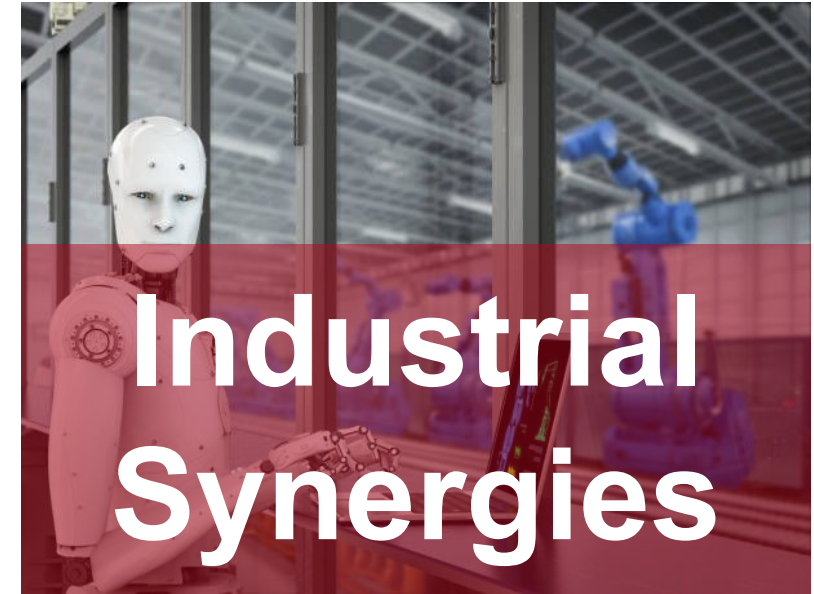






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DESIGN APPROACH TO THE PROGRAM

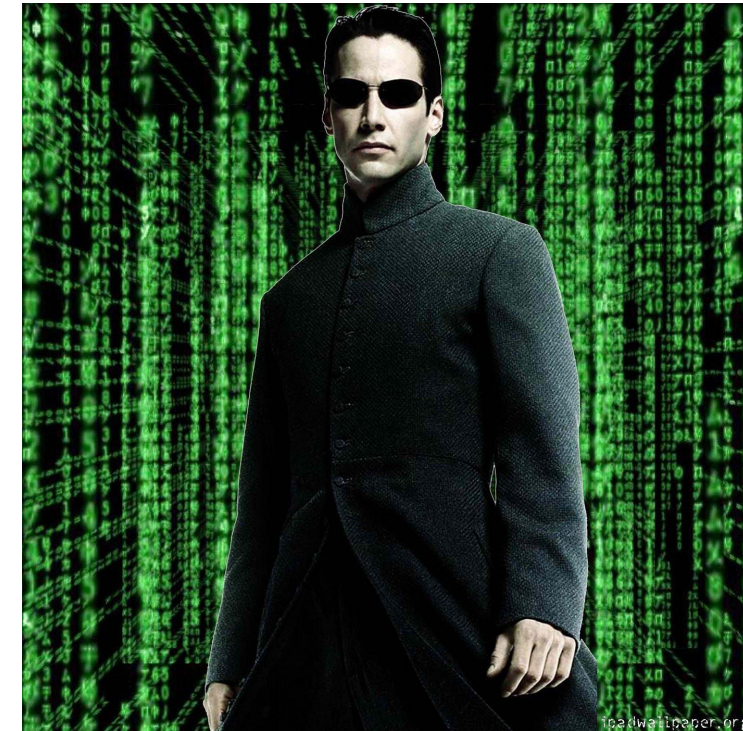


**Study Plan
Students' Autonomy**



Training a **professional** figure **able** to:

- ✓ **deliver core engineering** competencies and advanced computer science expertise
- ✓ **promote technological innovation** in the field of computer engineering and related disciplines
- ✓ **adapt** to its **rapid developments**
- ✓ easily **interact** with other engineering sectors and disciplines and **operate** in **different** application and **industry areas**
- ✓ **be ready** for pursuing a **research career** in academia or industry





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THE PROGRAM AT A GLANCE

4 CURRICULA

BACKED BY LEADING RESEARCH

RESEARCH TRAINING /
INTERNSHIP & THESIS

ARTIFICIAL INTELLIGENCE
AND ROBOTICS

BIOINFORMATICS

HIGH PERFORMANCE AND
BIG DATA COMPUTING

WEB AND INFORMATION
DATA ENGINEERING

CORE COMPETENCIES



	UNIPD	Italy
Occupation Rate	100.00%	96.00%
Net Monthly Salary	2,540€	2,198 €
PhD	20.00%	14.10%



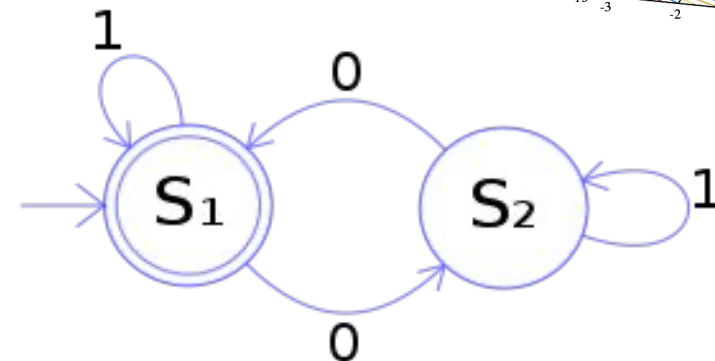
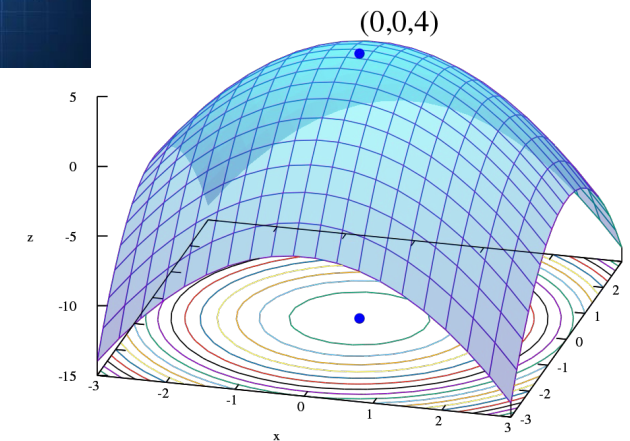
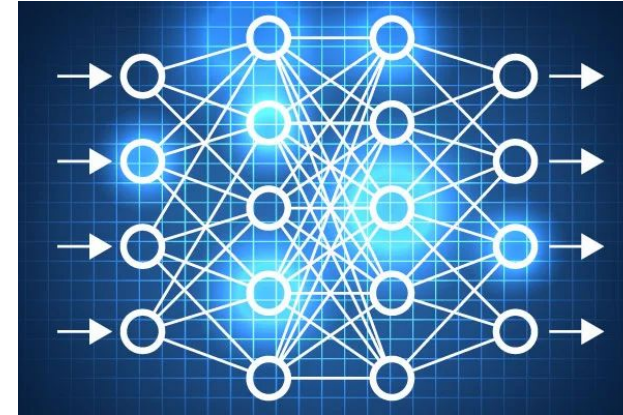
THE PROGRAM: CORE COMPETENCIES (ALL CURRICULA)

MANDATORY COURSES

Course	ECTS	Period
Automata, Languages and Computation	9	Y1.1
Machine Learning	6	Y1.1
Operations Research 1	9	Y1.1

OTHER ACTIVITIES

Activity	ECTS	
English Language/Italian Language	3	
Internship/Research Training	9	Y2
Final Project	21	Y2





✓ **Hands-on** experience

- Homeworks
- Laboratories
- Projects

✓ **Interdisciplinary** topics

✓ **Soft skills**: communication, teamwork, problem solving, critical thinking,...





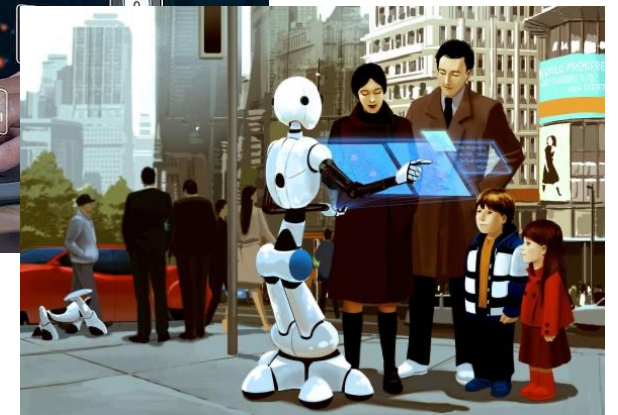
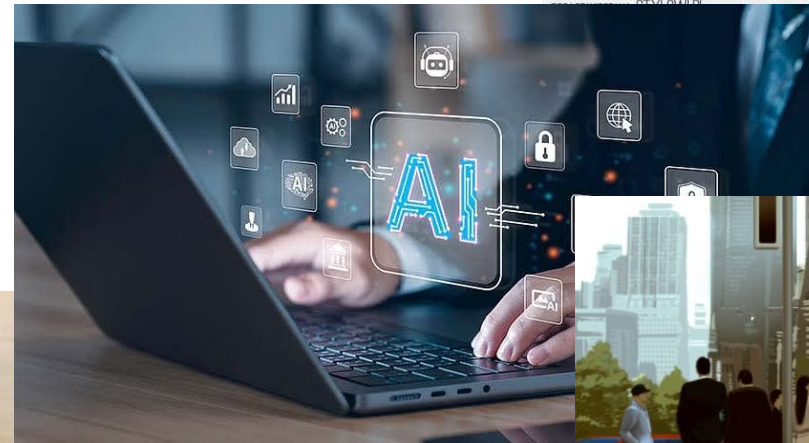
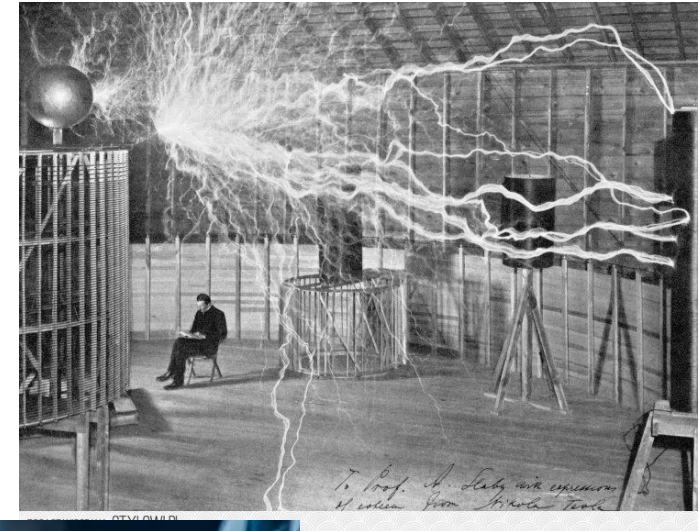
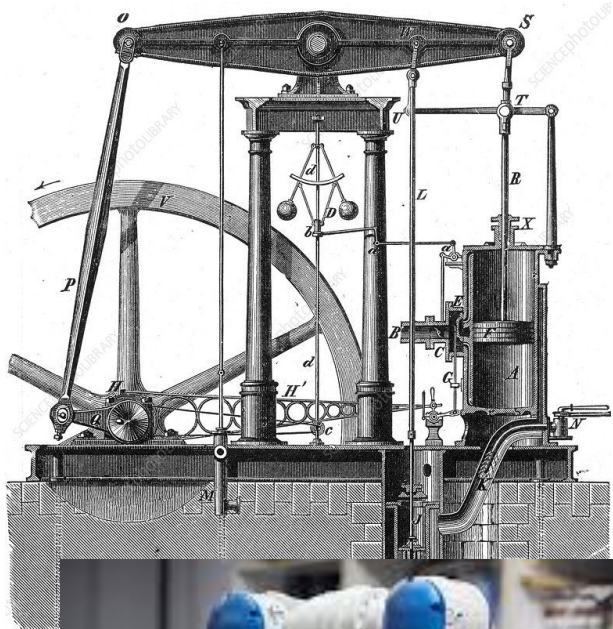
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ARTIFICIAL INTELLIGENCE AND ROBOTICS

Like the steam-engine or
electricity in the past...

AI and Robotics

are transforming our world,
our society and our industry





THE PROGRAM: ARTIFICIAL INTELLIGENCE AND ROBOTICS

MANDATORY COURSES

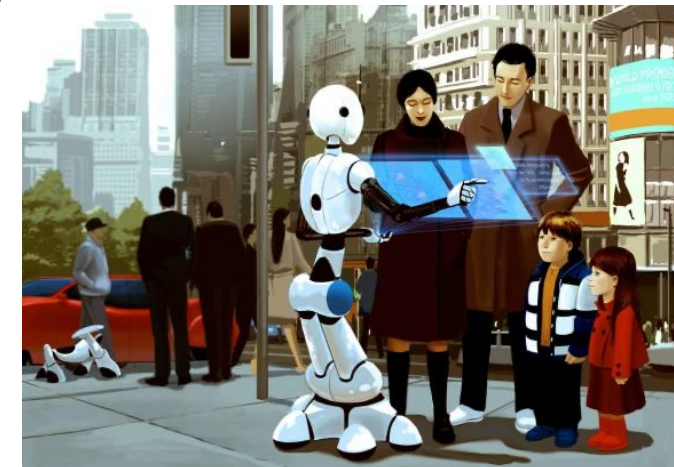
Course	ECTS	Period
Artificial Intelligence	9	Y1.2
Computer Vision	9	Y1.2
Deep Learning	6	Y1.2
Intelligent Robotics	9	Y2.1

ELECTIVE COURSES: AT LEAST 18 ECTS

Course	ECTS	Period
Big Data Computing	6	Y1.2
Robotics and Control 1	9	Y1.2
Neurorobotics	6	Y2.1
Learning from Networks	6	Y2.1
Natural Language Processing	6	Y2.2
3D Data Processing	6	Y2.2

OTHER CHOICES

Course	ECTS	Period
Quality Engineering	6	Y1.2
Reinforcement Learning	6	Y2.1
Game Theory	6	Y2.1
Innovation, Entrepreneurship, Finance	9	Y2.1
Industrial Robotics	9	Y2.1
Measurement Architectures for Cyber-Physical Systems	9	Y2.1
Operations Research 2	6	Y2.2





THE PROGRAM: BIOINFORMATICS

MANDATORY COURSES

Course	ECTS	Period
Inferential Statistics	6	Y1.1
Bioinformatics	9	Y1.2
Computational Genomics	6	Y2.1
Learning from Networks	6	Y2.1

ELECTIVE COURSES: AT LEAST 24 ECTS

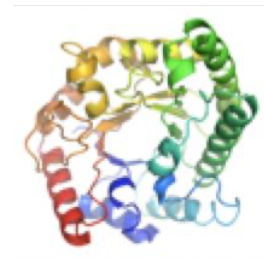
Course	ECTS	Period
Big Data Computing	6	Y1.2
Deep Learning	6	Y1.2
Search Engines	9	Y1.2
Web applications	6	Y1.2
Distributed Systems	9	Y2.1
Natural Language Processing	6	Y2.2

OTHER CHOICES: AT LEAST 12 ECTS

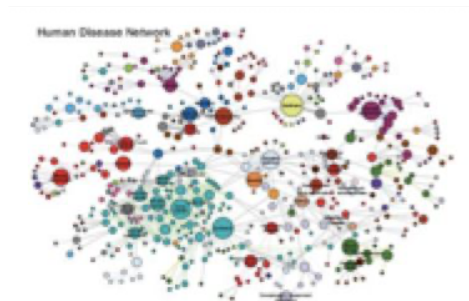
Course	ECTS	Period
Imaging for Neuroscience	9	Y1.2
Structural Bioinformatics	6	Y1.2
Advanced Algorithm Design	9	Y2.1
Genomics and NGS Data Analysis	9	Y2.2
Operations Research 2	6	Y2.2



Sequences (e.g., DNA)



3D data (e.g., proteins)



Networks (e.g., genes interactions)

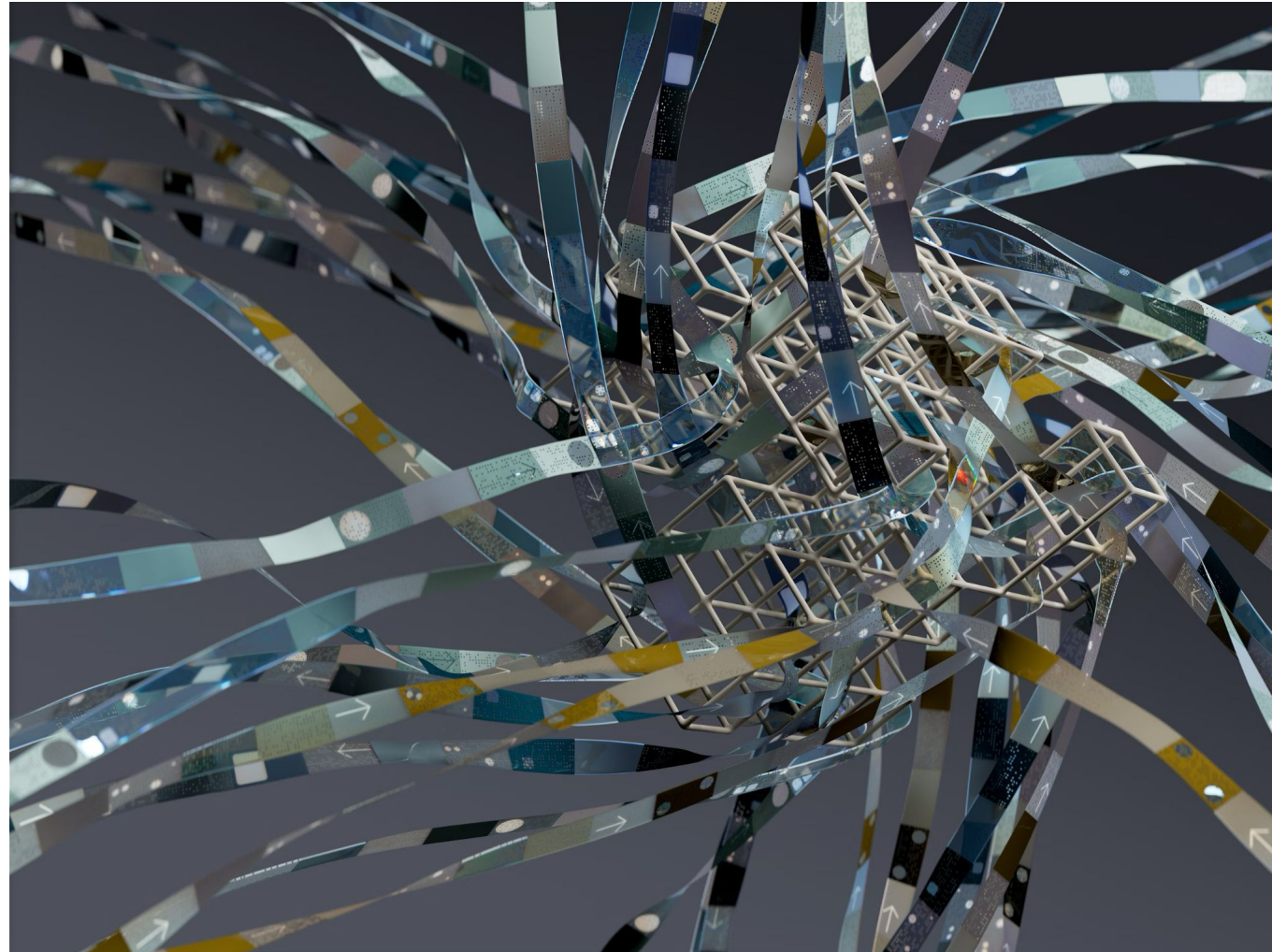


Motivation:

- ✓ **Data** is produced **everywhere!**
- ✓ **Extracting** significant **information** from gathered data

We need

- ✓ **Efficient** and scalable **algorithms**
- ✓ **Advanced** computing **systems**





THE PROGRAM: HIGH PERFORMANCE AND BIG DATA COMPUTING

MANDATORY COURSES

Course	ECTS	Period
Inferential Statistics	6	Y1.1
Big Data Computing	6	Y1.2
Parallel Computing	9	Y1.2
Advanced Algorithm Design	9	Y2.1

ELECTIVE COURSES: AT LEAST 21 ECTS

Course	ECTS	Period
Artificial Intelligence	9	Y1.2
Deep Learning	6	Y1.2
Search Engines	9	Y1.2
Computer Networks	9	Y1.2
Bioinformatics	9	Y1.2
Distributed Systems	9	Y2.1
Learning from Networks	6	Y2.1
Computers and Networks Security	6	Y2.2

OTHER CHOICES: AT LEAST 12 ECTS

Course	ECTS	Period
Cryptography	6	Y2.1
Computational Genomics	6	Y2.1
Game theory	6	Y2.1
Stochastic Processes	6	Y2.2
Operations Research 2	6	Y2.2

2021 This Is What Happens In An Internet Minute





Data is the new oil

- ✓ **Wide**-reaching competencies and skills in impacting domains (health, multilingual and multimodal information access, social media, e-commerce, ...)
- ✓ **Wide**-ranging knowledge in databases, web applications, search engines, recommender systems, semantic technologies, distributed systems, and security
- ✓ **Wide**-spectrum competencies in core computer engineering and cutting-edge technologies (knowledge graphs, LLMs, RAG, text analytics, ...)
- ✓ **Widen** your soft skills and hands-on experience on managing, accessing, sharing any kind of data (projects or assignments)



THE PROGRAM: WEB AND INFORMATION DATA ENGINEERING

MANDATORY COURSES

Course	ECTS	Period
Computer Networks	9	Y1.2
Search Engines	9	Y1.2
Web Applications	6	Y1.2
Graph Databases	9	Y2.1

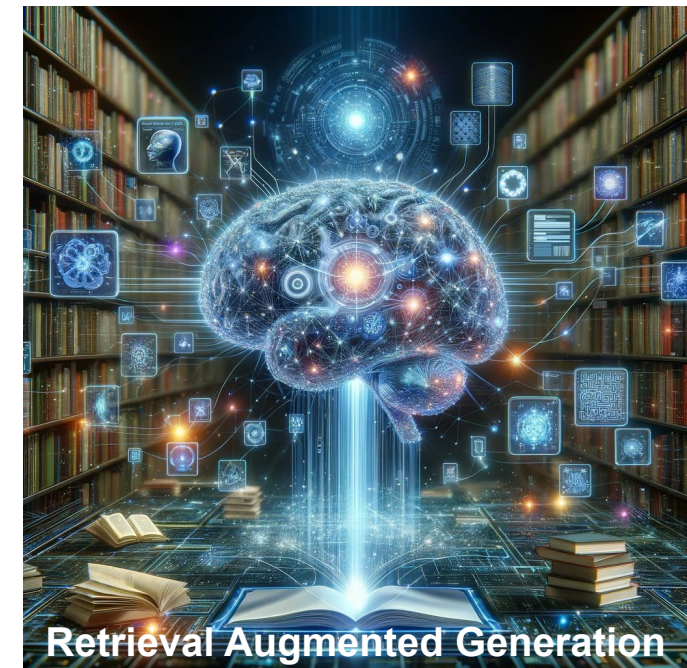
ELECTIVE COURSES: AT LEAST 18 ECTS

Course	ECTS	Period
Software Platforms	6	Y1.2
Distributed Systems	9	Y2.1
Concurrent and Real Time Programming	6	Y2.1
Privacy Preserving Information Access	6	Y2.1
Computers and Networks Security	6	Y2.2
Computer Engineering for Music and Multimedia	6	Y2.2
Natural Language Processing	6	Y2.2

OTHER CHOICES: AT LEAST 12 ECTS

Course	ECTS	Period
Inferential Statistics	6	Y1.1
Quality Engineering	6	Y1.1
Big Data Computing	6	Y1.2
Information Security	6	Y2.1
Advanced Text Analytics	6	Y2.1
Operations Research 2	6	Y2.2

Knowledge graphs



Retrieval Augmented Generation



More Info:

- ✓ <https://degrees.dei.unipd.it/master-degrees/computer-engineering/>
- ✓ <https://didattica.unipd.it/off/2025/LM/IN/IN2547>

Contacts

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