Linnæus University

Dnr: LNU-2025/2097

Programme syllabus

Faculty of Technology

Interaktiva AI-system, masterprogram, 120 högskolepoäng
Interactive AI Systems, Master Programme, 120 credits

Level
Second cycle

Date of Ratification
Approved 2025-06-19.

The programme syllabus is valid from autumn semester 2026.

Prerequisites
General entry requirements for second-cycle studies and specific entry requirements: Bachelor Degree in Media Technology or Computer Science or the equivalent. English 6 or the equivalent.

Description of Programme

The Master Programme in Interactive AI Systems aims to provide students with the knowledge and competence required to build the future collaboration between humans and artificial intelligence. Interactive AI refers to intelligent systems that continuously interact with people – they learn from, adapt to, and support users in real-time. Interactive AI is based on human actors actively participating throughout the system's entire lifecycle – from training and development to evaluation and improvement.

The programme prepares students to build such systems while managing the ethical, sustainability-related, and societal challenges that come with integrating AI into people's everyday lives. As AI plays an increasingly important role in everything from healthcare and education to public services and creative industries, experts are needed who can develop responsible, user-centered AI solutions that are inclusive, reliable, and socially beneficial.

In line with the latest research in the field of interactive AI, the master programme offers education that prepares students both for an academic career in research and for professional roles in industry, where they can work with both development and applied research. A central part of the programme is also the critical analysis of knowledge,

where students are expected to summarize, evaluate, and question existing solutions, as well as use their creativity to design new innovative systems. The programme thus provides both deep theoretical insights and practical skills required to operate in a rapidly changing and interdisciplinary technology landscape.

Objectives

Central degree objectives in accordance with the Higher Education Ordinance
Knowledge and understanding
For a Degree of Master (120 credits) the student shall

- demonstrate knowledge and understanding in the main field of study, including both broad knowledge of the field and a considerable degree of specialised knowledge in certain areas of the field as well as insight into current research and development work, and

- demonstrate specialised methodological knowledge in the main field of study.

Competence and skills
For a Degree of Master (120 credits) the student shall

- demonstrate the ability to critically and systematically integrate knowledge and analyse, assess and deal with complex phenomena, issues and situations even with limited information,

- demonstrate the ability to identify and formulate issues critically, autonomously and creatively as well as to plan and, using appropriate methods, undertake advanced tasks within predetermined time frames and so contribute to the formation of knowledge as well as the ability to evaluate this work,

- demonstrate the ability in speech and writing both nationally and internationally to clearly report and discuss his or her conclusions and the knowledge and arguments on which they are based in dialogue with different audiences, and

- demonstrate the skills required for participation in research and development work or autonomous employment in some other qualified capacity.

Judgement and approach
For a Degree of Master (120 credits) the student shall

- demonstrate the ability to make assessments in the main field of study informed by relevant disciplinary, social and ethical issues and also to demonstrate awareness of ethical aspects of research and development work,

- demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used, and

- demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

Content

Programme Overview

The programme consists of two years of full-time studies corresponding to 120 credits.

Students are given a foundation consisting of computer science and media technology at advanced level. The programme combines courses and faculty expertise from various areas within media technology and computer science, such as information visualization, human-in-the-loop machine learning, human-centered AI, and human-computer interaction.

During the first year, students work on acquiring comprehensive knowledge and deeper understanding of the most important building blocks of interactive AI, such as information visualization, machine learning for interactive systems, and scientific methods. These are expanded with concepts for ethical and sustainable AI development, explainability and interpretability, and how to involve people in the development of interactive AI applications.

The second year begins with a full semester of elective courses, where students will have a range of different options for how to proceed with their studies. The recommended set of courses for this period will be a continuation of the important aspects introduced during the first year, such as advanced information visualization, data mining, and topics in the field, concluded with an extended project where all acquired knowledge must be used together in a coherent and effective manner.

Other options that can be combined include internship placement; advanced courses in the field of informatics, related to the interaction between AI and society; and other deeper, more technical computer science courses. The student will also have the opportunity to study abroad during this period.

The programme concludes with a degree project comprising 30 credits.

The courses in the programme can also, in agreement with the programme coordinator, be exchanged for equivalent courses relevant to the programme's focus. When exchanging courses, the programme coordinator checks that the programme's objectives are still met. The prerequisite requirements for courses and the local regulations for degrees at Linnaeus University must always be met.

Courses in the Programme

The exact placement of courses in academic year and study period may vary somewhat from year to year.

* indicates that the main field of study for the current course is media technology.

Year 1

Foundations for Interactive AI Systems, 10 credits, G1N:
The course focuses on deepening important mathematical knowledge, as well as strengthening skills in programming and algorithmic thinking. It should ensure that all students have the prerequisites required to successfully continue their education in the interactive AI field.

Information Visualization, 5 credits, A1N:
Advanced level course that addresses how visualization and data analysis can help in analyzing and understanding abstract data. Interaction and user experience are also covered.

Research Methods in Computer and Information Science, 7.5 credits, A1N:
Advanced course in scientific methods that addresses current research and methods within media technology. The course is a seminar course where students present and review published scientific papers.

Machine Learning for Interactive Systems, 7.5 credits, A1F: *
The course covers both fundamental and applied aspects of machine learning with particular focus on the interaction between algorithms and users, for example through user-guided model training. Students should be prepared to work with methods and tools where machine learning functions as support for human decision-making and insight generation.

AI, Ethics and Sustainability, 7.5 credits, A1N: *
The course addresses the ethical, social, and sustainability-related issues that arise in connection with the development and use of artificial intelligence. Students get to analyze how AI affects individuals, societies, and the environment, as well as discuss responsible design, transparency, and justice in AI systems.

Explainable AI, 7.5 credits, A1F: *
The course builds on previous knowledge in machine learning and introduces central concepts and methods within explainable and interpretable AI, with focus on how complex models can be made comprehensible and transparent for both developers and end users. Students get to explore techniques for model analysis, visualization, as well as user-centered explanation of AI systems.

Elective courses, 15 credits
Option 1: Human-Computer Interaction, 15 credits, A1N:
Focuses on designing interactive systems with emphasis on usability, user experience, and accessibility. The course includes user research, prototyping, and usability testing.
or
Option 2: Degree Project in Media Technology at Master Level, 15 credits, A1E: *
Independent work where the student will develop knowledge, understanding, abilities, and approaches within the education's context. The degree project involves a deepening and synthesis of previously acquired knowledge, corresponding to the content of the programme's first year.

Year 2

Electives, 30 credits, at least 7.5 credits at advanced level in the main field of study:
List of recommended elective courses is announced by the programme coordinator before the application period for the current semester.

Master Thesis in Media Technology, 30 credits, A2E: *
Independent work where the student shall develop deeper knowledge, understanding, abilities, and approaches within the education's context. The degree project involves a deepening and synthesis of previously acquired knowledge, corresponding to the content of the programme's two years.

Social Relevance

In the future labor market, AI is expected to reshape roles rather than eliminate them, by transforming work through, for example, automating routine tasks and enabling people to focus on more strategic, creative, and value-driven activities. Involving "the

human in the loop" with interactive interfaces is central to ensuring responsible AI development, as human oversight is necessary to maintain ethical standards, mitigate bias, and maintain accountability in AI systems. Emerging roles such as AI prompt designer, AI ethicist, and AI communication developer highlight the demand for professionals who blend technical expertise with skills such as interactive design, creativity, communication, and problem-solving.

The master programme maintains a strong connection to working life through several integrated activities. Students participate in project-based courses where real problems and challenges from industry and the public sector are addressed, often in direct collaboration with external organizations. Guest lecturers from leading companies and research institutes within AI and interactive systems contribute with current insights from the industry. During the third semester, the opportunity for internship placement is offered where students can apply their knowledge in a professional environment. The programme also maintains an active network of partner companies that contribute with case studies, mentorship, and opportunities for degree projects.

Internationalization

Studies abroad can be conducted during the third semester at the student's initiative in consultation with the programme coordinator, and should primarily take place within the university's exchange programmes. Availability and eligibility conditions should be discussed individually with the programme cordinator. Other possible existing agreements with specific external universities and programmes may be available to students, including a list of possible courses that can be taken and that are pre-approved. Confirmation that other individual courses abroad can be included in the master's programme should be obtained in advance.

Sustainable Social Development

The foundation of Interactive AI Systems is that people are actively included in AI systems' entire lifecycle – from design and development to evaluation and use – which is a fundamental prerequisite for sustainable technological social development. Through, among other things, user-centered design and transparent AI methods, students learn to create solutions that meet societal needs and reduce negative environmental consequences. This prepares students to support equal access, social well-being, and long-term social resilience in an increasingly digitalized world.

The master programme also promotes sustainable social development by emphasizing inclusion, ethical aspects of innovation, and responsible use of technology. These perspectives shall be integrated both in the content of teaching and in its form. Throughout the programme, teaching methods are also used that will promote equal participation, such as conscious group composition and inclusive classroom discussions, where different experiences and perspectives are actively encouraged and utilized.

Quality Development

Quality and progression are maintained through continuous dialogue with the subject responsible and programme coordinator.

Programme council meetings are held at least twice per academic year. This programme council consists of the programme coordinator, at least one student representative from

each year, as well as relevant teachers and other stakeholders in the education.

Continuous evaluation and improvement of the programme and its courses occur, among other things, through course evaluations in connection with each course, through academic year evaluations of the programme once per year, and in consultation with students at programme council meetings. Both academic year evaluations and course evaluations are archived and available at the institution.

Furthermore, collaboration occurs with companies and other stakeholders as well as benchmarking against other colleges and universities.

Degree

After having completed their studies in accordance with the requirements stated in the Qualification Ordinance of the Higher Education Ordinance and in Linnaeus University's local qualification ordinance, the student may apply for the award of a qualification. Students who have completed the programme Interactive AI Systems may obtain the following qualification:

Degree of Master of Science (120 credits) with Specialisation in Interactive AI Systems
Main Field of Study: Media Technology

Filosofie masterexamen med inriktning mot interaktiva AI-system
Huvudområde: Medieteknik

The degree certificate is issued in two languages (Swedish and English) and is accompanied by a diploma supplement in English.

Other Information

In the event of any discrepancies between the Swedish and the English version of this programme syllabus, the Swedish version shall prevail.