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#SU



LAUREE MAGISTRALI /
MASTER'S DEGREE PROGRAMMES

HUMAN-CENTERED ARTIFICIAL INTELLIGENCE



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Human-Centered
Artificial Intelligence



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What type of Master's Degree?

- 2 Years Master's Degree
- Inter-University
- In English
- Started September 2023
- Admissions now open for new cohort 25-26



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What is Human-centered AI?

- The focus of the research and development activities of both large companies and prestigious international research centers
- Reasonable and responsible integration of new technologies into the human context
- Strong multidisciplinary knowledge and competencies
- Professional figures between the hard-skills of experienced developers and the soft-skills needed to integrate AI applications into different human contexts



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To whom is it addressed?

Students from all over the world with a bachelor degree in different fields

- Math,
- Psychology,
- Biology,
- Computer Science,
- Philosophy,
- Law,
- Economics,
- ...



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Basic knowledge in logic and epistemology, mathematics and computer science, cognitive, philosophical, legal sciences is required to enter the Degree.

Curricular requirements consist of the possession of at least 30 CFUs in the fields INF/01, ING-INF/05, MAT/01, 02, MAT/05, 06, 07, 09, SECS-S/01, M-FIL/02, 03, 05, M-PSI/01, 02, BIO/09, IUS/01, IUS/08, 09, 20, of which:

- at least 12 in the fields INF/01, ING-INF/05, MAT/01, 02, MAT/05, 06, 07, 09, SECS-S/01
- at least 12 in the fields M-FIL/02, 03, 05, M-PSI/01, 02, BIO/09, IUS/01, IUS/08, 09, 20.

Proficiency in English at a B2 level or higher per the Common European Framework of Reference for Languages (CEFR) is required for admission.



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Three main contexts

1. **HYBRID AI:** Integrating AI applications in an organisation and planning for fruitful collaboration between humans and machines, considering the philosophical, psychological and social components of this interaction
2. **NEURO AI:** Integrating and developing AI models for clinical and theoretical neuroscience; from Brain to AI and back
3. **AI & LAW:** Integrating AI applications for legal and ethical context (domestic and European), in public or private organisations



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1st year

COMMON BASE

**Advanced
Foundational
Courses**

2nd year

HYBRID AI

NEURO AI

AI & LAW



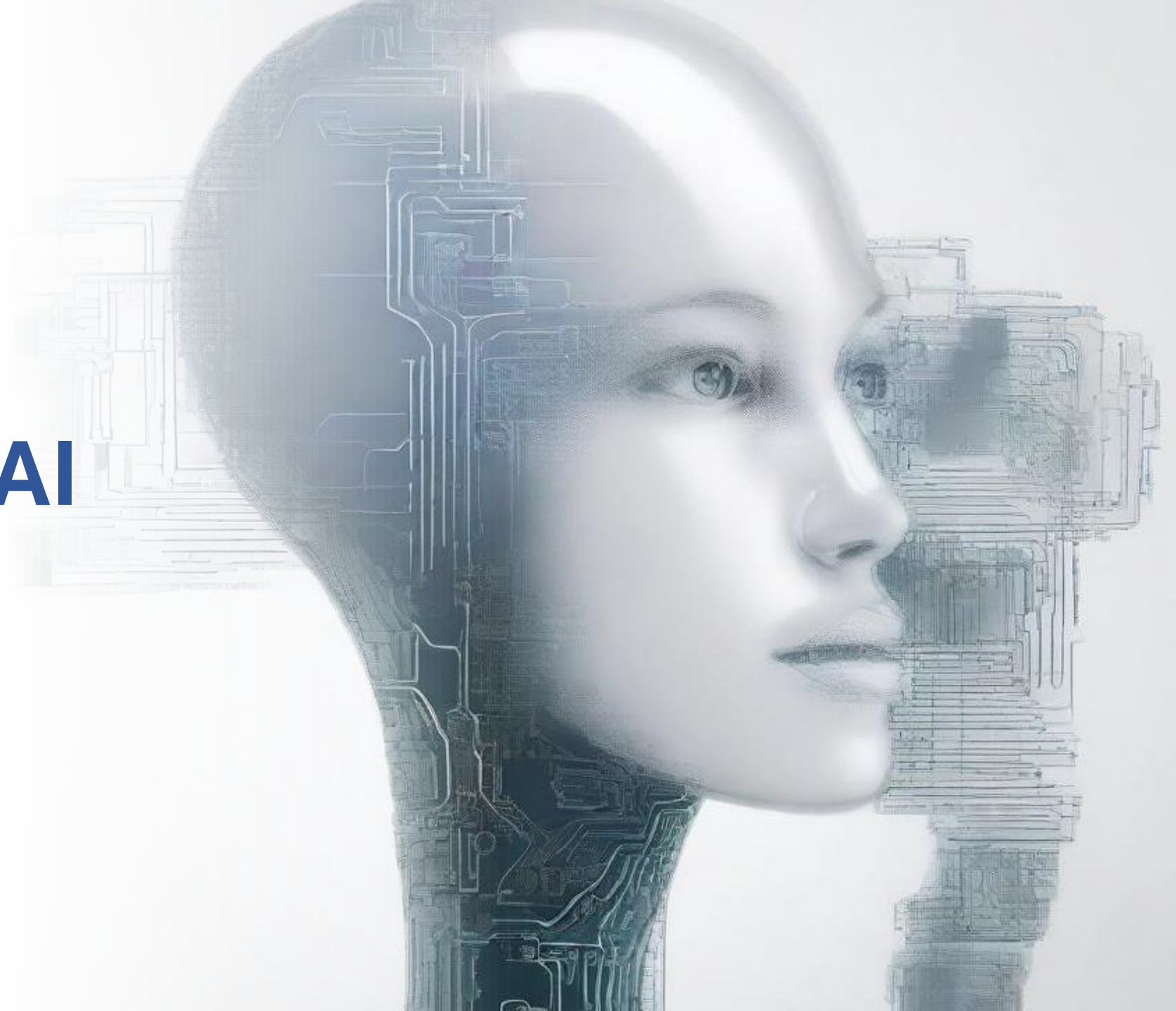
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HYBRID AI



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HYBRID AI: FOCUS

- Research and development activities aimed at fostering cooperation between symbolic artificial intelligence, machine learning and human intelligence.
- Knowledge of the fundamentals of artificial intelligence, both symbolic and sub-symbolic.



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HYBRID AI: AIMS

- Ability to foster dialogue and interaction among components of a team including developers and personnel with domain expertise.
- Develop skills and capabilities necessary to integrate AI into the work environment effectively, ethically, and strategically for the company or institution, fostering a human-centric perspective.
- Embrace the philosophical, psychological and anthropological aspects of the widespread diffusion of AI in the work environment and society.



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Compulsory

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Ai and Human Decision-Making	12	96	English	Second semester	M-PSI/01
Ai, Ethics and Law	6	48	English	First semester	IUS/20 M-FIL/03
Brain and Cognition	6	48	English	First semester	M-PSI/02
Machine Learning	6	48	English	First semester	INF/01
Mathematics for Ai	6	48	English	Second semester	MAT/07
Workshop: Programming Lab	3	36	English	First semester	

Optional activities and study plan rules

A1 - 1 exam to choose among:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Knowledge Representation and Reasoning	6	48	English	First semester	INF/01
Natural Language Processing	6	48	English	First semester	INF/01
Programming	6	48	English	First semester	INF/01

A2 - 1 exam to choose among:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Logics for Ai	6	48	English	Second semester	M-FIL/02
Philosophy of Cognitive Neuroscience	6	48	English	Second semester	M-FIL/02
The Epistemology of Big Data	6	48	English	Second semester	M-FIL/02

A3 - 6 ECTS in

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Principles of Social Psychology for Ai Design	6	48	English	Second semester	M-PSI/05

A6 - 1 exam to choose among:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Ai in Education	6	48	English		M-PED/03
Media Theory and Ai	6	48	English		L-ART/06 M-FIL/04
Technological Transfer	6	48	English		SECS-P/08

A7 - 1 exam to choose among:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Affective Computing	6	48	English		INF/01
Human-Computer Interaction	6	48	English	First semester	INF/01
Knowledge Representation and Reasoning	6	48	English	First semester	INF/01
Natural Language Processing	6	48	English	First semester	INF/01
Text and Argument Mining	6	48	English		INF/01

A8 - 1 exam to choose among:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Anthropology of Ai	6	48	English		M-DEA/01
Smart Contracts and Intellectual Property Law	6	48	English		INF/01 IUS/01
Sociology of Ai	6	48	English		SPS/08

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HYBRID AI: FUNCTIONS & SKILLS

- oversee staff training activities;
- assess the ethical, psychological and social aspects of AI deployment;
- make decisions based on logical-epistemological, cognitive and CS aspects;
- use data analysis and visualization tools aimed at human-computer interaction;
- develop AI applications in education, humanities, arts and culture
- coordinate a team composed of IT experts, domain experts, and ordinary users.



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HYBRID AI: EMPLOYMENT OUTLETS

AI TEAM MANAGER

- AI contact person in national and transnational SMEs and corporate groups
- In PA, independent authorities and national, EU and international agencies
- freelance consultant.



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NEURO AI



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NEURO AI: FOCUS

- Multiscale brain modelling
- AI algorithms in Basic and Clinical Neuroscience
- AI-Assisted Diagnosis and AI for clinical decision-making
- AI-based brain-computer interface
- Neurorobotics



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NEURO AI: AIMS

- further knowledge and skills in the field of neural bases of brain processes for the development of AI-based, multiscale and bio-inspired neural models and for the handling of human-machine interface neural signals
- knowledge and skills for the application of AI algorithms in the field of clinical neuroscience, to promote diagnostic and therapeutic/rehabilitation processes in the direction of precision and personalised medicine



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NEURO AI: FUNCTIONS & SKILLS

- ability to make decisions based on the neuroscientific, cognitive and computer science foundations of AI
- ability to analyze and visualize data, in the context of human-computer interaction
- ability to coordinate a team composed of computer scientists and domain experts
- ability to apply AI in the field of medicine



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Compulsory

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Ai and Human Decision-Making	12	96	English	Second semester	M-PSI/01
Ai, Ethics and Law	6	48	English	First semester	IUS/20 M-FIL/03
Brain and Cognition	6	48	English	First semester	M-PSI/02
Brain Modelling for Biomedicine and Ict	6	48	English	Second semester	BIO/09
Machine Learning	6	48	English	First semester	INF/01
Neurophysiology and Biophysics for Ai	6	48	English	Second semester	BIO/09
Workshop: Programming Lab	3	36	English	First semester	

Optional activities and study plan rules

C1 - 1 exam to choose among:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Knowledge Representation and Reasoning	6	48	English	First semester	INF/01
Natural Language Processing	6	48	English	First semester	INF/01
Programming	6	48	English	First semester	INF/01

C2 - 1 exam to choose among:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Logics for Ai	6	48	English	Second semester	M-FIL/02
Philosophy of Cognitive Neuroscience	6	48	English	Second semester	M-FIL/02
The Epistemology of Big Data	6	48	English	Second semester	M-FIL/02

Compulsory

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Ai Applied to Neuroimaging	6	48	English		FIS/07 MED/37
Ai Applied to Neurological Sciences and Brain-Computer Interfaces	6	48	English		M-PSI/02 MED/26

Optional activities and study plan rules

C4 - 1 exam to choose among:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Human-Computer Interaction	6	48	English	First semester	INF/01
Machine Learning for Collaborative Intelligent Systems	6	48	English		ING-INF/05
Neuromorphic Computing for Ai Solutions and Neuro-Robotics	6	48	English		ING-INF/05 ING-INF/06

C5 - 1 workshop to choose between:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Workshop: Software Tools for Machine Learning	3	36	English		
Workshop: Software Tools for Statistics	3	36	English		

C6 - 1 workshop to choose between:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Workshop: Neuromorphic and Neurorobotics	3	36	English		
Workshop: Neuroplasticity and Non-Invasive Brain Stimulation Techniques	3	36	English		

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NEURO AI: Employment Outlets

- Develop and use virtual models of the brain
- Interface the clinical setting with new AI-based ICT technologies
- Oversee the training activities of healthcare personnel by fostering the growth and dissemination of an "AI culture."
- Evaluate the ethical, psychological, and social aspects related to the introduction of artificial intelligence in the health and social context.



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AI & LAW



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AI & LAW: FOCUS

- Constitutional, EU and international principles involved;
- Media law;
- Responsibility;
- Justice;
- Tax law;
- Corporate, banking and insurance law;
- Labor law



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AI & LAW: AIMS

- Combining legal preparation with a conceptual and operational basis of AI technologies applied to data collection and analysis processes and decision-making in public and private entities
- Understanding of the legal discipline as a function of opportunities for technological, economic and social development;
- Understanding the legal framework and legal limitations (privacy, responsibility, human rights, etc.) for the best functioning of AI



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Compulsory

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Ai and Human Decision-Making	12	96	English	Second semester	M-PSI/01
Ai and Media Law	6	48	English	Second semester	IUS/08
Ai, Ethics and Law	6	48	English	First semester	IUS/20 M-FIL/03
Brain and Cognition	6	48	English	First semester	M-PSI/02
Data Protection, Law and Ai	6	48	English	Second semester	IUS/20
Machine Learning	6	48	English	First semester	INF/01
Workshop: Programming Lab	3	36	English	First semester	

Optional activities and study plan rules

B1 - 1 exam to choose among:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Knowledge Representation and Reasoning	6	48	English	First semester	INF/01
Natural Language Processing	6	48	English	First semester	INF/01
Programming	6	48	English	First semester	INF/01

B2 - 1 exam to choose among:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Logics for Ai	6	48	English	Second semester	M-FIL/02
Philosophy of Cognitive Neuroscience	6	48	English	Second semester	M-FIL/02
The Epistemology of Big Data	6	48	English	Second semester	M-FIL/02

Optional activities and study plan rules

B4 - 1 exam to choose among:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Corporate Governance and Ai	6	48	English		IUS/04
Responsibility and Ai	6	48	English		IUS/02 IUS/14
Sources of Law and Fundamental Rights in Ai	6	48	English		IUS/08

B5 - 1 exam to choose among:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Data Analysis and Tax Compliance	6	48	English		IUS/12 SECS-S/01
Digital Surveillance, Employee Monitoring and Selection By Ai	6	48	English		IUS/07
Justice By Algorithm	6	36	English		INF/01 IUS/16

B6 - 1 exam to choose among:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Ai and Public Administration	6	36	English		INF/01 IUS/10
Banking and Insurance Law	6	48	English		IUS/04 MAT/06
Multilevel Protection of Rights in Ai	6	48	English		IUS/13 IUS/14
Smart Contracts and Intellectual Property Law	6	48	English		INF/01 IUS/01

B7 - 1 workshop to choose among:

Courses or activities	ECTS	Total hours	Language	Lesson period	SSD
Workshop: Employee Monitoring and Recruitment	3	36	English		
Workshop: Forensics	3	36	English		
Workshop: Tax Data Analysis and Tax Risk	3	36	English		

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AI & LAW: FUNCTIONS & SKILLS

- cybersecurity;
- discrimination prevention;
- data protection;
- expenditure and performance control;
- analysis of contracts;
- predictive tax and crime risk;
- algorithmic decision-making (also involving employment decisions);
- digital evidence acquisition;
- use of intelligent databases and telematic justice platforms.



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AI & LAW: Employment Outlets

- functions in PA (Courts, tax authorities, local authorities) and international organizations;
- functions in private entities (professional firms; banks; insurance companies; publishers and the media in general);
- Self-employed persons.



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Applications for Academic Year 2025-2026

The Admissions for the Academic Year 2025-2026 are now open.

The Deadline for non-EU VISA Applicants is April 30th, 2025.
The Deadline for all other students is September 30th, 2025.

Applicants who satisfy the entry requirements will be invited for an Interview. Dates are as follows:

- 11 March 2025, 2pm (for Hybrid AI and for Neuro AI curricula)
- 11 March 2025, 3pm (for AI and Law curriculum)
- 9 April 2025, 2pm (for all the three curricula)
- 21 May 2025, 10.30am (for AI and Law curriculum)
- 22 May 2025, 10am (for Hybrid AI and for Neuro AI curricula)
- 18 September 2024, 10.30am (for AI and Law curriculum)
- 18 September 2024, 2pm (for Hybrid AI and for Neuro AI curricula)

Candidates will receive a personal invitation with a link to access the virtual interview room remotely.

Contacts

Email address of the admission committee

ammissioni.hcai@unimi.it



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A Human-Centered Artificial Intelligence



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