



RESEARCH &
DEVELOPMENT



Reaching powering progress.

Range of services

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Research & development at a glance

Since 2003, the University of Applied Sciences Upper Austria has taken an innovative approach to applied research and development in ten Centers of Excellence and Focal Areas. Today, the University of Applied Sciences Upper Austria is in an outstanding position in the field of research and development. In 2023, around 260 professors and 234 full-time employees were responsible for €23,7 million in R&D turnover. In addition, ten members of the research staff completed their dissertations and two were awarded a habilitation degree in 2023. This ensures that practical, high-level research and development with a clear orientation towards economic and social needs will continue. The University of Applied Sciences Upper Austria is not only the clear leader among Austria's universities of applied sciences but also one of the most research-intensive universities of applied sciences in the German-speaking world!

For all R&D-related news of the University of Applied Sciences Upper Austria please see our website at forschung.fh-ooe.at.

€51 million

in research agreements

597

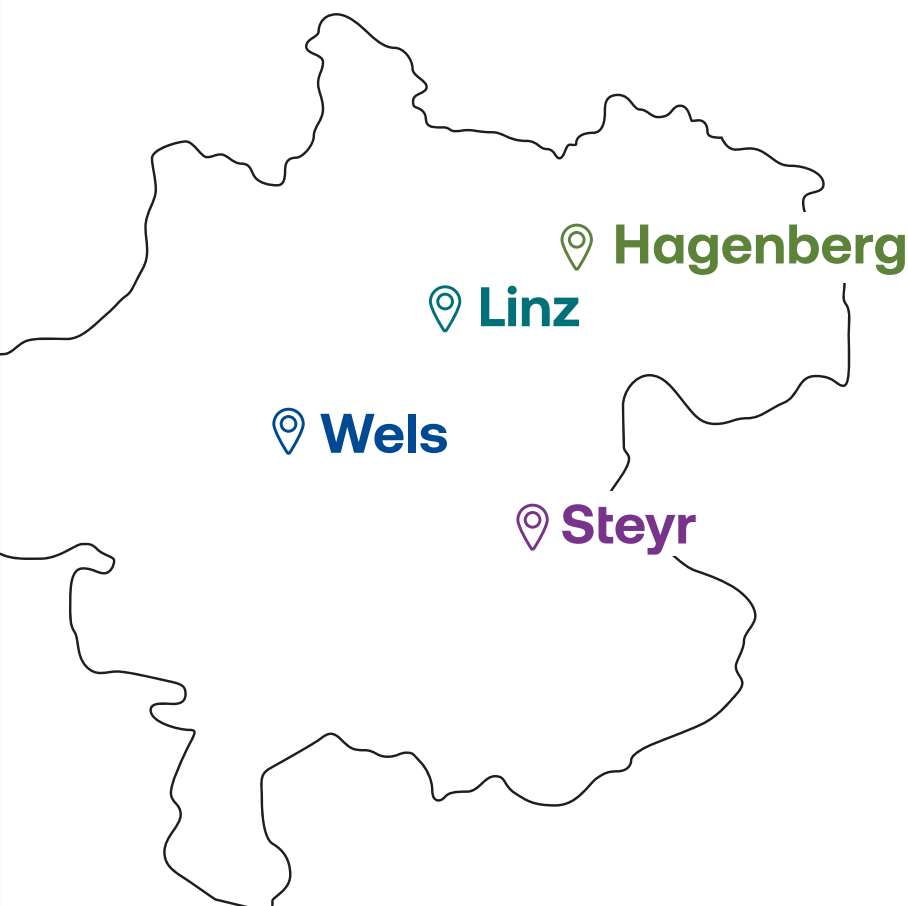
scientific publication
(10 dissertations | 2 habilitation)

+ 6.3%

R&D turnover (in total)
compared to the previous year

10

Centers of Excellence
and focus areas



 **Hagenberg**

 **Linz**

 **Wels**

 **Steyr**

Hagenberg Campus

School of Informatics,
Communications and Media

Linz Campus

School of Medical Engineering and
Applied Social Sciences

Steyr Campus

School of Business and Management

Wels Campus

School of Engineering

On the road to success with R&D!



Thomas Stelzer
State governor of Upper Austria

Research and development is particularly important for our economy and society. Businesses must innovate and be creative in order to remain competitive at an international level. Only innovative processes, products and services can secure existing jobs and create new ones. The University of Applied Sciences Upper Austria is a strong and flexible partner, ready to effectively master the challenges of the future.



Markus Achleitner
Minister of economy and research of Upper Austria

With its strategic economic and research program #upperVISION2030, the State of Upper Austria has adopted specific measures and priorities in order to continue Upper Austria's success as an industrial, export and technology region. In doing so, we deliberately rely on the proven innovative strength of the University of Applied Sciences Upper Austria and support its activities in research and development, which continue to provide Upper Austria with cutting-edge, innovative know-how.



Gerald Reisinger
President University of Applied Sciences Upper Austria

Since teaching and research form an inseparable unit, it is in the interest of the University of Applied Sciences Upper Austria to conduct qualified research and development. Our researchers are dedicated to the most important subject areas of the 21st century and provide our students with the latest know-how. The application-oriented research area of the University of Applied Sciences Upper Austria is also strongly oriented towards the needs of local industry and society and thus makes a significant contribution to the implementation of the #upperVISION2030 strategy of the state of Upper Austria.



Johann Kastner
Executive Vice-President for research and development

Applied research has the potential to reveal solutions to recent economic and social challenges. Future-proof and sustainable development requires, above all, investments in new knowledge and young researchers. To this end, the University of Applied Sciences Upper Austria will focus its R&D on establishing new areas of focus and expanding existing competencies until 2030, particularly in the subject areas of the European Green Deal and digitalization.

Progress through innovation

Customized R&D solutions

International recognition and a hands-on academic education are the factors that distinguish a university of applied sciences as an educational institution. Qualified graduates from a university of applied sciences strengthen business activities through their outstanding performance.

With **more than 70 degree programs** at the **four schools** in Hagenberg, Linz, Steyr and Wels, and about **5,500 students** enrolled in the academic year 2023/2024, the University of Applied Sciences Upper Austria has become a driving force in education and research in the State of Upper Austria.

Moreover, the University of Applied Sciences Upper Austria focuses its R&D activities on achieving innovative results that benefit industry and society. The University of Applied Sciences Upper Austria's research and development programs converge in the FH OÖ Forschungs & Entwicklungs GmbH, which was specifically founded to coordinate research projects.

Innovative solutions for industry & society

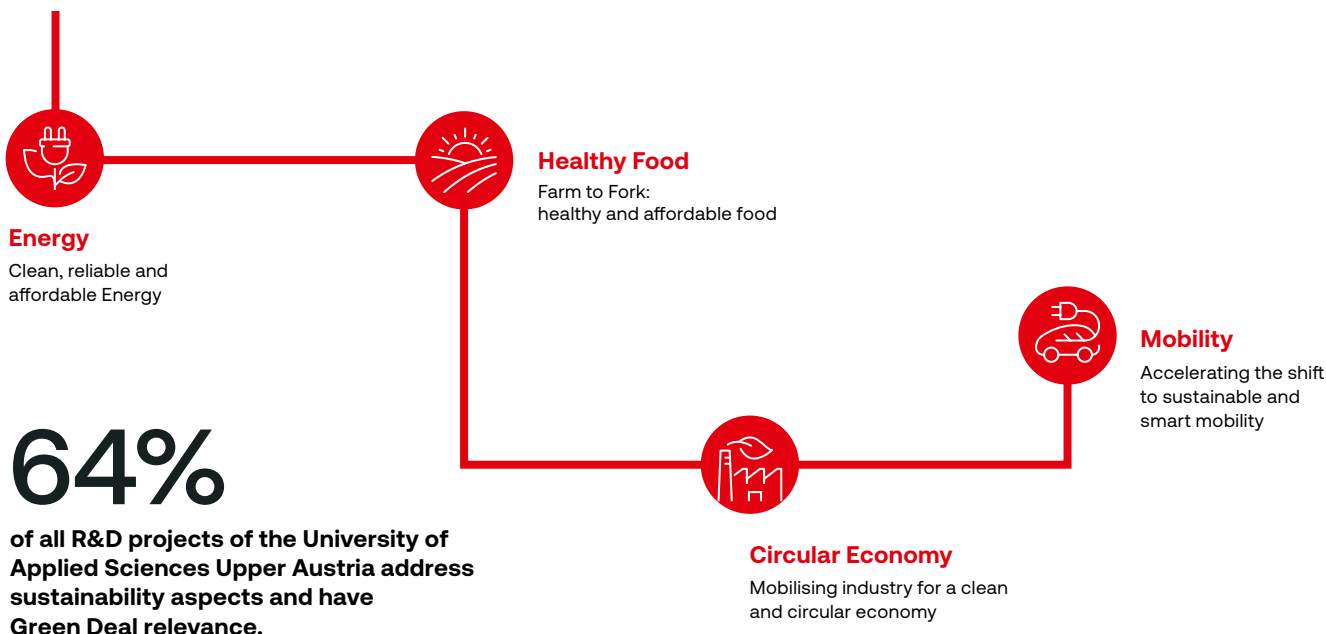
In close coordination with the areas of competence in teaching, a total of ten Centers of Excellence and research Focal Areas have been established within the framework of the degree programs offered at the four schools.

Aspects of the European Green Deal and digitalization are addressed in a future-oriented manner in all 10 Centers of Excellence and Focal Areas.

10 Centers of Excellence

- Food Technology & Nutrition
- Medical Engineering/TIMed CENTER
- Smart Production
- Energy
- Automotive & Mobility
- Logistics
- Materials
- ICT - Information & Communications Technology
- Digitale Transformation
- Societal & Social Innovation

We are particularly strong in these European Green Deal areas:



Strategic research partnerships

The University of Applied Sciences Upper Austria is a fixture of the Upper Austrian research landscape and cooperates closely with industry and academic institutions. In order to manage this collaboration strategically and efficiently, the University of Applied Sciences Upper Austria is a shareholder in the following initiatives:

Digitrans GmbH

Test region Austria-North for automated driving with a focus on freight mobility and logistics

DigiTrans aims to develop a test region for automated and networked driving in north-central Austria, taking into account the requirements of industry and infrastructure managers and focusing on user- and impact-driven implementation within a sustainable operating model.

DIH Arbeitswelt GmbH

Digital Innovation Hub ARBEITSWELT KMU (DIH.work)

The aim of DIH.work is to collaborate with SMEs to create sustainable working environments in a digital society.

FFoQSI GmbH

K1 Competence Centre for Food Research

The Austrian Competence Centre for Feed and Food Quality, Safety and Innovation—FFoQSI for short—is the first COMET Competence Centre to safeguard feed and food production. Research is concentrated in preharvest and postharvest solutions of the research programme on selected topics along the value chain of plant-based feed and food as well as foodstuffs of animal origin. Area 3 involves strategic research and is an innovation platform for smart technologies.



Logistikum Schweiz GmbH

Logistik and supply chain management

Logistikum Schweiz develops optimal and sustainable logistics solutions for the future. It promotes the ability to innovate in the area of purchasing, logistics and supply chain management and thus contributes to the design of competitive, regional and international logistics and value creation networks.

TCKT

Transfercenter für Kunststofftechnik GmbH

TCKT stands for application-oriented research and development in all areas of plastics engineering. TCKT develops solutions to diverse challenges within the scope of research projects. However, its range of services is also available on a contract basis, whether for individual material tests or longer-term studies. Since May 2022 the University of Applied Sciences Upper Austria owns 100% of the shares.

tech2b Inkubator GmbH

tech2b supports, guides and accelerates the development of innovative technology-oriented, knowledge-intensive and design-oriented start-ups. Admission to the tech2b support program (AplusB) opens the way to developing business ideas in a structured and targeted manner and implementing them in the marketplace.

Centers of Excellence

Smart Production

As products, machines and processes can be 'intelligently' connected through the Internet, things and services have the ability to communicate with each other. Therefore, the primary goal of the Center of Excellence for Smart Production is to research on different models to make optimal use of distributed intelligence. In addition, the development of innovative data analysis, modeling, simulation, and optimization approaches is important to enable holistic improvements. New application areas for 3D printing/rapid prototyping, especially based on metal components, are being explored, as well as data-driven business models.

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Energy

Research is focused on industrial production processes and systems engineering as well as management, simulation and optimisation of (renewable) energy technologies. Work is being done on topics such as decentralized energy systems, resilient energy grids, load management and integration of thermal and electrical energy storage. In the bioenergy sector, researchers are addressing the development of production processes of advanced biofuels (bioethanol from straw) and the optimisation of biogas processes.

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Automotive I Mobility

The University of Applied Sciences Upper Austria is pursuing an interdisciplinary and holistic approach in the automotive and mobility sector that aims to achieve more efficient, safer and user-friendlier as well as more socially and environmentally compatible transport of people and goods. Topics such as automotive engineering, new drive and vehicle technologies, vehicle communication, lightweight design and new composite materials are being explored intensively.

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Medical Engineering/ TIMed CENTER

Researchers at the TIMed CENTER focus their scientific work on biomedical data analysis, biomimetics and materials development, biomedical sensors, high-resolution imaging, medical simulators and drug characterisation. In order to develop interdisciplinary, technical solutions for problems in the field of medicine with its cooperation partners, the TIMed CENTER combines the strengths of the four University of Applied Sciences Upper Austria campuses in Hagenberg, Linz, Steyr and Wels at the interface between technology and medicine. The Center's Core Facilities make shared resources available in order to facilitate collaboration.

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Food Technology I Nutrition

The Center of Excellence Food Technology and Nutrition focuses on bioactive compounds and the formulation of functional food and feed products. Therefore, various in vitro and in vivo test systems are implemented to unravel the mode of action of the compounds on a molecular and cellular level. Another topic is food quality control through various measuring procedures.

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Logistics

LOGISTICS = FUTURE SECURITY. Dealing with future issues and identifying current trends by means of logistics expertise and technology creates security. Methods for pattern recognition in value networks, systemic risk assessment in real time, emission calculations and circular economy through the digital transformation of trade in the 21st century are an excerpt from the portfolio of the CoE Logistics. One thing is certain = CoE Logistics creates future security.

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#upperVISION2030
Wirtschafts- & Forschungsstrategie OÖ



Facts & figures 2023

Key financial figures 2023

The FH OÖ Forschungs & Entwicklungs GmbH is not just active on a national level but also 'exports' its research know-how worldwide:

Regional Breakdown 2023:

15.2%

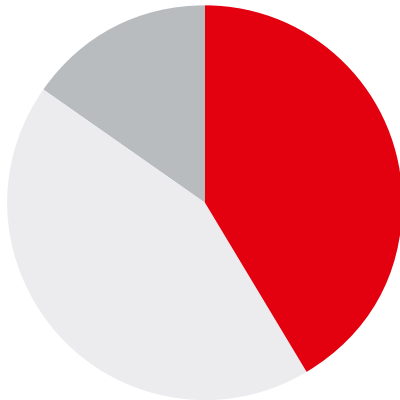
● EU and worldwide

43.2%

● Austria (without Upper Austria)

41.6%

● Upper Austria

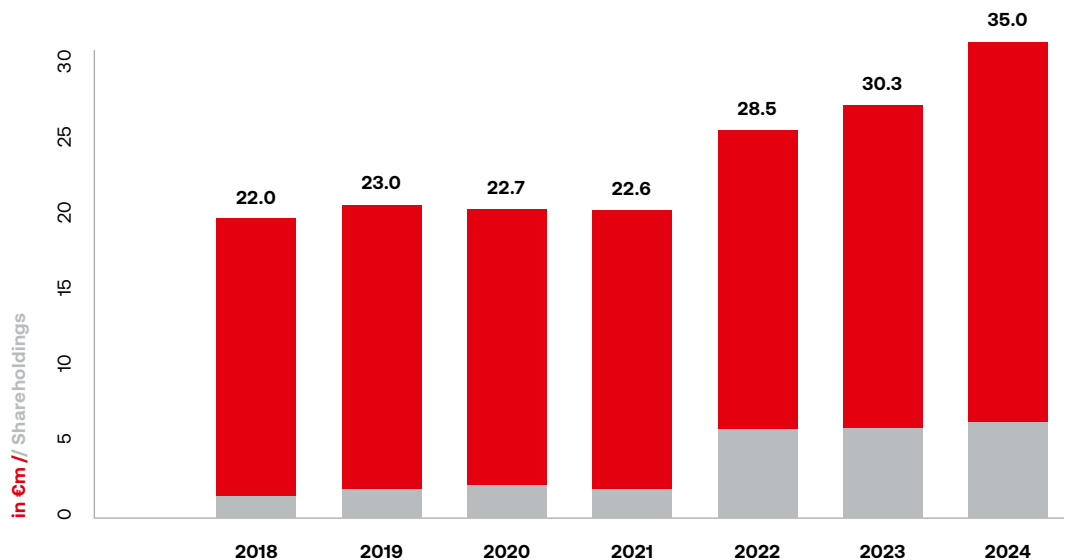


In 2023, the State of Upper Austria supported the University of Applied Sciences Upper Austria's R&D activities with €1.38 million, providing the basis for applied and practical research and development. Numerous other projects were realized with the State of Upper Austria's support as well.

A total of 565 projects were concluded in 2022. Moreover, 123 new, mostly multi-year projects with a total volume of €31.7 million were acquired. More than 600 partners from industry and society cooperated with the University of Applied Sciences Upper Austria in research and development. Approximately 60% of all business partners are small and medium-sized enterprises.

30.3 Mio. €

turnover growth, 2023
thereof 6.6 million in R&D
participations



Scientific output

- Publications in 2023: **597**
- Conference presentations and scientific publications: **276**
- Books: **72**
- Articles in scientific journals: **216**
- Other publications: **24**
- Patents: **9**
- Dissertations: **10**
- Habilitations: **2**

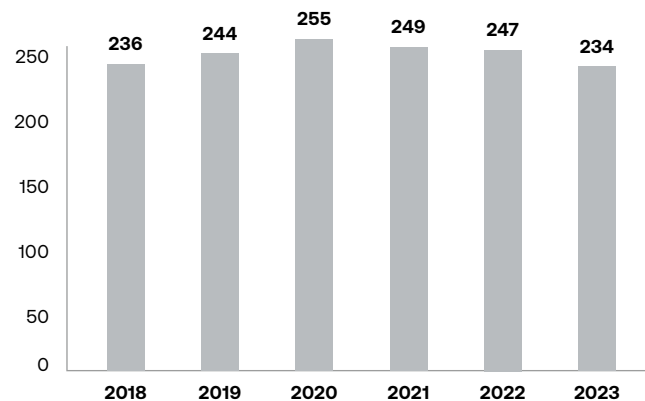
The publication of research results is of great importance for the further development of R&D at the University of Applied Sciences Upper Austria. Unless subject to non-disclosure agreements, research results are presented at national and international conferences as well as in relevant journals. In 2023, a total number of 597 publications appeared in international journals or were presented at scientific conferences, including conference papers, books and journal articles. The support of dissertations and habilitation degrees (a postdoctoral qualification) in cooperation with university partners, such as the Johannes Kepler University Linz or the TU Wien, is a primary aim of the University of Applied Sciences Upper Austria. In 2023, ten employees completed their dissertations and two received a habilitation degree.

R&D turnover of the University of Applied Sciences Upper Austria

Success is also reflected in R&D turnover growth, which is expected to reach €35 million in 2024. The grey bars represent the consolidated turnover of the University of Applied Sciences Upper Austria's shareholdings.

R&D staff

R&D staff members carry out research and development projects together with the University of Applied Sciences Upper Austria's approximately 260 professors. The University of Applied Sciences Upper Austria has seen a steady increase in research staff with the number of full-time equivalents (annual average) rising from 182 in 2015 to 234 in 2023.



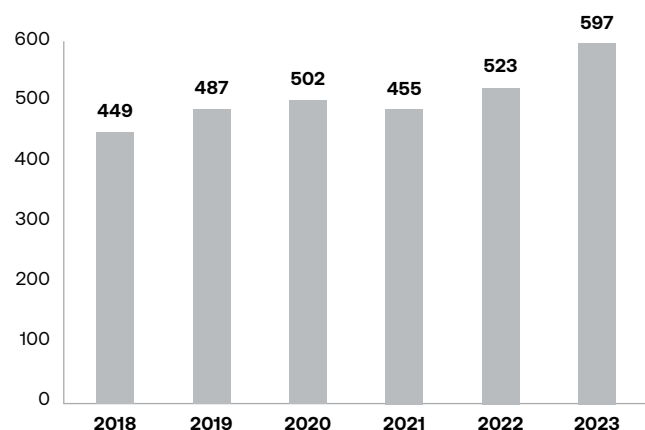
Scientific work

In 2013 researchers published 403 articles in journals, conference proceedings, books and reports. By 2023 this figure had increased to 597. In 2018 the State of Upper Austria and the Austrian Research Promotion Agency jointly launched the University of Applied Sciences Upper Austria's dissertation program to support excellent junior researchers in the implementation of their dissertation projects.

597

scientific publication
(10 dissertations | 2 habilitation)

Number of scientific publications



R&D projects 2023

64%

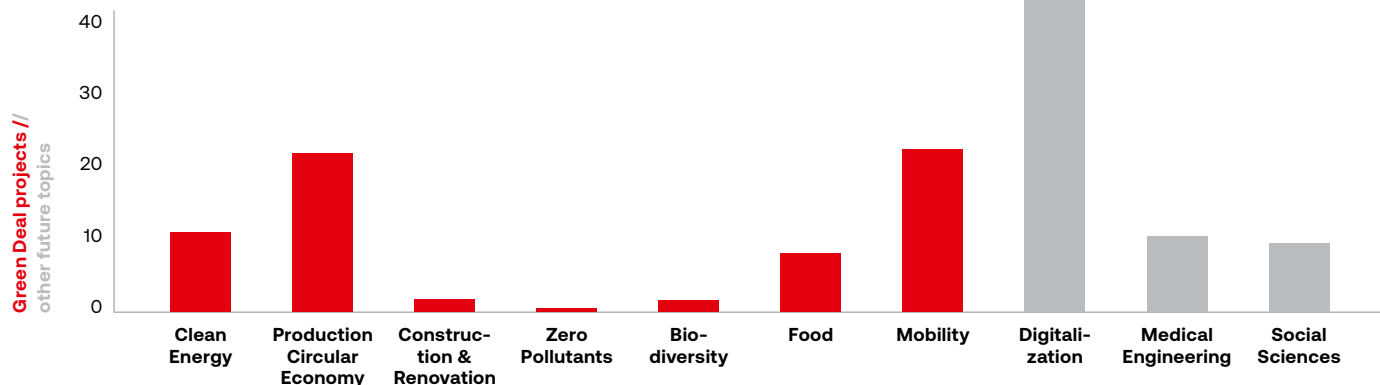
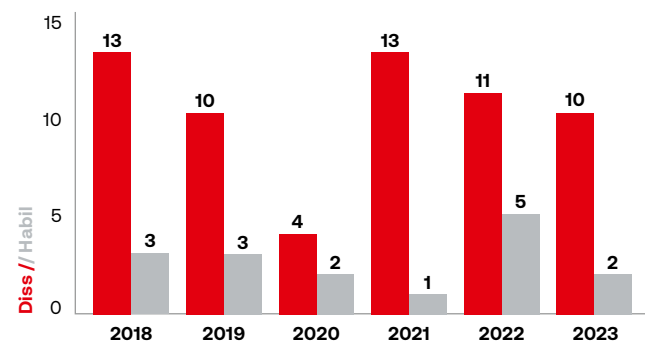
Green Deal

43%

Digitalization

The graph shows the amount of current research projects on future topics and with Green Deal relevance at the University of Applied Sciences Upper Austria in 2023. In addition to the primary topic of a research project, aspects of digitalization are often addressed and advanced in parallel. This means that digitalization is evaluated in multiple ways.

Completed dissertations/habilitation





Informatics
Communications
Media

Hagenberg

Hagenberg Campus

Research and development at the University of Applied Sciences Upper Austria Hagenberg Campus is centred on computer science, communications and media. Thirteen research groups and three Josef Ressel Centres are working on innovative solutions for the digital future.

ICT – Information and Communications Technology

Advanced Information Systems and Technology

The AIST research group focuses on the improvement and automation of IT-assisted systems through the application of machine learning and data science algorithms and paradigms. The research spectrum covers standard-driven processes mining in medical IT, the improvement of software systems through Artificial Intelligence and Machine Vision, as well as Digital Transformation for business processes of SMEs.

Embedded AI

In this Josef Ressel Centre we research training algorithms that dynamically adapt machine learning models directly to resource-limited devices so that they can make self-learning, autonomous decisions. The methods developed

are used in areas such as energy flow optimization and collaborative robots.

Embedded Systems

The 'Wearable' team works on networked embedded systems that are attached to the body during use - these smart textiles are integrated into clothing, recognize movement patterns and measure temperatures, humidity and other biometric data. The 'AI for Resource Limited Devices' team deals with artificial intelligence on limited embedded systems and implements efficient AI algorithms that work without a server and network connection. The 'Signal Processing' team deals with CAD of electronic circuits and devices with emphasis on radio frequency technology up to the THz range and digital signal processing for next generation mobile phones as well as artificial intelligence employing novel

Prescriptive analytics

Heuristic Methods and Evolutionary Algorithms

This research group models and optimizes tasks, especially in the areas of production and logistics. Simulation-based approaches are used in combination with heuristic optimisation methods and various data mining approaches. A special research focus in the field of intelligent data analysis is on explainable data analysis (white-box data mining).

Energy

Not only transport and distribution networks play a relevant role in future energy supply, data networks and data exchange are also becoming increasingly important. The energy transition brings a variety of new services and business models that can only be realized if consumption and production data is available promptly and in high quality. The use of this data must be made as simple as possible, while taking into account all security regulations. Projects such as EDDIE (European Distributed Data Infrastructure for Energy), INNOnet (Interactive network optimization and network tariffs), CELINE (Cross-sectorial integrated digital services Enabling energy Localized InnovatioN and community Empowerment) and ECLIPSE (Energy Consumption reduction based on Open-source Reference framework) contribute significantly to the creation of a Europe-wide data space for energy systems.

Human computer interaction

Digital Media Lab

The research activities span different areas: Projects in the field of human-computer interaction in cooperation with automotive companies develop and investigate next-generation

interfaces for the transportation of tomorrow. The field of human-centred AI is reflected for example in projects investigating driver support systems. The lab also investigates new and natural forms of playful interaction for various contexts, including co-located games, multiuser interaction in mixed reality, hybrid reality games, serious games and expanded animation. In addition, the lab has a penchant for generative AI and large language models, spearheading research and development in this rapidly evolving field. In combination with multimedia web applications and the analysis and visualization of media data this forms the basis for successful research projects.

Human Interfaces & Virtual Environments

The Human Interfaces & Virtual Environments (HIVE) group has extensive and long-standing expertise in research and development in the field of human-computer interaction, data visualisation and virtual and augmented reality. The research group deals with the design and technical implementation of novel digital tools for the visualisation, exploration or manipulation of data and processes. For this purpose, natural interaction techniques and intuitive presentation methods for a wide variety of applications are developed and evaluated - e.g. production data visualisation on interactive walls, visualisation of biological or logistic networks in virtual reality or new media for digital teamwork. Another focus is the exploration of transitions along the mixed reality continuum.

Mobile Interactive Systems

The focus of this group is on the interaction between mobile devices and the surrounding infrastructure (e.g. displays, embedded systems, interactive tables). In addition to developing novel interaction techniques, applications and services, evaluating their usability is a research priority.

Knowledge Media & Engineering

The main areas of research encompass the conceptualisation of learning and working environments for cooperative knowledge generation and communication as well as their implementation in the field of organisational learning, taking into account flexible working models. Additional research activities are concerned with the development of collaborative and adaptive systems, the interaction between humans and machines and the creation of knowledge banks as well as the targeted application of semantic

Artificial intelligence

Artificial intelligence methods are often used or further developed in our research projects. Our researchers have extensive skills in using machine learning for optimization and data analysis or in image recognition and text analysis using deep learning to conduct research at an international level.



Digital future

Digitize the world with a degree in IT or media studies from Hagenberg!

The University of Applied Sciences Upper Austria Hagenberg Campus offers eleven bachelor's and twelve master's degree programs to choose from. About 290 professors and lecturers impart practical knowledge to currently 1,566 students. 8,100 graduates have already laid the foundation for their careers here.

Partners

We have successfully completed and are actively conducting research projects for and with a wide variety of companies, institutions and scientific cooperation partners.

- AVL List
- Banner
- BMW
- Education Group
- Erema
- Fronius
- Infineon
- Johannes Kepler Universität Linz
- Kepler Universitätsklinikum
- Kunstuniversität Linz
- LCM
- LIFEtool
- LiSEC
- Medizinische Universität Wien
- Miba
- Microsoft Research
- OÖ Energiesparverband
- Primetals
- RISC Software
- SCCH
- Silicon Austria Labs
- TGW
- Universität Wien
- Voestalpine

technologies for the networking, processing and extraction of knowledge. The research activities can be summed up under three areas of focus: Webbased Media and Online Communication, Learning and Working in the Digital Age, and Personalised Human-Computer Interaction.

Assistive Technology Lab

New interactive concepts and technologies facilitate the development and utilisation of natural user interfaces for workstations as well as for people with physical or mental disabilities. For these areas of application, assistive systems and aids are developed by the research group using design thinking and interaction design methods in order to make work processes and daily activities easier.

Personalized Environments and Collaborative Systems

The research group PEEC deals intensively with topics related to Human-Computer Interaction, primarily Computer-Supported Cooperative Work (CSCW) and personalization on the web and beyond.

The focus around CSCW includes comprehensive qualitative and quantitative analysis and computer-based support of different cooperation and collaboration settings (remote, hybrid or co-located), as well as conception and prototypical implementation of collaborative environments. The focus on personalisation includes the conception, prototypical implementation and evaluation of adaptive systems (primarily on the web) that take into account the individual requirements of users.

The PEEC group works intensively with methods related to Human-Centered Design (e.g., Contextual Design, prototyping, user studies) and comprehensive analytical frameworks for the elicitation of requirements and the conception and evaluation of solutions on the one hand, and with latest web technologies for implementation on the other.

WEL-Digital: Research Group for Work, Education and Life in a Digital World

As an interdisciplinary social science team, we deal with the importance of digital media and technologies for work, education and life in a digital world. In the WORK context, we address the question of how digital transformation can take place in organizations, taking into account changed work requirements and individual needs. In the EDUCATION context, questions about media didactic design, the learning experience and self-directed learning in hybrid learning arrangements are in the foreground. In the LIFE context, questions arise about the daily use of digital media and the ability to act in an increasingly mediatized world. Our projects range from basic research to social sciencebased applications.

IT-Security

Secure Information Systems

The protection of know-how and resources plays an ever increasing role in our interconnected society. The University of Applied Sciences Upper Austria conducts research in the following areas: critical infrastructure, computer foren-

sics, improvement of cryptographic methods, early recognition of malicious software and threats from the Internet as well as risk management and the establishment of a secure corporate organisation. Security questions in the Internet of Things (IoT) are being addressed at the SESAM (SEcure SmArt hoME) Laboratory. A particular focus lies on security analyses of IoT devices and the development of security concepts for the IoT. The KI-Lab uses methods from the fields of artificial intelligence (AI) and machine learning (ML) to solve problems with a safety and security context. The main focus is on problem areas from economy and society, such as the application of language models for intelligent risk management, but also the safety of AI technologies themselves, such as inferring training data from models. The Quantum & Post-quantum Lab focuses on studying the implications that the use of quantum computers could have on the security of cryptographic methods. To gain insightful knowledge, they employ quantum computing simulations.

Automotive & Mobility

Networks and Mobility

The research group NEMO is primarily concerned with research into mobile and wireless radio systems and the analysis of how methods for influencing private transport affect the use of resources. Communication amongst vehicles and between vehicles and road infrastructure makes new approaches in the management of private transport possible.

Medical Engineering/ TIMed CENTER

Bioinformatics

The bioinformatics research group at the University of Applied Sciences Upper Austria explores and develops algorithms for the analysis of molecular biological data, such as mass spectrometry data, microscopy images of cells and DNA sequences.

The programs developed on this basis are then used to explore the causes of illnesses as well as to develop appropriate treatments and simulate biological processes.

Smart Production

Symbolic Regression

At the Josef Ressel Centre for Symbolic Regression, methods and algorithms for databased, semi-physical modelling are researched and developed. The newly developed methods are used to improve the modelling, design and control of powertrains and friction systems.

Adaptive Optimisation

The Josef Ressel Centre for Adaptive Optimisation in Dynamic Environments (adaptOp) researches and develops predictive and adaptive optimisation algorithms that can anticipate changes in dynamic production processes and enable proactive responses. These new processes are used in operational process control in the manufacture of steel and flat glass in order to improve the efficiency of production, storage and in-house transport.



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Medical Engineering
Applied Social
Sciences

Linz

Linz Campus

In accordance with the principle of ‘Designing future working and living environments’ the School of Medical Engineering and Applied Social Sciences places the individual at the center of its research activities. Research focuses on applied technologies on the one hand, and on methods and procedures that improve human life and support work for people on the other.

The research objectives are new developments in medical technology as well as answers to questions arising from social and organizational transformation in social, health, educational and sustainability aspects.

The resulting research priorities are mapped in the focal area 'Societal Transformation and Social Innovation' and in the Center of Excellence for Technical Innovations in Medicine (TImed CENTER).

Medical Engineering/ TImed CENTER

'Systems & Technologies for Humans' is one of the three priority areas for action in the new Upper Austrian research, technology and innovation strategy '#Upper Vision 2030'. Together with the Johannes Kepler University Linz, the University of Applied Sciences for Health Professions Upper Austria, non- university research institutions and Upper Austrian health care institutions – such as the Kepler University Hospital, hospitals operated by religious orders and Upper Austria's health care holding company OÖG – the TImed CENTER makes a significant contribution to excellence in medical (technology) research in Upper Austria. At its Core Facilities, opened in 2018, the TImedCENTER offers access to shared high- end instruments, cutting-edge technologies, state-of-the-art methods, experts, and services to tackle complex issues in the fields of research, development, and innovation. To this end, the researchers in Linz draw primarily from their expertise in the areas of high-resolution imaging, nanolithography, motion measurement, biomechanics, electronics, materials, and software engineering. This makes it possible to continuously expand and upgrade the medical engineering infrastructure at the Linz Campus to facilitate applied research and development in the manufacture of medical devices and in vitro diagnostics and to support our partners in the development of their medical devices in compliance with applicable standards.

High resolution imaging for molecular diagnostics

Complementing conventional imaging methods, new microscopy environments are being developed to solve molecular biological problems. They include extremely sensitive detection techniques and methods for diagnostics, nanoscopic characterization of biomedical samples with real-time analyses, and surface analysis and manipulation in the micrometer and nanometer range.

Biomimetics & materials development

New 3D printing technologies enable lithographic structuring and biomolecular analysis on a nanometer scale, the production of organ-like support structures for medical research and the imitation of mechanical and chemical properties of biological systems.

Hybrid surgical simulators/model building and simulation

Development and validation of hybrid surgical simulators for medical education and training, product development and approval as well as preoperative planning.

Motion analysis/biomechanics

Research is focused on 3D motion measurement of the musculoskeletal system, analysis of muscle strength, use of accelerometry to classify physical activities and posturographic methods for analyzing the balance system.

Prosthetics/sensors

The use of intelligent sensors improves the interface between devices and people in the fields of rehabilitation technology and prosthetics.

Medical device software

The increasing digitalization of the medical field requires secure software, especially for software medical devices and embedded software components. Participation in relevant standardization bodies will contribute to this regard.

Ergonomics and ageing in the work environment

While the economy is facing an increasing shortage of workforce on the one hand, people are getting increasingly older on the other. This requires systematic approaches to keep employees active in the work process for a longer period. Research at Linz Campus is investigating how active workers can be supported within this social transformation through ergonomic, gradually adapted, gentle and social measures. For example, the prevention of increasingly age-related accidents like falling also plays a key role here.

Our labs are fully equipped with state-of-the-art equipment and software tools

- High resolution imaging: super-resolution, 3D-localisation, high-speed atomic force, confocal and single-molecule fluorescence microscopy, spectroscopy
- 3D nanolithography for biomimetics and materials development
- Hybrid surgical simulators consisting of artificial anatomical structures, computer models and virtual reality
- Biomedical sensors for motion analysis and activity measurements



A human focus

Make the world a better place with a degree in medical engineering and applied social sciences from Linz!

The University of Applied Sciences Upper Austria Linz Campus offers three bachelor's and four master's degree programs to choose from. About 230 professors and lecturers impart practical knowledge to currently 690 students. 3,394 graduates have already laid the foundation for their careers here.

Partners

We have successfully completed and are actively conducting research projects for and with a wide variety of companies, institutions and scientific cooperation partners.

A selection of our partners:

- Linz General Hospital
- Federal Association of Austrian Nursing and Foster Homes
- Caritas Upper Austria
- g.tec
- GE Healthcare
- OÖG
- Hospice Austria
- Johns Hopkins University
- State of Upper Austria
- Med-EL
- Otto Bock
- Paracelsus Medical University Salzburg
- City of Wels
- University of Wisconsin, Milwaukee
- University of Michigan
- Volkshilfe Upper Austria
- x-tention Informationstechnologie GmbH
- Yerevan State University

Societal transformation and Social innovation

Researchers at the Linz Campus are concerned with phenomena such as demographic change, migration, changes in health care and social services, social aspects of digitalization and social innovations. With their expertise, they contribute to innovative concepts in the sustainability, social and health sectors as well as in public management.

Further research projects in the field of social work are used to critically reflect on social problem areas and evaluate the work of social service providers. This forms the basis for the practice-oriented further development of concepts and methods of the profession and discipline of social work.

These are our main areas of research at a glance:

Digisocialisation – transformations in a digisocial world

This subject area addresses communication and participation in digital space. The expansion and simultaneous limitation of encounter and communication in digital spaces requires further development of social support and its underlying attitudes based on findings from research in the field of counseling, coaching, and therapy.

Social work research

Social work research is a practice-oriented research discipline that deals with aspects of both social development and social cohesion. Based on theories of social work as well as the social sciences and humanities (e.g., psychology, sociology, anthropology), social work research aims to find answers to current social challenges and profession-related questions. To this end, numerous multidisciplinary research approaches are integrated, such as childhood and youth research, educational research, research on social and socio-political issues (e.g., enforcement of measures, intersectionality, bullying, etc.) or research on ethical/political issues of the profession and discipline of social work.

Innovations in the public sector

The further development of socially relevant public services and strategies is based on a solid foundation of data. This applies equally to child and youth welfare, regional development, municipalities, and waste management: involving the relevant stakeholders in both analysis and further development through participatory processes is the credo of the research area 'Public Sector' at the Linz Campus.

Transformation of organizations, people & planet

In this field of research, it is all about digital, ecological, and social transformation and its impact on people, the environment, and organizations. We are investigating the following questions: How can agile transformation processes be designed effectively and responsibly? How does change implementation work smoothly? How can organizations and processes be designed sustainably? What is

the (un)intended impact of a transformation? Our research projects are regionally and internationally oriented and are specifically designed for impact and social profit organizations.

Impact evaluation

The question of the impact of services and technologies is increasingly gaining prominence in the face of dwindling resources and ever more rapid technological development, whether as an impact orientation in administration, as an impact evaluation of social and health-related services or as an accompanying evaluation of various (digital) transformation processes. Impact-oriented, evidence-based practice is increasingly being demanded by funding bodies and political decision-makers. This means that developed products, services, projects, programs, interventions, measures, etc. must demonstrate their impact (input-process-output-outcome-impact) based on scientific evidence. The expertise required for this is a research area at Linz Campus.

Living Care Lab

The Living Care Lab team is researching use-case-based, digitally supported solutions to effectively relieve the burden on caregivers in practice. The team is working on interdisciplinary, international projects and research partnerships to alleviate the impending care crisis in Austria. With the Living Care Lab, a spatial and organizational structure is being developed in which digital assistance systems can be developed to completion under real conditions and with real care staff, but detached from day-to-day operations, and evaluated based on impact targets.

Higher Education Research and Development

The Department of Higher Education Research and Development supports the university management and staff of the University of Applied Sciences Upper Austria in identifying and professionally managing potential needs for change. Current societal trends, recent developments and prospects in higher education are analyzed, assessed, and anticipated based on research findings applicable to all faculties.



Your points of contact for research & development



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Business
Management

Steyr

Steyr Campus

At Steyr Campus, research and development activities focus primarily on the areas of management and digitalization. Scientists analyze various facets of digitalization from a business perspective and develop methods to support decision-making in the real business world.

Logistics

The Logistikum, as the largest national research and education unit in the discipline of logistics, has the lead over the Center of Excellence and currently forms the Center of Excellence Network together with its (inter)national partners and research groups of the University of Applied Sciences Upper Austria, the Logistics Network Association and the Logistikum Switzerland. The Center of Excellence Logistics is a leading international research center for the logistics of the future, an interface for cooperation in research for companies, partners, and institutions regionally, nationally and internationally. Strategically relevant future topics are dealt with across faculties and in a multidisciplinary manner. Selected projects are listed below.

AWARD – Automated transport logistics despite harsh weather conditions

Even difficult weather conditions should not affect autonomous vehicles in the future. A research consortium is pur-

suing this ambitious goal in the EU H2020 project AWARD. Fully automated shuttle services have already been tested. Efficiency, sustainability and safety were core criteria in the project.

Josef Ressel Center for Predictive Analytics and Data-Driven Intelligence in Value Networks (PREVAIL)

PREVAIL supports companies in the implementation of predictive analytics in SCM, enabling the transition from purely human-driven to data-driven decision-making. Use cases include, for example, AI-based demand prediction at product and material level, pattern recognition and optimization of procurement and warehouse management or prediction of supplier performance.

Logistikum.RETAIL 2.0

In the Retail division, we support and shape the (digital) transformation of retail in the 21st century in close dialog with key leading companies and stakeholders in the retail discipline. The areas of expertise comprise five central blocks: Retail Analytics, Retail Logistics & Last-Mile, Sustainability & Circular Retail, Omnichannel & Point-of-Sale, and Scouting the Future of Retail (SCORE).

MobiLab Upper Austria

MobiLab Upper Austria is an innovation laboratory that has been working on key mobility issues and local and regional challenges since it was founded in 2017. As a hotspot for future-oriented mobility innovations, MobiLab supports cities, municipalities, regions, companies and start-ups in the development, testing and implementation of new mobility solutions.

MultiRELOAD – Multimodal demonstrators to promote a greater modal shift.

The Horizon Europe project MultiRELOAD, aims to promote modal shift as a key instrument of European transport policy to promote alternative modes of transport. MultiRELOAD focuses on strengthening cooperation between European transport hubs to develop innovations and create optimal conditions for multimodal freight transport solutions.

PREP – Predictive resource planning in the warehouse

PREP uses machine learning algorithms to optimize resource planning (people, technology, infrastructure) in the warehouse. The aim is to enable optimized, smoothed resource planning based on predicted volumes that need to be handled in the warehouse, to avoid peaks and to be able to operate more efficiently and on schedule.

RESISTANT

The aim of the project is to increase the resilience and transparency of the military supply chain in order to make supply sustainable, transparent and effective despite the most difficult conditions. This is to be achieved through a new, internationally compatible logistics concept in conjunction with innovative technologies. The additional increase in supply chain transparency will also improve management processes and information flows. An essential part of the project concerns the IT security of the new digitalized and networked components.

SURE – Sustainable and Resilient Interconnected Supply Chains

The research objective of SURE is to deepen the understanding of effective tools for the management of global, dynamic, non-linear networks (ISCs). The research activities in SURE change the perspective from traditional supply chains with direct, linear individual relationships to many interconnected networks with multiple levels.

Smart Production

Smart Operations Management

Intelligent production processes lead to intelligent products. These products are the guarantee for companies, but also the prerequisite for being able to survive in future competition. As an innovative partner to industry, the Center of Excellence specializes in research and transfer on the subject of smart production. The coordination and networking of all relevant departments facilitates a lively exchange of information between the faculties (Hagenberg, Steyr and Wels) in R&D as well as in diploma and master's theses. For example, pilot and demonstration projects on the topic of "Innovative applications for the digitalization of production" are carried out together with Upper Austrian companies. The Steyr Campus is the production and organizational competence center at the Center. The researchers at the site are active in many areas, with a particular focus on the following areas:

Smart Production

The entirety of production processes and their interactions are researched in the field of smart production. The field of activity ranges from the analysis and optimization of production planning and control (selection and parameterization of planning methods) and capacity planning (personnel deployment and qualifications) to production controlling (key figures and logistical positioning) and the simulation and optimization of production (focus on production planning). The influence of planning on energy consumption in production systems is also addressed here as a new topic area.

Business Analytics

Knowing the past, understanding the present and shaping the future. This is how the field of business and prescriptive analytics can be described. In intelligent production, where machines are networked with software systems, data is generated. The first step is to make the raw data usable and put it into the right structure. The next step is to interpret and evaluate the data. As soon as the basic understanding of how the data is generated is available, it can be optimized. This results in predictions, decision support and recommendations for action.

Extended reality and intelligent assistance systems

In the field of extended reality and intelligent assistance systems, the focus is on innovative technologies and their benefits for optimizing production processes. At the heart of the research work are assistance systems that relieve

the physical and cognitive burden on humans and optimize the interaction between humans and machines. Using virtual reality training, complex work scenarios can be experienced realistically and interactively and can be flexibly adapted to the learning situation. Mixed reality enables the visualization of relevant data in the user's field of vision. In conjunction with the field of collaborative robotics, this creates working environments that open up new opportunities for modernizing production and making it more flexible.

Josef Ressel Center for Data-Driven Business Model Innovation (DDBMI)

The changes brought about by smart production also enable a transformation in the creation of products. New revenue models, such as usage-based payment or additional services (predictive maintenance), are made possible by digitalization. The Josef Ressel Center for DDBMI develops data-driven approaches (in particular concepts, process models, methods and tools) for business model innovation and makes these available to partner companies. Key topics will include recognizing the necessity of business model innovation for established production companies, ensuring a focus on sustainability and the targeted and efficient use of data to design business models and guarantee the innovation process. The newly developed approaches will be applied and implemented by the partner companies in pilot projects.

We are digital

University of Applied Sciences Upper Austria DigiSpace

The DigiSpace with its infrastructure supports both teaching and research and development at the Steyr Campus. In addition, the DigiSpace is a contact point for companies in all matters relating to digitization.

The content addresses the following innovative topics:

- data-supported control of companies
- digital process design in companies
- digital products and services
- digital business models
- digital value networks
- people in the digital world of work

The DigiSpace provides:

- Business Lounge & Performance Show
- Digital Boardroom: 220" LED Wall and 5 Working Bunks
- Behavioral Analysis Labs
- Smart Production Area
- Innovation Space

Digital Transformation

Hardly any other phenomenon has aroused so much interest and brought about so much change in business, science, politics and society in recent years as digitalization. Many new concepts such as Industry 5.0, big data, cloud computing, the Internet of Things and artificial intelligence are being discussed. In research projects carried out together with researchers from the Digital Transformation area of strength, a wide variety of aspects of digitalization are examined from a management and corporate perspective in order to support decision-making and action processes in practice.

The Digital Business Institute (DBx) with its focus on Digital Strategy & Innovation, Digital Marketing & Commerce and Digital Work & Life supports companies in tapping the potential of digitalization and thus securing their competitiveness for the future.

Digital Strategy & Innovation

The strategic (re)alignment of companies in terms of digital leadership requires the concepts of business model innovation and digital entrepreneurship to be firmly anchored in the DNA of companies. We develop joint digitalization and innovation strategies with companies in order to strengthen their digital leadership.

Digital Marketing & Commerce

Digital technologies are said to have enormous business potential, such as revolutionizing the way companies interact with their stakeholders. Our research supports companies in successfully using digital technologies to create positive customer experiences and to reduce the unfavorable consequences of problematic experiences for companies (e.g. negative word of mouth) and for customers and to sustainably increase the effectiveness and efficiency of companies. We support the creation of market-oriented, data-supported and knowledge-based marketing management in digitalized companies using modern technologies (mobile, web, virtual reality, AI, data analytics, etc.).

Digital Work & Life

The digital transformation encompasses all areas of work and life. The degree of digitalization in companies is increasing, but more and more people are also using digital media in their private lives. The effects of the use of digital technologies in business and society are an important field of research. Insights gained on topics such as social media use, dependencies on digital devices and software, working from home, technostress, information overload and IT-based interruptions form the basis for the effective and economical design of working and living environments in which people benefit from the use of digital technologies and do not fall victim to them.

AI Catalyst for SMEs (Interreg Austria – Czech Republic)

In Austria and the Czech Republic, less than 10% of companies, especially SMEs, have recently been using artificial intelligence solutions, mainly due to uncertainties and resource constraints. The Interreg Austria-Czech Republic

project “AI Catalyst for SMEs” aims to close the gap between research and practice. For this reason, the AI laboratory at Steyr Campus is being successively expanded, in which state-of-the-art AI applications focusing on marketing, sales and export are presented. Companies can acquire knowledge and reflect on the applications from the perspective of technology - value for marketing and sales - and ethics in social design thinking workshops at the AI Days and develop AI strategies for their own company. The accompanying scientific studies of the Global Business Management research focus show that the expansion of AI applications for sales and marketing in Austria begins with companies' awareness of data management and data protection, training, AI knowledge and expertise. The necessary AI strategy and change management can be developed in AI Social Design Labs. This project is aimed at companies, especially SMEs, regions, political decision-makers, the scientific community and business support organizations.

Circular Academy (Interreg Austria – Bavaria)

Producing sustainable packaging solutions and successfully launching them on the market fundamentally requires the establishment of profitable, circular business models that are based on a holistic, ecological, and economic circular economy. This is where the Circular Academy project comes in. In particular, the targeted and involved groups benefit from the online knowledge platform and the design labs. Knowledge transfer and cross-border networking are essential outputs of the project. This is achieved through the implementation of various exchange formats such as Policy meets business, Makeathon, podcasts, a roadshow, and much more.

Forward-looking financial research: digital innovations and skills development

Advancing digitalization in the financial sector is opening up new ways to support companies in the digital transformation of the financial sector. The focus here is not only on increasing efficiency by automating processes in data preparation and analysis, but also on identifying decision-relevant data and key figures for the respective business model. The development and application of AI-based per-

formance measurement and risk models is a key tool for companies to determine their performance and financial risk in a data-driven manner and make well-founded decisions.

User-friendly interactive dashboards are essential in order to access decision-relevant information promptly. The use of eye tracking and behavioral analysis helps to identify user behavior and attention patterns. These findings are essential in order to optimize the dashboard design and to make information intake and processing effective.

The digital transformation also promotes the integration of sustainability aspects, whereby AI-supported tools are crucial for efficiently integrating ESG data into performance measurement and risk models as well as reporting and optimizing their visualization. This enables a holistic presentation of corporate performance by presenting sustainability indicators clearly and comprehensibly in interactive dashboards.

In the financial sector, digitalization is also reflected in the use of intelligent language models. The aim is to demonstrate the opportunities and limitations of artificially intelligent language models in the interpretation of legal issues in tax and accounting.

The digital transformation of the financial sector also requires specific skills and knowledge from employees. The development of skills profiles and corresponding training and development programs, such as e-learning courses for programming bots, helps specialists to prepare for and successfully master the challenges of digital transformation.

These research topics reflect the endeavor to make the financial sector fit for the future through technological innovation and skills development. The aim is to support companies in the automation of financial reporting, the modelling of performance measurement models and risk models, the development and/or optimization of interactive dashboards as well as the development of their employees and to explore the potential and limits of artificially intelligent technologies.


Your points of contact for research & development



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A photograph showing a man in a light blue blazer and a woman in a grey jacket looking at a tablet together. They are outdoors, with solar panels visible in the background. The man is pointing at the screen, and the woman is holding the tablet. The background shows a clear blue sky and some buildings in the distance.

Engineering
Applied natural
sciences

Wels

Wels Campus

Research and development work at the University of Applied Sciences Upper Austria Wels Campus revolves around engineering and applied science. Six Centers of Excellence and Focal Areas provide the foundation for its research work and make the school one of the most research-intensive and best-equipped in Europe.

Smart Production

Intelligent production processes result in intelligent products. Such products are not only the guarantors but also the prerequisites for the competitiveness of companies in the future. The main focus of Wels Campus within the CoE for Smart Production lies on advanced manufacturing and additive manufacturing: The increasing shortage of resources, shortening of product life cycles and individualisation of products means shorter development cycles and increasing competition for raw materials. An increasing number of component variants with smaller quantities and shortened innovation cycles have made additive manufacturing processes (3D printing, additive manufacturing) key technologies. Another important pillar in this area is the integration of additive manufacturing in automated and intelligent processes as well as products and tools.

At the heart of the Center of Excellence for Smart Production is our industry-oriented teaching and research laboratory for smart manufacturing, the Center for Smart Manufacturing, which features a flexible manufacturing and assembly system (FMAS). Five stations are connected by a transfer system with integrated RFID for workpiece carrier tracking. Complex products are manufactured fully automatically at the processing stations using seven robots (four of which are collaborative), image processing systems, automatic screwing units, CNC processing centres and other components. The system's configuration allows for the production of items from a lot size of one. A SCADA system is used to operate and monitor the FMAS. Research include the full digitalisation of the system for simulation and virtual commissioning (virtual planning and optimisation – real production) purposes.

Automotive & Mobility

The CoE Automotive and Mobility primarily focuses on lightweight construction and lightweight materials as well as smart drive and vehicle technologies. Research in the field of lightweight construction and lightweight materials is primarily concentrated on plastics, composites (especially carbon composites) and metals as well as hybrid materials and structures for the automotive and aerospace industries. Giving due consideration to the processing of these materials and materials testing is also crucial. Our activities therefore focus on plastic, composite and metal processing processes, surface technology for lightweight construction, connection technology and recycling of plastics, composites and metals on the one hand, and on materials testing and characterisation, including the non-destructive testing methods of X-ray computer tomography and active thermography, on the other.

In the field of smart drive and vehicle technologies, the CoE addresses current topics ranging from powertrains, power generation, energy sources, energy storage, energy management, power and control electronics, control units, model-based algorithms and simulation to sensors. Thus work can be carried out on a wide range of complex topics—such as the design, simulation and optimisation of (hybrid) powertrains from power generation to the road or model development and optimisation of, for example, hydrogen-based drive concepts or the development of functions for control unit software in the vehicle, HIL (hardware in the loop) simulation development, including real-time models and testing.

Energy

Current research at the CoE Energy focuses primarily on renewable energy technologies (especially solar technology and wind), heating technology, energy storage and energy management issues. Other projects deal with life cycle considerations of energy-optimized buildings, quality assurance

in building technology and heating and combustion technology as well as methods, processes and products for increasing energy efficiency in production facilities.

The focus in the field of electric energy technology is on smart grids, the development of components for electric energy technologies, protective technology for electrical storage and DC systems, powertrains for electric mobility, test generators for cost-effective simulation of DC power supplies and the integration of large electrical storage systems in the grid. Work is also done on energy-related issues, legal and regulatory aspects of energy grids and electricity market design.

A large area of research is concerned with the development of algorithms and the implementation of optimal controls of energy flows in building and industrial applications, taking into account load and weather forecasts, as well as the development of (renewable) energy communities.

In the field of environmental technology, the focus is on the (further) development and optimisation of processes and systems for exhaust gas cleaning, dust measurement, development/optimisation of exhaust air filters and scrubbers, optimisation of composting processes and biofilter materials, recycling of residual materials and environmental analysis.

H₂-research center

Hydrogen research is undergoing an innovative and forward-looking transformation thanks to the HyBRID project at the University of Applied Sciences Upper Austria Wels Campus. The establishment of a comprehensive hydrogen research and testing infrastructure is creating a new focus in the field of hydrogen applications. This cutting-edge laboratory infrastructure not only supports the development of H₂ components, but also their use in industrial processes and enables the operation of large fuel cell systems. Based on the

Technical infrastructure

The facilities that we have available for research and development are as multifaceted as our research topics and make it possible to conduct internationally recognized, cutting-edge research in the fields of engineering and applied natural sciences. Our laboratories are fully equipped with state-of-the-art hardware and software tools, which ensures that all research incorporates the latest available technological advances.

Smart

Simplify the world with a degree in engineering and environmental studies from Wels!

The University of Applied Sciences Upper Austria Wels Campus offers fifteen bachelor's and fifteen master's degree programs to choose from. Over 300 professors and lecturers impart practical knowledge to currently 2,016 students. 7,514 graduates have already laid the foundation for their careers here.

Partners

We have successfully completed and are actively conducting research projects for and with a wide variety of companies, institutions and scientific cooperation partners.

Here is a selection:

- Agromed Austria GmbH
- ARC Leichtmetallkompetenzzentrum Ranshofen GmbH
- Airbus Helicopters
- Austrian Bioenergy Centre GmbH
- BOKU
- Borealis Polyolefine GmbH
- Energiesparverband OÖ
- Engel Austria GmbH
- FACC AG
- Festo GmbH
- Fischer Brot GmbH
- Fronius International GmbH
- Georg Fischer Fittings GmbH
- Johannes Kepler University
- KTM
- LCM - Linz Center of Mechatronics GmbH
- LITE GmbH
- LKR Leichtmetallkompetenzzentrum Ranshofen GmbH
- Montanuniversität Leoben
- Next Generation Analytics GmbH
- Next Generation Recycling GmbH
- Neuburger Fleischlos GmbH
- PM International AG
- PROFACTOR Produktionsforschungs GmbH
- RHI Veitsch Radex AG
- Rübige GmbH & Co KG
- Schiebel Elektronische Geräte GmbH
- STARLIM Spritzguß GmbH
- Stern & Hafferl Verkehrs GmbH
- TU Wien
- Graz University of Technology
- UAR – Upper Austrian Research GmbH
- VetMed
- voestalpine Stahl GmbH
- voestalpine BÖHLER Edelstahl GmbH & Co KG

specific needs in Upper Austria and the existing expertise of Wels Campus, four thematic priorities have been defined for the H₂-research center:

- the thermal utilization of H₂ in high-temperature processes,
- the interaction of H₂ with materials and components,
- H₂ utilization in the electrical grid network and
- the process engineering use of H₂.

With this ambitious approach, the Hydrogen Research Center is laying the foundations for forward-looking basic research as well as application-oriented research aimed at ensuring the efficient and effective use of climate-neutral H₂. This project sustainably supports structural change in industry and society and drives innovation in companies.

Food Technology and Nutrition

An extensive portfolio of substances and herbal ingredients can be found in nature. Relevant natural extracts and plant substances with a measurable biological effect are increasingly being used in modern medicine and nutrition for the prevention or treatment of diseases and may in future represent a potential alternative to conventional active substances. For targeted use, it is important to know and be able to describe the basic molecular mechanisms of action. Our work therefore focuses on the identification and characterisation of phytochemicals and research into their biological effects in suitable in vitro, in vivo, in ovo and in silico test systems. In addition to basic research, we work together with innovative partners from industry for the development of functional foods, phytochemical feed additives and highly effective natural pharmaceuticals and nutraceuticals.

Moreover, research is conducted into a wide variety of materials in the food sector, such as functional 'smart packaging', bioplastics, self-composting 'green packaging', condition indicators (warehouse indicators), etc. Other topics include food quality assurance (food inspection) using various measuring methods, such as imaging and sensors, and new production technologies. More than 40 staff members work in ten fully equipped cell and molecular biology as well as chemical analysis laboratories. A key issue is the detection of bioactive substances in plant raw materials and toxic or undesirable by-products that occur in food production. Austria's only experimental and teaching brewery complements the research opportunities of this focal area.

Materials

The optimized, materials-specific processing and testing of polymers, composites and metals takes centre stage in this focal area. Research in this focal area is devoted to the following areas: polymer processing and polymer cycle, forming technology, heat treatment technology, surface technology, metallurgy and alloy development, additive

manufacturing. The field of polymer technology is focused on extrusion technology, thermoforming and the polymer cycle, with a special focus on the tribological and rheological interactions in in polymer processing machines, moulds and dies. In the field of metallurgy, the focus is on the improvement of properties of tool steels and modern steels for lightweight design. A working group is addressing the production of surface coatings for metallic components as well as plastics, glass and textiles. State-of-the-art equipment is available to carry out research, including systems for additive manufacturing – selective laser melting (SLM), fused deposition modelling (FDM), stereolithography – scanning electron microscopes, quenching and forming dilatometers, high-pressure capillary rheometers, film extrusion systems, compounders, thermoforming systems, thermal analysis methods (DSC, DMA), etc.

In addition to the materials themselves, materials testing is an important research area that focuses on the non-destructive testing of materials and components. Here, 3D X-ray computed tomography (CT) and active thermography play a central role. CT inspection captures the interior of 3D structures (metals, plastics, etc.) non-destructively and characterizes materials three-dimensionally with a resolution of up to 250 nm. Active thermal measuring processes are fast imaging methods using infrared cameras for examining heat flow in previously stimulated test specimens. They provide information about defects in the interior of the object or material properties. In addition, projects are carried out using optical measurement technology, sound and vibration technology and industrial image processing, and our own test setups and test beds are being developed.

Innovation and technology management

In the field of digital transformation, the Faculty of Engineering and Applied Natural Sciences focuses on innovation and technology management as well as agility. This interdisciplinary area of expertise is dedicated to the specific further development of procedures, methods and tools whose application and implementation improve



companies' ability to adapt and innovate in highly volatile and complex corporate environments.

In the area of trend recognition & foresight, we work with our clients to further develop processes and methods for strategic foresight. This makes it easier to identify relevant trends in the macro and micro environment and adapt strategies accordingly. Based on the latest scientific findings, we develop and implement company-specific innovation portfolios and innovation roadmaps as well as business model innovations. In addition, we support companies in all relevant topics in product development, such as process analysis and optimization (e.g. advanced systems engineering), product lifecycle management (e.g. product data management) or the creation of digital twins of products and production processes.

Our offer in the field of agile transformation methods and organizational development includes methodical training in various innovation methods as well as the implementation of makerthons, idea generation and design thinking workshops. We also research how artificial intelligence (AI) can be used for innovation management in order to design innovative solutions more efficiently and optimize creativity processes. With a systematic assessment, we support organizations in agile transformation in order to optimize their structures and processes and increase their innovative capacity and adaptability.

The Institute for Agile Transformation bundles our expertise in order to offer our partners and stakeholders extended benefits. In addition to the services mentioned above, we organize knowledge and experience exchange events specifically for agile enthusiasts as well as innovation and R&D leaders.

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A fixture of Upper Austria's research landscape



R&D advisory board

The R&D advisory board ensures the optimal strategic alignment of all R&D activities of the University of Applied Sciences Upper Austria in coordination with other R&D institutions. It is currently composed of the following members:

- **DI Dr. Wilfried Enzenhofer, MBA**
CEO, Upper Austrian Research GmbH
- **MMag. Irmgard Gmachi**
Head of lab:hagenberg, Porsche Informatik GmbH
- **Ing. Rudolf Mark**
CEO, MARK Metallwarenfabrik GmbH,
Chairman of the R&D-Advisory Board
- **DI Harald Plöckinger**
CEO, RÜBIG Gruppe
- **Mag. Sok-Kheng Taing**
Managing Director, Blue Value GmbH
- **Prim. Prof. Dr. Björn Rath**
Head of Department of Orthopaedics and
Orthopaedic Surgery, Klinikum Wels-Grieskirchen
- **Dr. Robert Zeillinger**
Managing Director SKF Österreich AG

Research award

To honour the outstanding work of its research staff, the University of Applied Sciences Upper Austria's most successful researchers were once again distinguished in 2023.

The recipients of the University of Applied Sciences Upper Austria Research Award for 2023 are:

- **Prof. DI Dr. Herbert Jodlbauer**
School of Business and Management, Steyr
- **Prof. DI Dr. Marc Kurz**, School of Informatics,
Communications and Media, Hagenberg
- **Prof. Priv.-Doz. Dr. Julian Weghuber**
School of Engineering, Wels

The young researcher awards were awarded to:

- **Mag. Andrea Massimiani**
School of Business and Management, Steyr
- **Kristiana Roth, MSc**
School of Engineering, Wels
- **DI Martina Zeinzinger**
School of Business and Management, Steyr

In just over a year, the six recipients published a total of 87 articles at academic conferences or in international journals and acquired more than €6.5 million in R&D project funds.

Cooperation made easy

The University of Applied Sciences Upper Austria as a partner in R&D

The University of Applied Sciences Upper Austria is a flexible and reliable partner for businesses and institutions from industry and society that stands ready to assist them with research and development.

Target audience

The University of Applied Sciences Upper Austria's R&D portfolio is aimed at businesses and institutions from industry and society. This includes on the one hand businesses that lack personnel resources or have limited financial resources for their own research and development activities (e.g. small and medium-sized enterprises). On the other hand, solutions are also developed for companies that need specialized support (e.g. in the form of special equipment). The University of Applied Sciences Upper Austria's services are relevant not only to traditional businesses but also associations and institutions, especially in the social sector.

Know-how

The University of Applied Sciences Upper Austria offers up-to-date know-how in ten Centers of Excellence and focal areas, making available the expertise and many years of (inter)national experience of more than 500 professors and academic staff. Project leaders are well versed in the methods of project management. If necessary, and depending on the requirements, students and interns may be involved as well. Moreover, modern equipment and well-

equipped laboratories provide the basis for innovative R&D solutions.

Financing

In addition to complete financing provided by clients, support is available through numerous state, federal and EU funding programs, some of which are linked to specific thematic areas. Projects that receive money from research funding programs must be in line with the respective programmatic objectives and meet all criteria. The University of Applied Sciences Upper Austria's internal R&D controlling unit ensures that the projects stay on budget. Partners contribute personnel and/or financial resources as well.

Advantages for the University of Applied Sciences Upper Austria's partners

Joint projects are first and foremost a financially straightforward and efficient undertaking for the University of Applied Sciences Upper Austria's partners. Innovative solutions are tailored to the needs of the client and can be put directly into practice.

The first steps towards cooperation

Interested parties should contact the head of the respective Research Center or University of Applied Sciences Upper Austria professors working in fields relevant to the client. The specific needs and goals of the client as well as the parameters of the potential collaboration are clarified in preliminary discussions.



Opportunities for cooperation:

- Applied R&D projects with business partners
- Academic research projects
- International R&D projects
- Symposia and workshops
- Bachelor's and master's theses

Your first points of contact are the heads of Research Center at our four schools.

Research & development at our 4 schools

Hagenberg Campus

School of Informatics,
Communications and Media

Linz Campus

School of Medical Engineering and
Applied Social Sciences

Steyr Campus

School of Business and
Management

Wels Campus

School of Engineering

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Imprint: Responsible for the content: University of Applied Sciences Upper Austria
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Text: Christina Musalek, MSc; Heads of Research Center | Photos: University of
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Varela, Andreas Atzlinger, Land OÖ, Hermann Wakolbinger, Zoe Goldstein
Last updated: April 2024



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