

Dottorato Nazionale in Intelligenza Artificiale

Italian National PhD in Artificial Intelligence

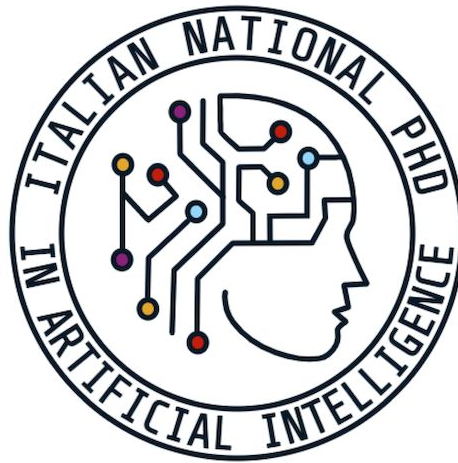
Welcome event - incontro inaugurale

Tuesday, 8 November 2022 h 11:00

University of Pisa

Aula Magna Nuova del Palazzo della Sapienza

and online at [Welcome event National Ph.D. in Artificial intelligence](#)



Italian National Ph.D. in Artificial Intelligence for Society

Welcome Meeting 2022 (38th Cycle)

Aula Magna Nuova, La Sapienza, via Curtatone e Montanara 15, Pisa, Italy

November 8th 2022 h11:00

University of Pisa



Italian National Ph.D. in Artificial Intelligence for Society

Welcome Meeting 2022 (38th Cycle)

Aula Magna Nuova, La Sapienza, via Curtatone e Montanara 15, Pisa, Italy
8th November 2022, h11:00



11:00 - Institutional Addresses

- ♦ **Prof. Riccardo Zucchi, University of Pisa**
Rector of the University of Pisa
- ♦ **Prof. Vincenzo Ambriola, University of Pisa**
Director of the Computer Science Department of the University of Pisa
- ♦ **Dr. Marco Conti, IIT-CNR**
Director of the Institute of Informatics and Telematics of the National Research Council

11:15 - The Italian National PhD in AI & the Scientific Vision

- ♦ **Prof. Dino Pedreschi, University of Pisa**
Director of the National Ph.D. in Artificial Intelligence

11:45 - Tour de Table

- ♦ Ph.D. Students
- ♦ Board Members

12:15 - Ph.D. Programme Organization

- ♦ **Prof. Dino Pedreschi, University of Pisa**
Coordinator of the National Ph.D. in Artificial Intelligence
- ♦ **Prof. Anna Monreale, University of Pisa**
Vice-Coordinator of the National Ph.D. in Artificial Intelligence for Society

12:45 - Query & Answer

13:00 - Networking lunch



Agenda

11:00 Institutional Addresses

Rettore **Università di Pisa**, Prof. Riccardo Zucchi

Direttore **Dipartimento di Informatica**, Università di Pisa, Prof. Vincenzo Ambriola

Delegato Presidente **CNR**, Dr. Marco Conti

11:15 Prof. Dino Pedreschi: The Italian National PhD in AI & its Scientific Vision

11:45 **Tour de Table** of the PhD Students & Board Members

12:15 Proff. Dino Pedreschi and Anna Monreale: **PhD Programme Organization**

12:45 Q&A

13:00 **Networking lunch**

DOTTORATO NAZIONALE IN INTELLIGENZA ARTIFICIALE

HOME

MODELLO ORGANIZZATIVO

NEWS

CRONOPROGRAMMA

CONTATTI



POLITECNICO
DI TORINO

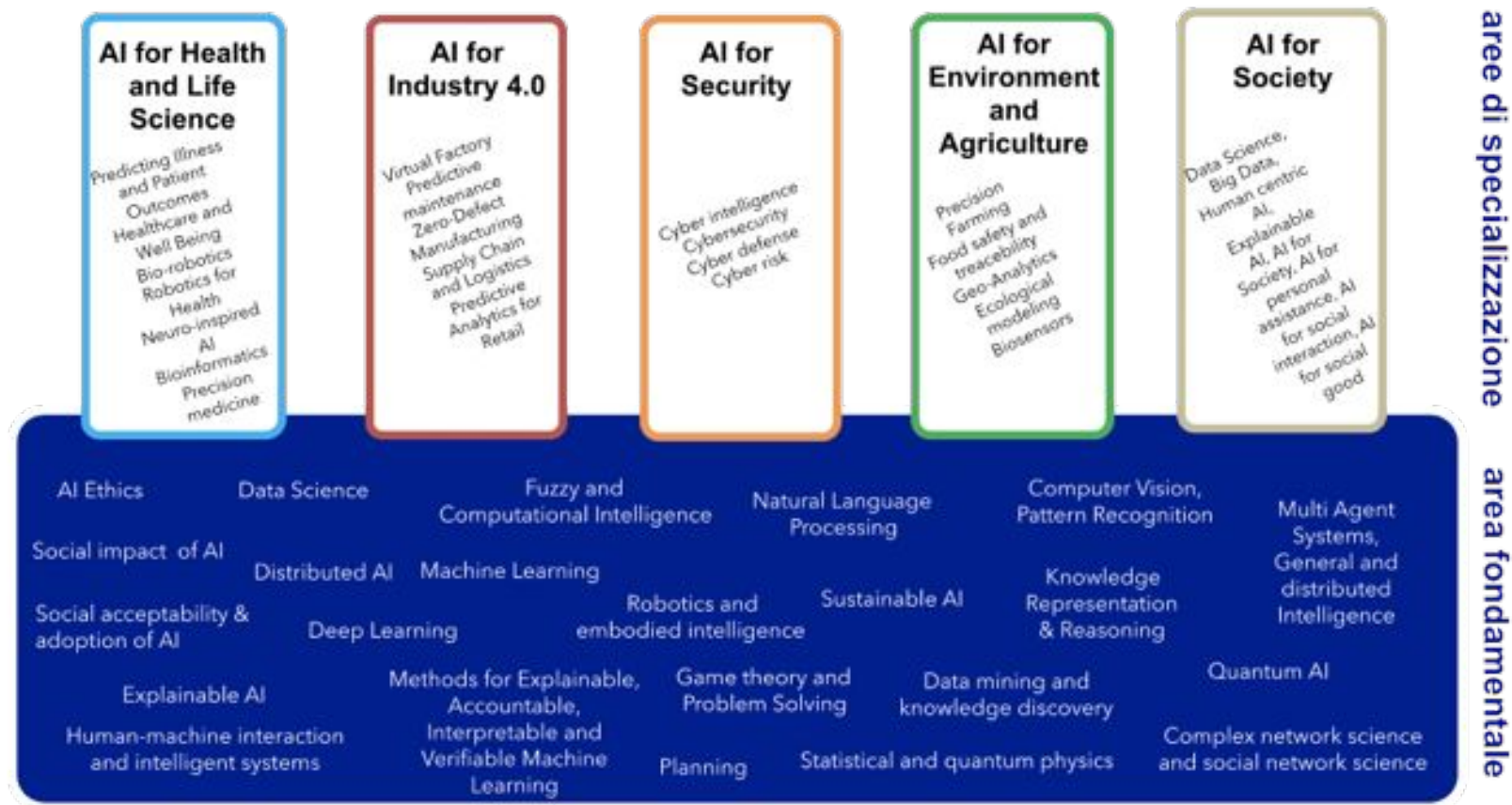


PhD-AI.it <https://www.phd-ai.it/>

Dino Pedreschi
Università di Pisa

Marco Conti
CNR

PhD-AI.it: scientific model



PhD-AI.it: 5 federated PhD courses

- | | |
|----------------------------------------------------|-----------------------------------------------|
| PhD-AI.it area health and life sciences | sede ammin. Campus Bio-Medico Roma ; |
| PhD-AI.it area agrifood & environment | sede ammin. Univ. Napoli Federico II ; |
| PhD-AI.it area security & cybersecurity | sede ammin. Sapienza Univ. Roma ; |
| PhD-AI.it area industry 4.0 | sede ammin. Politecnico Torino ; |
| PhD-AI.it area società | sede ammin. Univ. Pisa . |

PhD-AI.it: numbers

2 coordinating institutions (UNIFI and CNR)

5 organizing universities

61 participating institutions

15+ million euro funding from MUR and participating institutions

194 phd fellowships

2 cycles starting 2021 and 2022

+ planning for the future + PNRR



Politecnico di Torino



SAPIENZA
UNIVERSITÀ DI ROMA



UNIVERSITÀ DEGLI STUDI
di NAPOLI FEDERICO II



UNIVERSITÀ DI PISA



Consiglio Nazionale
delle Ricerche



UNIVERSITÀ DI PISA

www.PhD-AI.it

AI for Health and Life Science

Predicting illness
and Patient
Outcomes
Healthcare and
Well Being
Bio-robotics
Robotics for
Health
Neuro-inspired
AI
Bioinformatics
Precision
medicine

AI for Industry 4.0

Virtual Factory
Predictive
maintenance
Zero-Defect
Manufacturing
Supply Chain
and Logistics
Predictive
Analytics for
Retail

AI for Security

Cyber intelligence
Cybersecurity
Cyber defense
Cyber risk

AI for Environment and Agriculture

Precision
Farming
Food safety and
traceability
Geo-Analytics
Ecological
modeling
Biosensors

AI for Society

Data Science,
Big Data,
Human centric
AI,
Explainable
AI, AI for
Society, AI for
personal
assistance, AI
for social
interaction, AI
for social
good

AI Ethics

Data Science

Fuzzy and
Computational Intelligence

Natural Language
Processing

Computer Vision,
Pattern Recognition

Multi Agent
Systems,
General and
distributed
Intelligence

Social impact of AI

Distributed AI

Machine Learning

Robotics and
embodied intelligence

Sustainable AI

Knowledge
Representation
& Reasoning

Social acceptability &
adoption of AI

Deep Learning

Explainable AI

Methods for Explainable,
Accountable,
Interpretable and
Verifiable Machine
Learning

Game theory and
Problem Solving

Data mining and
knowledge discovery

Quantum AI

Human-machine interaction
and intelligent systems

Planning

Statistical and quantum physics

Complex network science
and social network science

Ateneo sede amministrativa: Università di Pisa

- **Atenei ed enti partecipanti:**
 - **CNR**, Scuola Superiore **Sant'Anna**, Scuola **Normale** Superiore, Scuola **IMT** Lucca, Università di **Firenze**, Università di **Modena e Reggio Emilia**, Università di **Siena**, Università di **Trento**
- **Atenei ed enti associati:**
 - Università di **Bari**, Università **Cattolica** del Sacro Cuore, Università **dell'Aquila**, Università degli Studi di **Napoli L'Orientale**, Università di **Sassari**, Università del **Salento**, Università di **Messina**, **INFN**
- **Aziende: Beam me up, OctoTelematics**
- **Borse bandite a.a. 2022-2023: 46 (+1 posto di dottorato industriale, azienda MACAI)**

AI & Society: numbers

Applications: **109**

Admitted to interview: **98**

Ranked: **67**

Fellowships: **40**

Extra positions:

- 4** “assegnisti di ricerca”

- 1** dipendente pubblico

- 1** dottorato industriale

Not only computer scientists/engineers:

- math, physics, stat, economics, social/political sciences, law, linguistics, ...

PNRR Grants

- **10 Grants funded by PNRR (Decr. n.351/2022)**
 - 6 months of study and research activity abroad (MANDATORY)
- **4 Grants funded by PNRR (Decr. n.351/2022) Public Administration**
 - 6 months of study and research activity abroad (MANDATORY)
 - 6 months of study and research activity in industries or research centers (MANDATORY)
 - Università di Trento, Università Cattolica del Sacro Cuore, Università di Messina
- **2 Grants co-funded by PNRR (Decr. n.352/2022)**
 - 6 months of study and research activity abroad (MANDATORY)
 - 6 months of study and research activity in industries or research centers (MANDATORY)
 - co-funders: Beam me up, OctoTelematics

AI for Society

The study of society and the **complexity of social and economic phenomena** has received a strong boost in the last decade thanks to **AI and Data Science** methods, powered by the social microscope of **big data analytics** and **social mining** through **interdisciplinary hybridisation with social and economic sciences**. The combination of the model-driven and data-driven approaches of **data mining, machine learning and network science** is progressively increasing the ability to observe, measure, model and predict complex socio-economic phenomena, such as **human mobility** and the dynamics of cities, **migration** and its economic determinants, the **wellbeing** dimensions of communities, the formation and dynamics of opinions and **online conversations**, and the **social impact of AI** systems. This scientific line is intertwined with that of **human-centered AI**, the development of advanced forms of **human-machine interaction** capable of improving the quality of individual and collective **decision making** in sensitive fields, from **health to justice**, economic transactions, and risk assessment in various social and economic domains. The AI for Society specialisation area will focus on crucial topics such as **explainable AI**, AI for personal assistance, AI for social interaction, **AI for social good**, following an approach aimed at incorporating shared ethical values (**ethics-by-design**) in AI systems and at achieving common goals, with a view to sustainability, diversity, respect for human dignity and autonomy, inclusiveness and social acceptability.

HUMANE



AI

Shaping the AI revolution in a direction that is beneficial to humans on both **individual** and **societal** levels

„understanding” humans

interacting in complex social settings

enhance human capabilities

empower individuals and society as a whole

respecting human autonomy and self-determination

Fundamental Scientific Problems

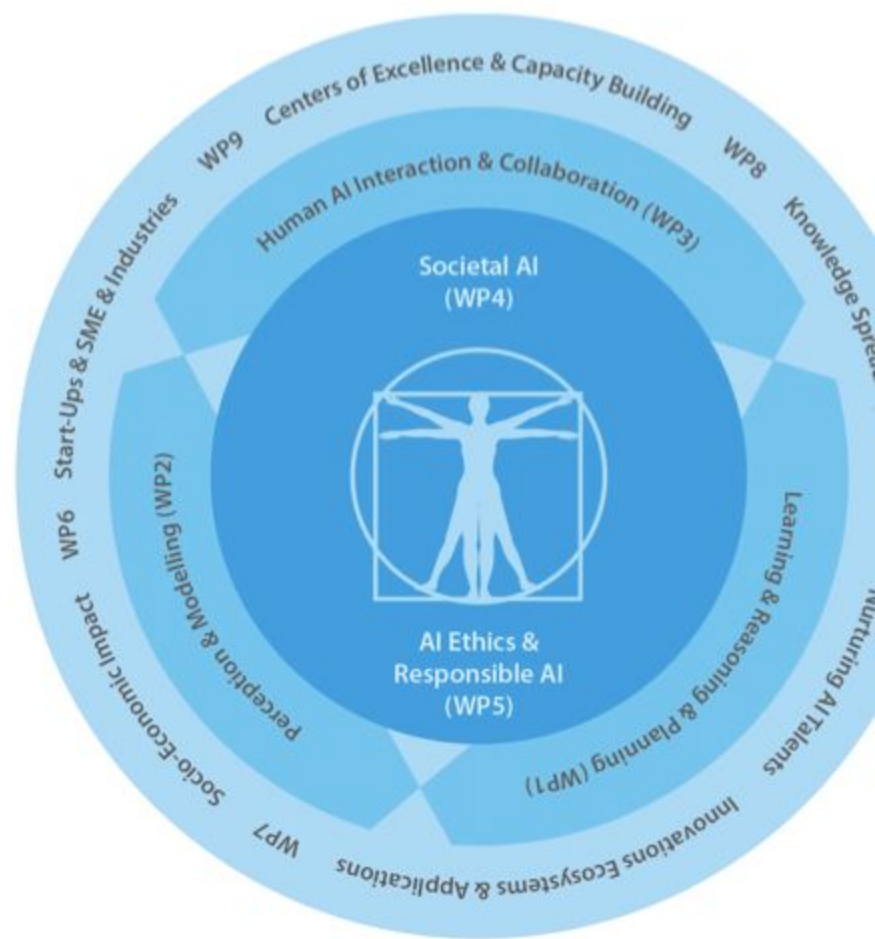
Human-in-the-loop machine learning, reasoning, and planning.

Multimodal perception and modeling.

Human-AI collaboration and interaction.

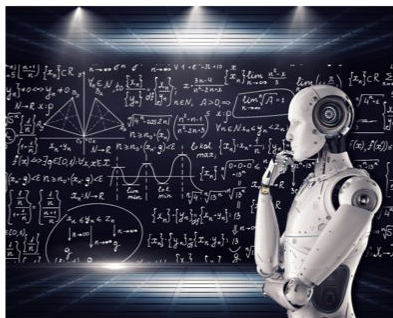
Societal awareness.

Legal and ethical bases for responsible AI.





Call for tender for the presentation of intervention proposals for the Creation of Enlarged Partnerships extended to Universities, Research Centres, Enterprises and funding basic research projects to be funded under the National Recovery and Resilience Plan (NRRP), Mission 4 Component 2 Investment 1.3 funded from the European Union - NextGenerationEU.



Piano Nazionale di Ripresa e Resilienza
NEXTGENERATIONITALIA



National Research Council of Italy

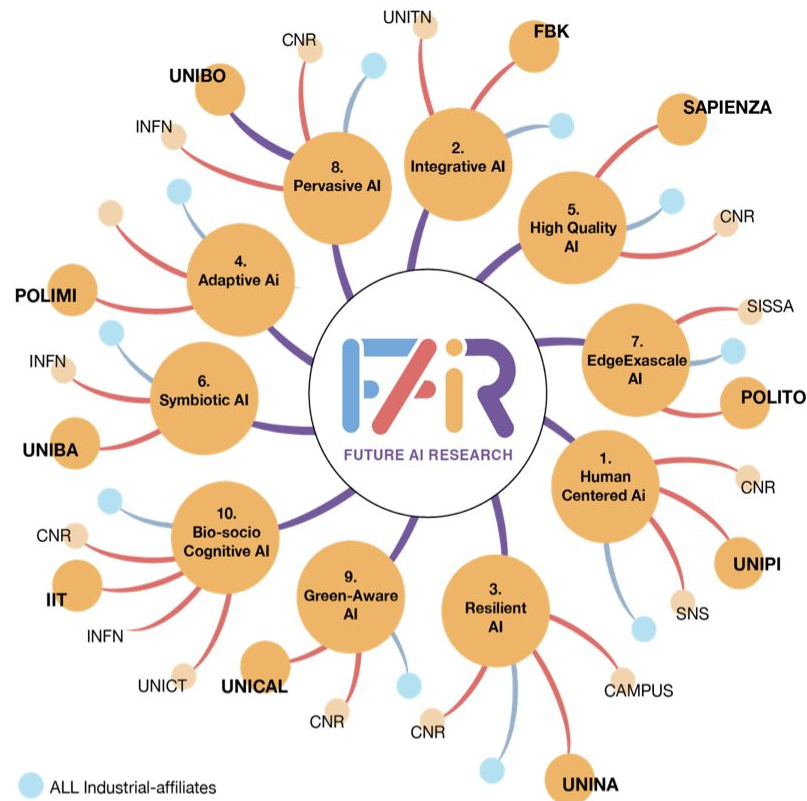
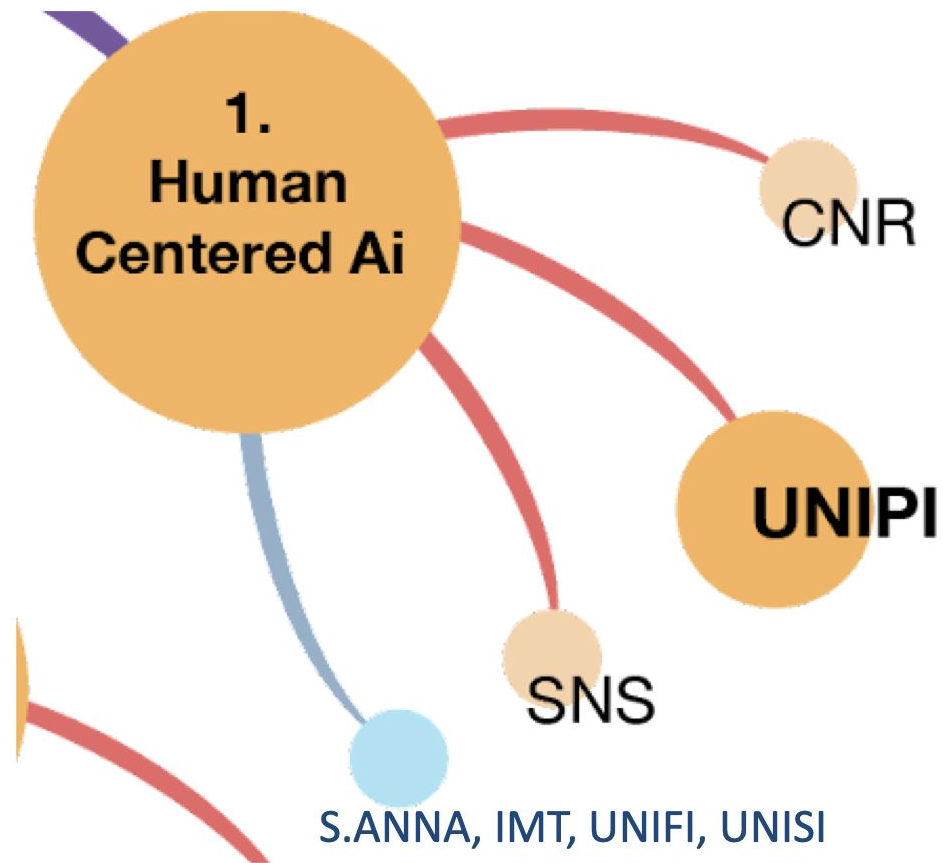


Fig. A.2 Spokes and Affiliates

Lo spoke Toscano



Human-centered AI

- **Human-in-the-loop machine learning, reasoning and co-evolution**
- **AI mediated complex social systems and social AI**
- **(co-)Design of trustworthy AI systems** aims at responsible (co-)design, development, validation and use of trustworthy AI systems, to incorporate “by-design” European values.
- **A strong multidisciplinary focus**
- **Many application domains:** healthcare, urban mobility, recruitment, public policy, finance, justice, engineering, scientific research

sobigdata.IT

■ ■ ■ ■ ■ Social Mining & Big Data Analytics

SoBigData

RESEARCH INFRASTRUCTURE



Tour de table

Our PhD students and Board Members

PhD course organization

Dino Pedreschi and Anna Monreale

Vademecum at <https://phd-ai-society.di.unipi.it/>

Assignment of PhD Students to scholarship/institution

- Formal assignment approved by the PhD Board
- Informally, each PhD students is already assigned to a host institution
- The reference workplace (desk) of each PhD student is provided by the host institution
- UNIP/CS dept. is working at providing open space desk for temporary visiting PhD students

Training Activities: requirements

Minimum **140 hours** of courses to be attended (overall in 3 years, the earlier the better)

Each PhD student is expected to

- attend and take the exam of three or more courses involving **at least 80 hours** of lectures in total. These courses should be selected among the ones made available by our PhD programme and by the other 4 PhD programmes of PhD-AI.it;
- attend **at least 60 hours** of training activities (without exams) provided exclusively for PhD students by the universities and research institutions of PhD-AI.it (or from other Italian and International institutions, subject to authorization of the PhD Board)
- attend **two PhD schools organized by PhD-AI.it** (the corresponding hours are included in the 60 hours above)

Training Activities

Seminars, “Summer School” and other training activities

The additional 60 hours of training activities (without exams) may include:

- **cycles of seminars** and **doctoral schools**, organized by university or research institutions external to PhD-AI.it (subject to the authorization of the PhD Board), with specific indication that they are aimed exclusively or mainly at doctoral students.

The additional 60 hours of training activities may include, up to a maximum of 20 hours:

- activities on soft skills, research management, European and international research systems, entrepreneurship, intellectual property, etc., organized by the university or research institutions of the PhD-AI.it.

AI & Society Summer School 2022 → 2023

[Home](#) / [National Ph.D. in Artificial Intelligence for Society](#) / [Summer Schools](#) / [AI & Society 2022 Summer School](#)

AI & Society 2022 Summer School

Where: Aula Magna Area Bruno Pontecorvo, Edificio E, University of Pisa

When: 4th – 8th July 2022

Welcome to Pisa, home of the first edition of the “AI & Society Summer School”, organized by the Italian National PHD program in Artificial Intelligence, PhD-AI.it. The Summer School is dedicated to the PhD students of the “AI & Society” branch of PhD-AI.it, and open to PhD students of the other branches. Five thrilling days of lectures, panel, poster sessions and proactive project work, to advance the frontier of AI research together with internationally renown scientists. And plenty of social activities to mix up and build the community of next-generation AI researchers, innovators and professionals.

<https://phd-ai-society.di.unipi.it/summer-schools/ph-d-ai-society-summer-school-2022/>

Study Plan

- Each PhD student compiles a study plan in collaboration with her supervisors and the PhD coordinator **within December 2022/January 2023.**
- The PhD Board will approve the study plan
 - The study plan can be modified
- The PhD Board can indicate for a specific student additional courses for alignment purposes (up to a maximum of 60 hours)
- Exams: preferably within the first year, but no later than the second year.

PhD Course Offer 2022/23

- Working on it, will be made available soon on the website <https://phd-ai-society.di.unipi.it/training/>
- The activities will be made available in hybrid mode (onsite+online) when possible
- Check with your supervisors/reference persons what is available onsite at your location

Research Activity & PhD Thesis

Supervisors

- The PhD Board will assign at least two supervisors during the first year, in order to cover the multidisciplinary nature of thesis.

Individual Panel for each PhD student

- The Panel has an advising role for the yearly PhD student assessment.
- The Panel is approved by PhD Board
- Panel composition (recommendations):
 - at least 2 supervisors
 - at least additional 3 members
 - at least 3 members should be part of the PhD Board
 - foster diversity in terms of interdisciplinarity and collaboration between different research groups

Evaluation Steps for the PhD activities

- **End of the first year:** Definition of the Panel & Thesis Proposal
 - Submission of the proposal to the panel + presentation and evaluation
- **End of the second year:** Thesis Progress
 - Presentation of the research progress to the panel + evaluation
- **End of the third year:** Final Thesis
 - Presentation of the final thesis to the panel
 - Evaluation from 2 external reviewers
 - **Defense** and final evaluation to get the PhD degree

Report of activities (training and research) compiled by each PhD student at the end of each year

Available funding for PhD students

- **Fellowship:** € 48.729,00 over 3 years (01.11.2022 - 31.10.2025)
- **Budget 20% for research activity** (overall 3 years): € 9.745,80
- **Functioning funds** (available since first year): € 1.264,01
- Possibility of periods of study/research abroad: up to 12 months
 - **Fellowship increased 50%**

Contacts

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PhD Students PhD-AI for Society <u>cycle 38th</u>	phdstudents-38-ai-society@PHD-AI.IT
PhD Students PhD-AI for Society cycles 37th and 38th	phdstudents-ai-society@PHD-AI.IT

Q&A

Welcome & best wishes to our PhD students!