invite you to explore this report and learn about the far-reaching impact of Idiap's research, which is grounded in the Institute's core values established at its foundation 33 years ago.

The report showcases achievements across our research programs and demonstrates the diverse applications of our research, including progress in leveraging AI to combat misinformation through advanced fact-checking, reskill the workforce, and empower humanitarian efforts globally. Additionally, you will read about promising advancements in tuberculosis detection and cancer treatment.

Our research would not happen without the sustained support we receive from our key funders: the Swiss Confederation, the Canton Valais and the City of Martigny; our founding members: École Polytechnique Fédérale de Lausanne (EPFL), University of Geneva and Swisscom; as well as our extensive network of collaborators.

As we reflect on 2024, I am already eager to see what 2025 holds. I invite you to join us on this exciting journey as we continue to push the boundaries of AI for the benefit of society.

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The Roots of Our Values

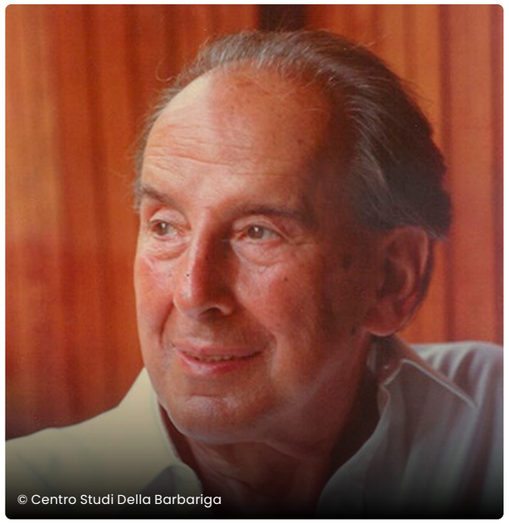
In the 1980s, a 28-member working group, "Relation Valais-Université", comprised of individuals from the economic, scientific, political and administrative spheres, began meeting weekly in Valais. Their goal was to explore how to foster academic activity in the region, similar to that flourishing elsewhere in Switzerland, without establishing a traditional university. During this period, the group encountered the work of Angelo Dalle Molle, a visionary Italian industrial and the inventor of the well-known liqueur, Cynar.

Angelo Dalle Molle believed that science and technology should improve lives and serve humanity. His aim was to improve communication, mobility and the environment for a comprehensive enrichment of human life and society in order to help people engage in more meaningful activities and be freed from purely practical tasks.

Dalle Molle believed that the role of researchers was fundamental to achieving his vision. He viewed researchers not only as experts in their fields but also as generalists dedicated to improving life for everyone and addressing wider societal challenges. His vision went beyond advancing science.

It was about building a community of like-minded individuals to improve lives while maintaining an open mind.

Inspired by these principles, the *Dalle Molle Foundation* was established to advance scientific knowledge, with a focus on the (then) emerging field of Artificial Intelligence (AI).



© Centro Studi Della Barbariga

The collaboration between the Dalle Molle Foundation and "Relation Valais-Université" eventually led to the founding of the *Institut Dalle Molle d'Intelligence Artificielle Perceptive* ("IDIAP") in 1991. Idiap's tagline, "Artificial Intelligence for Society," reflects Angelo Dalle Molle's vision which still guides the activities of the institute today. Nowadays, "IDIAP" is commonly referred to as Idiap Research Institute (Idiap), yet it solidly maintains its historical roots. From the foundations laid by Dalle Molle's humanistic approach to science, one can outline values that guide the Institute to this day.

Human-Centricity

We address the needs of people and society. We focus on advancing science and creating technologies that enhance human lives, from securing privacy to improving accessibility.

Ethics

We carefully consider the ethical implications of our research and innovations, aiming to develop solutions that are inclusive and beneficial to everyone.

Interdisciplinarity

We cover a spectrum of interconnected fields. The diversity of ideas, perspectives, and methods allows us to approach complex problems from multiple angles, fostering knowledge creation and innovation.

Passion

We share our passion with everyone who collaborates with us. We believe that by sharing our passion for research, we spark creativity, advance together and train research leaders of tomorrow.

Respect

We foster a culture of respect that empowers everyone to reach their full potential. Just as we value and support our people, we are equally dedicated to respecting our planet and creating sustainable solutions that promote resilience.

Openness

We are committed to transparency and knowledge sharing, making the results of our work available to both the scientific community and the public.

Why Idiap?

Anyssa Bououkaz

After thirteen years in the HR team at the HES-SO Valais Wallis, Anyssa joined Idiap in September 2024 as HR Specialist.

She decided to join the Institute because she finds the field of artificial intelligence both fascinating and inspiring. She was also attracted to the Institute's manageable size, which nurtures a strong sense of team spirit.

"The values shared by Idiap align closely with my own, creating a positive and supportive working environment" she explains.

She describes the work environment as both positive and caring, and particularly notes the warm welcome she received from everyone.

"This welcoming atmosphere makes it an inspiring place to work" she continues.

When asked to sum up her experience at Idiap in three words, she chose "welcoming", "stimulating", and "motivating".

Anyssa strengthens team dynamics through her expertise in recruitment, HR policies and processes, talent management and conflict mediation.

Discover the full interview on YouTube

Giorgia Rossi

Giorgia was born in Ticino and moved to Martigny in September 2024. She spent seven years in Lausanne to pursue her university studies and worked at Logitech and Nestlé in various communications teams.

Joining Idiap to further develop her communication skills and pursue her interest in technology, she shares:

"I'm lucky to do what I love, so I am eager to embrace any challenge".

Giorgia appreciates Idiap's commitment to excellence and welcoming atmosphere. Indeed, she says:

"I received the warmest welcome of my career so far!"

She describes her experience as **"enriching"**, **"challenging"**, and **"fun"**.

As the Communications Officer, she ensures Idiap's messaging is clear, consistent, and impactful, shaping the Institute's image.

Discover the full interview on YouTube

Sarah Delporte

Sarah is the Assistant to the Institute Director at Idiap. She was drawn to Idiap's motto, "AI for Society," as it combines her passions for technology and societal contribution – passions that began during her time at the UN International Telecommunication Union (ITU).

She values the Institute's research programs for their ability to transform technical work into meaningful societal impact and treasures the daily opportunities to learn through interactions with leading researchers.

"Working in a research institute is very exciting because people are tackling complex challenges and striving to discover the next big breakthrough" she explains.

The three words that best describe her experience at Idiap are: **"growth"**, **"creativity"**, and **"enjoyment"**.

Sarah strengthens the team by driving forward Idiap's three focus areas – Research, Education, and Innovation – overseeing research programs, and actively contributing to institutional policies, reports, and overall Institute advancements.

Discover the full interview on YouTube

HUMAIN-AI TEAMING

Interpreting Natural Language

What about an AI designed for efficient and rapid information retireval? That's what James Henderson's team achieved through the logical connection of concepts from large data sources.

Natural language processing (NLP) is a field of artificial intelligence dedicated to enabling computers to understand, generate and use human language, including large language models (LLMs), making it easier for people to work with machines and deal with complex tasks.

Unlike traditional LLMs, which understand text sequences but are less proficient in interpreting connections between information (or graph relations), the team developed the Graph-to-Graph Transformer architecture, which seamlessly integrates links between information items (called knowledge graphs) inside the architecture of LLMs. They then went a step further and extended this architecture to the Graph-Assisted Declarative Pooling (GADePo) model, which helps improve the extraction of relationships from entire documents.

Identifying how different entities (such as people, places or organizations) are related in large texts can be challenging. Conventional methods (key words and syntax analysis) rely on rigid, predefined rules, but GADePo offers a more flexible and customizable approach.

This allows for better understanding of complex relationships, making it a valuable tool in fields that require the processing and analysis of large volumes of text, such as medicine and biology.

The team did not stop there. They are also working on another improvement of the language understanding of LLMs: the Fast-and-Frugal Text-Graph Transformer model. The idea is to use the structure of a knowledge graph to make it easier for the text encoder, which changes text into numbers, to predict relationships more quickly and accurately. Unlike traditional methods where the text encoder (a machine-learning tool that transforms language into numbers) deduces complex relationships, this model relies on knowledge graphs, that is, the links between information elements. These graphs provide a framework for the encoder, enabling it to make faster and more accurate predictions while optimizing resource utilization. This represents a step further in how we can organize and understand complex data, allowing us to predict new relationships between information sources with manageable computational resources.

Efficiency, adaptability and performance are the cornerstones of James's work, making language processing both easier and more impactful for society.

Related resources

Coman, A., Theodoropoulos, C., Moens, M.-F., & Henderson, J. (2024). GADePo: Graph-assisted declarative pooling transformers for document-level relation extraction. In *Proceedings of the 3rd Workshop on Knowledge Augmented Methods for NLP*. Association for Computational Linguistics, Bangkok, Thailand.

Fehr, F., & Henderson, J. (2024). Nonparametric Variational Regularisation of Pretrained Transformers. In *Proceedings of the First Conference on Language Modelling* (COLM).

HUMAIN-AI TEAMING

Reskilling the Workforce

The AI revolution presents both challenges and opportunities for the future of work. While automation can raise concerns about job displacement, it also offers the opportunity for workforce upskilling and reskilling.

Collaborative robots (cobots), designed to work alongside humans, are key to this transformation. By redistributing tasks between people and machines, cobots empower workers to focus on more complex and rewarding tasks, enhancing their skills and job satisfaction.

Idiap's contribution to the CODIMAN project, coordinated by the University of Applied Sciences of Bern, has directly supported this shift. Through CODIMAN, Sylvain Calinon and his team developed innovative automation approaches that prioritize upskilling and foster meaningful human-machine collaboration, ensuring a future where technology empowers, rather than replaces, human potential.

The team developed two complementary approaches to make robot programming accessible to production workers: block-based programming (a way to write code using command blocks) and learning from demonstration. In particular, they developed an algorithm that can learn from just a few demonstrations of robot movements. Instead of requiring numerous, high-resolution and precisely timed demonstrations, the algorithm only needs key positions along the desired movement path to learn the task.

The solutions developed in the project were continuously refined based on user feedback and industry needs.

> This study demonstrates how a skill-enhancing approach can help Swiss SMEs maintain competitiveness despite variable production volumes and the ongoing need for workforce flexibility.

By combining the flexibility of human labor with the efficiency of automation, companies can achieve a balance that meets the demands of producing small volumes of highly variable products. This approach not only boosts productivity but also promotes worker reskilling and can contribute to improving work conditions.

This study was supported by the Swiss National Science Foundation (SNSF) as part of the National Research Program "Digital Transformation" (PNR 77) and fully aligns with the goal of improving human-machine coollaboration.

Swiss National Science Foundation

Berner Fachhochschule
Haute école spécialisée bernoise
Bern University of Applied Sciences

SUSTAINABLE AND RESILIENT SOCIETIES

Fact-Checking and Unmasking Media Bias

Newspapers, social media, TV, radio and other communication channels shape our daily lives and influence our knowledge. Verifying the vast information shared through these channels is key for professions where factual, evidence-based information is a daily basis. A tool designed for this purpose could be a helpful solution.

To combat misinformation, a team led by Petr Motlicek has developed an innovative platform using two machine-learning tools: a claim dissector and a news source reliability estimator.

The claim dissector assesses the credibility of online claims by verifying content and ranking supporting and refuting evidence. The news source reliability estimator uses reinforcement learning to analyze how sources relate to each other, assigning each a reliability score on a continuous scale without relying on external verification.

These tools work together to assess the political bias and factual reliability of media outlets by analyzing their long-term interconnections. This approach differs from traditional methods that rely on social media metadata or time-consuming manual content analysis.

This research, part of the EU-funded Horizon 2020 program and the CRiTERIA[1] project, aims to bridge the gap between combined evidence (events, trends, biases, risks, threats, etc.) and threat analysis in the context of migration[2]. This study directly supports the objectives of the Sustainable and Resilient Societies research program.

Related resources

Sánchez-Cortés, D., Burdisso, S., Villatoro-Tello, E., & Motlicek, P. (2024). Mapping the media landscape: Predicting factual reporting and political bias through web interactions. In L. Goeuriot et al. (Eds.), *Experimental IR meets multilinguality, multimodality, and interaction. CLEF 2024. Lecture notes in computer science* (Vol. 14958). Springer.

Burdisso, S., Sánchez-Cortés, D., Villatoro-Tello, E., & Motlicek, P. (2024). Reliability estimation of news media sources: Birds of a feather flock together. In *Proceedings of the 2024 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies* (Vol. 1), Mexico City, Mexico.

Funded by the European Union

1. https://www.project-criteria.eu/
2. https://www.idiap.ch/en/allnews/detecting-factual-reporting-news-sources-political-bias-new-approach-media-information-analysis

Smarter Heat

Decarbonizing space and domestic hot water heating is a critical challenge. District heating networks, utilizing renewable and waste heat, offer a promising solution. These can be further enhanced through dedicated simulation tools. In Switzerland, interest in district heating has grown significantly in the pursuit of reaching net zero greenhouse gases in 2050.[1]

District heating systems, which distribute heat from a centralized plant to buildings through insulated pipes, offer significant energy efficiency improvements by utilizing excess heat from large businesses and renewable energy plants.[2] Although some heat is lost in transport, this can be mitigated, making district heating a cost-effective alternative to gas or oil heating.

For example, PyDHN has been used by RWB Fribourg to improve and plan heating networks for Satom SA in Monthey, Altis in Verbier, and Oiken in Sion. The tool has played a key role in refining system designs and ensuring efficient energy use.

The Eguzki project, focused on developing innovative solutions for district heating networks, developed PyDHN, a Python library for AI-driven simulation of District Heating Networks, under the leadership of Jérôme Kämpf. PyDHN is designed to accurately simulate heat loss in district heating systems, taking into account factors such as energy usage, system layouts and weather. This helps users predict system performance in real-world scenarios and optimize their designs.

PyDHN is designed to be flexible and easy to use, allowing engineers and researchers to quickly integrate it into their projects without extensive coding. Individual parts of the library can also be used for other applications, such as simulating geothermal wells. Its modular design also allows it to be used as a plugin for other tools, like the Eguzki simulation tool[3].

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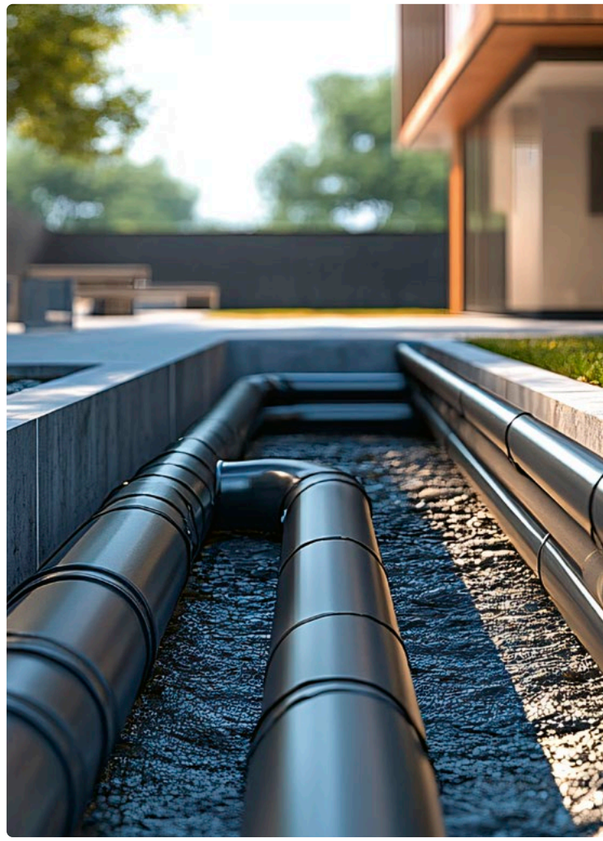
Swiss Federal Office of Energy SFOE

The Idiap team is also exploring how machine learning can further accelerate simulations and improve accuracy. Their approach, tested on a real network, matches simulation methods in over 90% of cases while being significantly faster. This represents a major improvement and paves the way for more efficient and responsive district heating systems.

Ultimately, such advancements support the transition to a more sustainable and resilient society.

Patrick Dewarrat, Energy Division Head, RWB Fribourg SA stated:

"RWB has been collaborating with Idiap for several years, in particular for the Eguzki project where advanced research and development expertise is required. These are services that a renowned firm like RWB could not have in-house. Therefore, without Idiap, RWB would not have been able to develop the Eguzki tool. This tool has been in use for over a year with satisfaction, both internally at RWB and with energy contractor clients. The world of data processing is becoming increasingly complex. As a result, it is essential for companies and engineering firms to have access to a competence center such as Idiap to create the tools that businesses need to perform today and, most importantly, tomorrow."



Related resources

Software: https://github.com/idiap/pydhn

Boghetti, R., & Kämpf, J. (2024). Verification of an open-source Python library for the simulation of district heating networks with complex topologies. *Energy, 290*, 120383.

1. https://www.bafu.admin.ch/bafu/en/home/topics/climate/info-specialists/emission-reduction/reduction-targets/2050-target/climate-strategy-2050.html
2. https://www.bfe.admin.ch/bfe/en/home/supply/energy-efficiency/district-heat.html
3. https://www.eguzki.ch/

AI for Humanitarian Aid

Around 4% of the global population requires humanitarian aid, with the need most pronounced in regions like West and Central Africa, the Middle East and North Africa, Asia and the Pacific, and Latin America and the Caribbean. The conflict between Russia and Ukraine and the challenges in East and Southern Africa have further exacerbated these needs.[1]

Despite the urgency and scale of these needs, the humanitarian aid system faces significant obstacles, such as fraud. In particular, instances of individuals falsely claiming multiple benefits by registering multiple times under different identities, undermine the fair and effective distribution of aid. These challenges not only divert resources from those most in need but also erode trust in the system. To combat these issues and ensure aid reaches its intended recipients, Idiap is collaborating with the International Committee of the Red Cross (ICRC), leveraging its expertise in biometrics to develop innovative solutions.

The study, led by Vedrana Krivokuca Hahn, aims to create a central system that uses biometric data such as face identification, to ensure each beneficiary is enrolled only once, enhancing the efficiency and equity of aid programs. Despite its advantages, such a system poses a significant risk: the creation of a single point of attack. People receiving humanitarian aid have to share personal biometric information to get the help they need, which makes the privacy issues of these systems even more important.

The PRiMeAiD project, supported by Innosuisse, aims to explore whether a centralized biometric identification system can be designed using Biometric Template Protection algorithms.

These algorithms safeguard biometric data by transforming it into an encoded format, reducing the risks associated with centralization. The goal is to develop a face identification system that not only protects privacy but also minimizes duplicate entries, therefore improving aid distribution efficiency while adhering to privacy-by-design principles.

The project's unique nature is highlighted by three key factors. Firstly, biometric template protection has largely been confined to academic research, with few real-world implementations. Secondly, while most biometrics template protection methods are designed for verification (1-to-1 comparisons), humanitarian programs require identification (1-to-many comparisons), which PRiMeAiD specifically addresses. Finally, the project will improve the application of a standardized biometric template method. This will help create a rigorous framework for evaluating the accuracy and effectiveness of this method.

Innovation project supported by

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Innosuisse – Swiss Innovation Agency

ICRC

1. https://www.unocha.org/publications/report/world/global-humanitarian-overview-2024-enarfres

If successful, this initiative could set a new standard for protecting privacy when using biometric technologies and serve as a model for other aid programs around the world, ensuring both ethical and effective aid distribution.

Vincent Graf Narbel, Head of the Data Protection Office Tech Hub, Office of the Director-General, International Committee of the Red Cross (ICRC) stated:

"For several years now, we have been proud to collaborate with Idiap, a recognized leader in biometric security and privacy, to develop more secure biometric template protection. Idiap's unique capabilities are invaluable in addressing the critical needs of the ICRC and the broader humanitarian sector."

AI FOR LIFE

Optimizing Cancer Treatments

Cancer is the second biggest cause of death globally, with around 10 million deaths annually.[1] Technology and medicine are converging to improve cancer treatment. The goal is to streamline the entire cancer care process, from diagnosis to treatment, making it more efficient and effective to achieve the promise of precision cancer medicine.

Treating cancer effectively requires oncologists to understand each patient's unique tumor and the best-targeted therapies. Cancer is incredibly complex, with constantly changing genetics and interactions with the immune system. To develop new and better treatments, it is necessary to improve the collection and analysis of patient data.

In this paradigm, technology and AI do not replace the expertise of clinicians – they augment it.

From the extraction of predictive insights to the continuous learning from clinical trial outcomes, the cancer discovery pathway evolves into a more agile, evidence-driven and effective system, offering new hope for those who need it most.

One of the key challenges is the development of models and systems that can support oncology experts in making sense of the growing available evidence in patient records, clinical trial reports and datasets and the scientific literature. Emerging AI tools are helping oncologists discover new patterns and insights in patient data, leading to more effective cancer treatments.

André Freitas and his team, working closely with the Cancer Research UK (CRUK) National Biomarker Centre and leading European oncology centers, are developing AI tools to help oncologists find better treatments for patients.

This research focuses on improving process challenges in experimental cancer medicine, such as providing the latest evidence situated within a patient case, improving the matching of patients to available clinical trials, predicting severe adverse events and streamlining the management of clinical trials. In these examples, natural language processing-based methods using large language models (LLMs) help analyze a considerable amount of data, enabling a positive impact on patients' lives.

Moreover, in partnership with the CRUK National Biomarker Centre (UK), the Karolinska Institutet (Sweden) and the Vall d'Hebron Institute of Oncology (Spain) the team developed new AI-based methods for supporting the discovery of predictive biomarkers, which can improve the delivery of personalized cancer therapies.

By leveraging AI-driven tools to streamline processes and deliver personalized insights, Andre's study paves the way for more precise, efficient and impactful healthcare solutions.

CANCER RESEARCH UK | National Biomarker Centre

1. https://ourworldindata.org/grapher/leading-cause-of-death

Related resources

Jullien, M., Valentino, M., & Freitas, A. (2024). SemEval-2024 Task 2: Safe biomedical natural language inference for clinical trials. In *Proceedings of the 18th International Workshop on Semantic Evaluation* (SemEval-2024), Mexico City, Mexico.

Wysocki, O., Wysocka, M., Carvalho, D., Bogatu, A., Gusicuma, D., Delmas, M., Unsworth, H., & Freitas, A. (2024). An LLM-based knowledge synthesis and scientific reasoning framework for biomedical discovery. In *Proceedings of the 62nd Annual Meeting of the Association for Computational Linguistics* (ACL 2024), Bangkok, Thailand.

AI FOR LIFE

Improving Tuberculosis Detection

In 2024, approximately 10.8 million people worldwide contracted tuberculosis (TB). Tuberculosis affects individuals across all countries and age groups. In the same year, around 1.25 million people died from tuberculosis, making it the second leading causes of death globally from a single infectious agent after COVID-19.[1]

Computer-aided detection (CAD) is transforming how chest radiography is interpreted, offering rapid and reliable tools to detect tuberculosis. With high sensitivity, CAD can support both individuals showing tuberculosis symptoms and population-wide screenings. Yet its effectiveness varies across different diagnostic settings and populations, making standardization more difficult. Moreover, CAD has not been validated for diagnosing tuberculosis in children, and its ability to identify other chest abnormalities remains unknown. Chest radiography has been a cornerstone in diagnosing and monitoring tuberculosis, traditionally relying on the expertise of skilled radiologists, an asset often missing in under-resourced areas, where it is needed most.[2]

Current AI models still present some limitations such as biases in training data and unclear decision-making processes.

To address this challenge André Anjos, together with researchers from the University of Zurich, introduced a new approach using deep neural networks. After training their AI model on a large, general dataset to recognize broad X-ray patterns, they fine-tuned it with tuberculosis specific data to ensure it worked across diverse data, avoiding overfitting to specific presentations of the disease. To make the AI model behave more like a skilled clinician, the team used saliency maps, which highlight the parts of the X-ray the fine-tuned AI model focuses on for the analysis. These saliency maps help ensure the AI focuses on critical areas, recognizable by experts, rather than irrelevant parts of the image.

The use of AI represents a significant step forward in the future of TB diagnosis, offering enhanced reliability, interpretability and potential for real-world implementation.

This research presents AI's potential to drive continuous advancements in healthcare, ultimately enhancing quality of life for all.

1. https://www.who.int/news-room/fact-sheets/detail/tuberculosis
2. Geric, C., Qin, Z. Z., Denkinger, C. M., Kik, S. V., Marais, B., Anjos, A., David, P.-M., Ahmad Khan, F., & Trajman, A. (2023). The rise of artificial intelligence reading of chest X-rays for enhanced TB diagnosis and elimination. *The International Journal of Tuberculosis and Lung Disease,* 27(5), 367–372.

Universität Zürich[UZH]

Related resources

Open source code for Pulmonary Tuberculosis detection: https://medai.pages.idiap.ch/software/paper/euvip24-refine-cad-tb/

Güler, Ö., Günther, M., & Anjos, A. (2024). Refining tuberculosis detection in CXR imaging: Addressing bias in deep neural networks via interpretability. In *Proceedings of the 12th European Workshop on Visual Information Processing,* Geneva, Switzerland.

Scientists Spotlight

Paola Merlo joins as Senior Research Scientist

With a rich academic background built in the United States and experience at the University of Geneva, Paola joined Idiap's team in the spring of 2024.

Together with her research group, she studies Computational Learning and Computational Linguistics. In recognition of her work, she was awarded a Swiss National Science Foundation (SNSF) Advanced Grant in 2022.

At Idiap, Paola leads a team specialized in natural language processing (NLP), with a particular focus on the potential of large language models (LLMs). Her team designs tasks to evaluate LLMs' linguistic and reasoning capabilities, while also developing multilingual datasets to understand the complexities of their internal representations.

Paola's work goes beyond technology. She collaborates with cognitive scientists to investigate how humans approach similar linguistic challenges, bridging the worlds of machine learning and human cognition.

She epxlains that she chose Idiap because the Institute

"supports interdisciplinarity very well".

The three words she associates with Idiap are **"transparent"**, **"friendly"**, and **"stimulating"**.

Paola joins the senior research scientists at Idiap contributing to the Human-AI Teaming research program.

Discover the full interview on YouTube

Jean-Marc Odobez: #AIforSociety

Jean-Marc is a Senior Research Scientist with over 23 years of contributions. He leads the Perception and Activity Understanding group, where his research focuses on leveraging advanced machine learning and computer vision techniques to analyze human activities, behaviors and social interactions from multi-modal data, such as video and audio.

With an extensive publication and project portfolio, Jean-Marc co-founded two Idiap spin-offs: Klewel SA that specializes in webcasting, recording and storing online events; and Eyeware SA that focuses on eye tracking and attention modeling. He also enjoys working on numerous technology transfer projects with industry partners and SMEs, as these collaborations allow him to discover new problems and challenges. When asked about his motivations for joining and pursuing a career at Idiap, he cites the institute's supportive and collaborative environment, which he describes as family-like.

"What motivated me to join Idiap – and what I truly enjoyed later – was that the institute felt like a family. Everyone knew each other and was familiar with their work. People were engaged in advanced research topics related to machine learning, using similar tools applied across different modalities. It was a truly stimulating atmosphere."

Since joining Idiap, Jean-Marc has contributed significantly to projects focused on understanding human behavior, with a particular emphasis on research involving individual tracking, non-verbal communication (including speaking turns, head pose, attention and gestures), and the interplay between these cues. His expertise spans research programs and domains, including smart environments, surveillance and human-robot interaction, aligning with the values of interdisciplinary research fostered at Idiap.

With the growth of the institute, Jean-Marc acknowledges that it is no longer possible to know everyone personally, especially given the demands of busy schedules. However, he firmly believes that Idiap continues to foster a sense of excellence, where friendly and stimulating exchanges remain a defining characteristic of the environment.

Vita Akstinaite: Bridging Disciplines

Vita earned her PhD from the University of Surrey (England) in 2018, focusing on the use of machine learning to identify linguistic markers of hubris[1]. She worked in London's IT industry as a Business Intelligence Program Manager and then joined Murdoch University in Western Australia, followed by a Fulbright research scholarship at Columbia University in New York. Eventually, she returned to her home country of Lithuania, where she currently serves as Vice-Rector for Research and Faculty at ISM University of Management and Economics. She is responsible for two academic programs focused on leadership and communication.

Vita is currently undertaking a Marie Skłodowska-Curie Global Fellowship at Idiap, a program designed to provide researchers at all career stages with opportunities for international mobility, interdisciplinary training and engagement with diverse sectors to enhance their skills. Over the past few years, her research has shifted to the intersection of leadership and artificial intelligence, blending social sciences with computer science. The Marie Skłodowska-Curie fellowship is designed precisely for such cross-disciplinary work. In fact, at Idiap, she has been exploring different research programs to learn the most from diverse expertise and research scientists.

When considering institutions for the final phase of her fellowship, she looked for a technical institute fostering interdisciplinary collaboration. Idiap emerged as the perfect fit, aligning with her vision of AI for societal impact. Vita says:

"Idiap stands out for its expertise and vibrant research community. It offers a collaborative environment where passionate experts come together, fostering innovation and interdisciplinary research."

Vita appreciates the Institute's openness to collaboration and the wealth of learning opportunities available. Her advice to those considering joining is straightforward: don't wait too long.

"Reach out to researchers working in your field of interest and explore potential collaborations. If your research aligns with Idiap's focus, it's an excellent place to start."

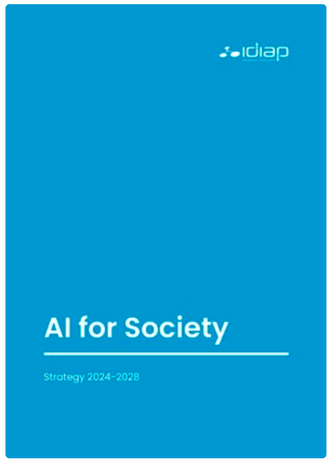
1. A way of talking or behaving that is excessively proud. https://dictionary.cambridge.org/dictionary/english/hubris

Selected Awards

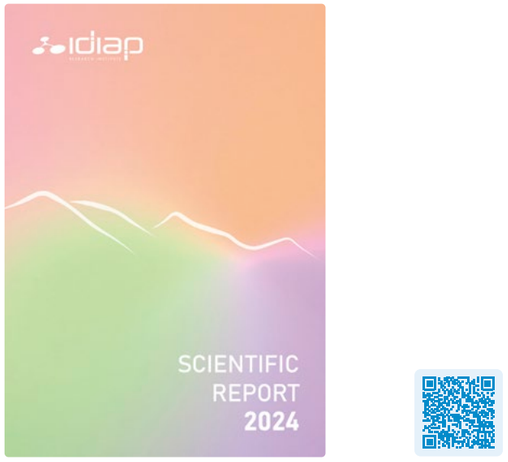
These selected awards recognize our researchers' contributions to AI, presented at leading international conferences.

Verification and Refinement of Natural Language Explanations through LLM-Symbolic Theorem Proving	X. Quan, M. Valentino, L. A. Dennis & A. Freitas	Outstanding Paper Award at Conference on Empirical Methods in Natural Language Processing (EMNLP).
Tensor Train for Global Optimization Problems in Robotics	S. Shetty, T. Lembono, T. Löw & S. Calinon	Best Paper Award, IEEE Robotics and Automation Society (RAS) Technical Committee on Model-based Optimization for Robotics.
Exploring the Zero-Shot Capabilities of Vision-Language Models for Improving Gaze Followi	A. Gupta, P. Vuillecard, A. Farkhondeh & J-M. Odobez	Best Paper Award, 6th International Workshop on Gaze Estimation and Prediction in the Wild (GAZE 2024) at Computer Vision and Pattern Recognition Conference (CVPR).
ZooPFL: Exploring Black-Box Foundation Models for Personalized Federated Learning	W. Lu, H. Yu, J. Wang, D. Teney, H. Wang, Y. Chen, Q. Yang, X . Xie & X. Ji	Outstanding Contribution Award, International Workshop on Federated Foundation Models (NeurIPS 2024).
Learning about Social Context from Smartphone Data: Generalization across Countries and Daily Life Moments	A. Maeder, L. Meegahapola & D. Gatica-Perez	Special Recognition for Sustainable Practices, ACM Conference on Human Factors in Computing Systems (CHI).
A Unified Model for Gaze Following and Social Gaze Prediction	A. Gupta, S. Tafasca, N. Chutisilp & J-M. Odobez	Best Student Paper Award, 18th International Conference on Automatic Face and Gesture Recognition (FG).

Our Strategy and Scientific Report



Learn more about our Strategy for the period 2024-2028, leveraging our research programs, centers and three interrelated domains: Research Innovation and Education.



Explore selected research highlights from 2024 across our four research programs. From advancements in Parkinson's detection and cancer treatment pathways to analyzing human behavior through gaze and addressing cultural diversity in LLMs, this report covers this and much more. The report starts with fundamental AI research highlights that support all research programs.

Idiap Research Programs are driven by global challenges and Switzerland's societal and industrial needs. Aiming at high impact, and aligned with the UN Sustainable Development Goals (SDGs), they are the focus of the Institute's multidisciplinary expertise.

Idiap research programs contribute to the following UN SDGs:

Advisory Board Visit
5-6 September 2024

Finances

Balance sheet (CHF)

ASSETS	31.12.2024	31.12.2023
Cash	3 483 524	3 505 422
Accounts receivable	1 446 159	1 449 792
Accrued income and other	1 797 270	1 835 318
Total current assets	**6 726 953**	**6 790 531**
Equipment	744 537	736 651
Other assets	1 130 861	1 119 401
Patents and licenses	9	9
Financial assets	10 000	10 000
Total non-current assets	**1 885 407**	**1 866 061**
TOTAL ASSETS	**8 612 360**	**8 656 593**

LIABILITIES	31.12.2024	31.12.2023
Accounts payable	66 156	139 998
Accrued expenses	4 959 604	4 520 169
Provisions	0	173 500
Total foreign funds	**5 025 760**	**4 833 667**
Share capital	40 000	40 000
Research funds reserve	1 462 953	1 554 478
Special reserve	1 650 000	1 800 000
Retained earnings	428 447	415 165
Net income	5 200	13 282
Total own funds	**3 586 600**	**3 822 925**
TOTAL LIABILITIES	**8 612 360**	**8 656 593**

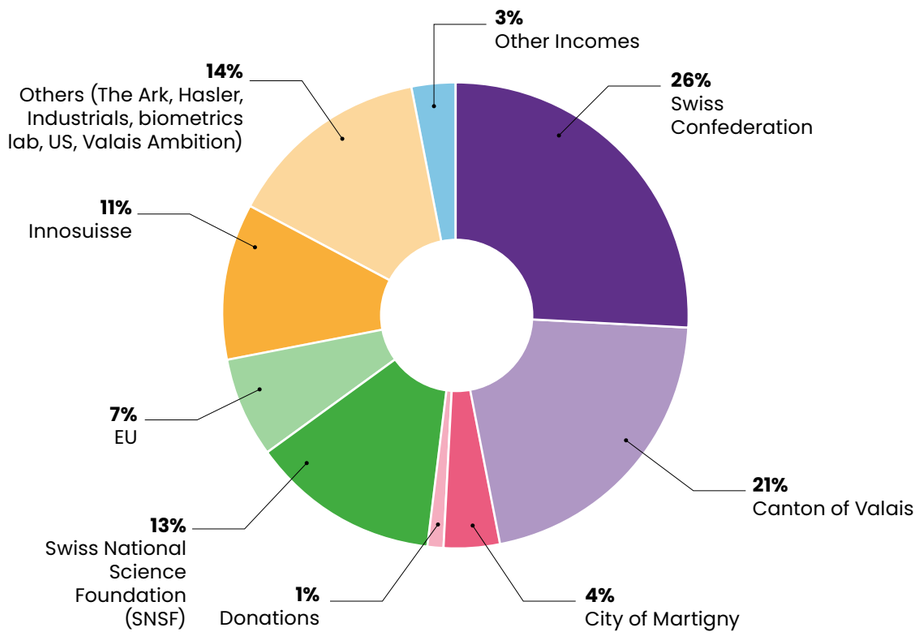
Profit and loss statement (CHF)

INCOME	2024	2023
Swiss Confederation Art. 15	4 342 800	4 060 300
Canton of Valais	4 059 146	3 491 388
City of Martigny	502 311	753 466
Third-party contributions	**8 904 257**	**8 305 154**
Donations	96 250	238 750
Donations	**96 250**	**238 750**
Swiss National Science Foundation	2 286 602	1 757 747
EU	1 098 063	1 404 303
Innosuisse	1 941 566	1 019 203
Others (The Ark, Hasler, industrials, biometrics lab, US, Valais Ambition)	2 310 215	3 070 676
Project funding	**7 636 445**	**7 251 928**
Subletting	115 850	119 072
Other incomes	178 358	208 681
Value created from research	84 452	42 159
Other incomes	**378 660**	**369 912**
TOTAL INCOME	**17 015 612**	**16 165 744**

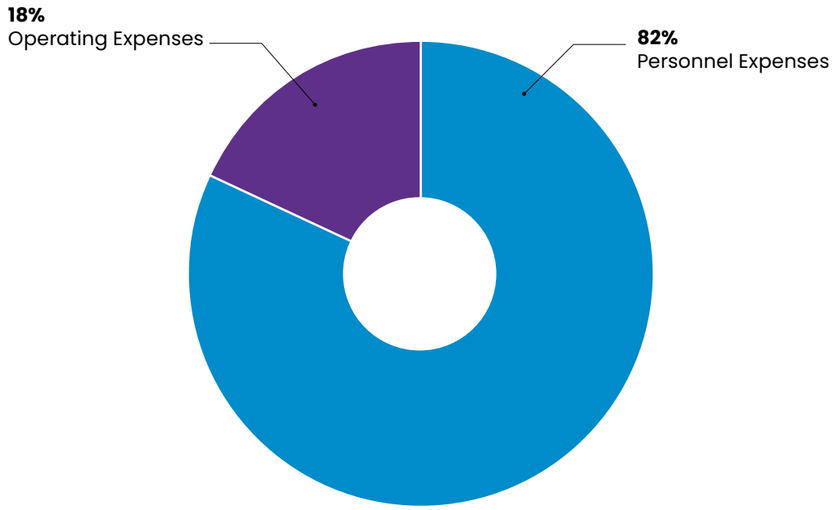
CHARGES	2024	2023
Personnel (incl. social deductions)	14 142 781	12 871 588
Operational costs	3 017 632	3 180 874
Allocation to operating reserves	0	100 000
Dissolution of reserves	-150 000	0
Total expenditures	**17 010 413**	**16 152 462**
OPERATING PROFIT/LOSS	**5 200**	**13 282**

Figures at a glance

Distribution of funding sources



Distribution of costs



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