Dottorato Nazionale in Intelligenza Artificiale

Italian National PhD in Artificial Intelligence

Kick-off event - incontro inaugurale

Wednesday, 17 November 2021 h 09:30

University of Pisa
Aula Magna Storica della Sapienza
and online at https://call.unipi.it/aiphd

Institutional Addresses

Rettore **Università di Pisa**, Prof. Paolo Mancarella
Delegato Presidente **CNR**, Dr. Marco Conti
Rettrice **Scuola Sant'Anna**, Prof.ssa Sabina Nuti
Delegata Direttore **Scuola Normale Superiore**, Prof.ssa Fosca Giannotti
Direttore **Scuola IMT Lucca**, Prof. Rocco De Nicola
Delegato al Dottorato di Ricerca **Università di Firenze**, Prof. Stefano Cannicci
Delegati **Università di Trento**, proff. Paolo Giorgini e Niculae Sebe
Delegato **Università di Siena**, Prof. Stefano Melacci
Delegato **Università di Modena e Reggio Emilia**, Prof. Paolo Pavan
Direttore **Dipartimento di Informatica**, Università di Pisa, Prof. Vincenzo Ambriola

DOTTORATO NAZIONALE IN INTELLIGENZA ARTIFICIALE

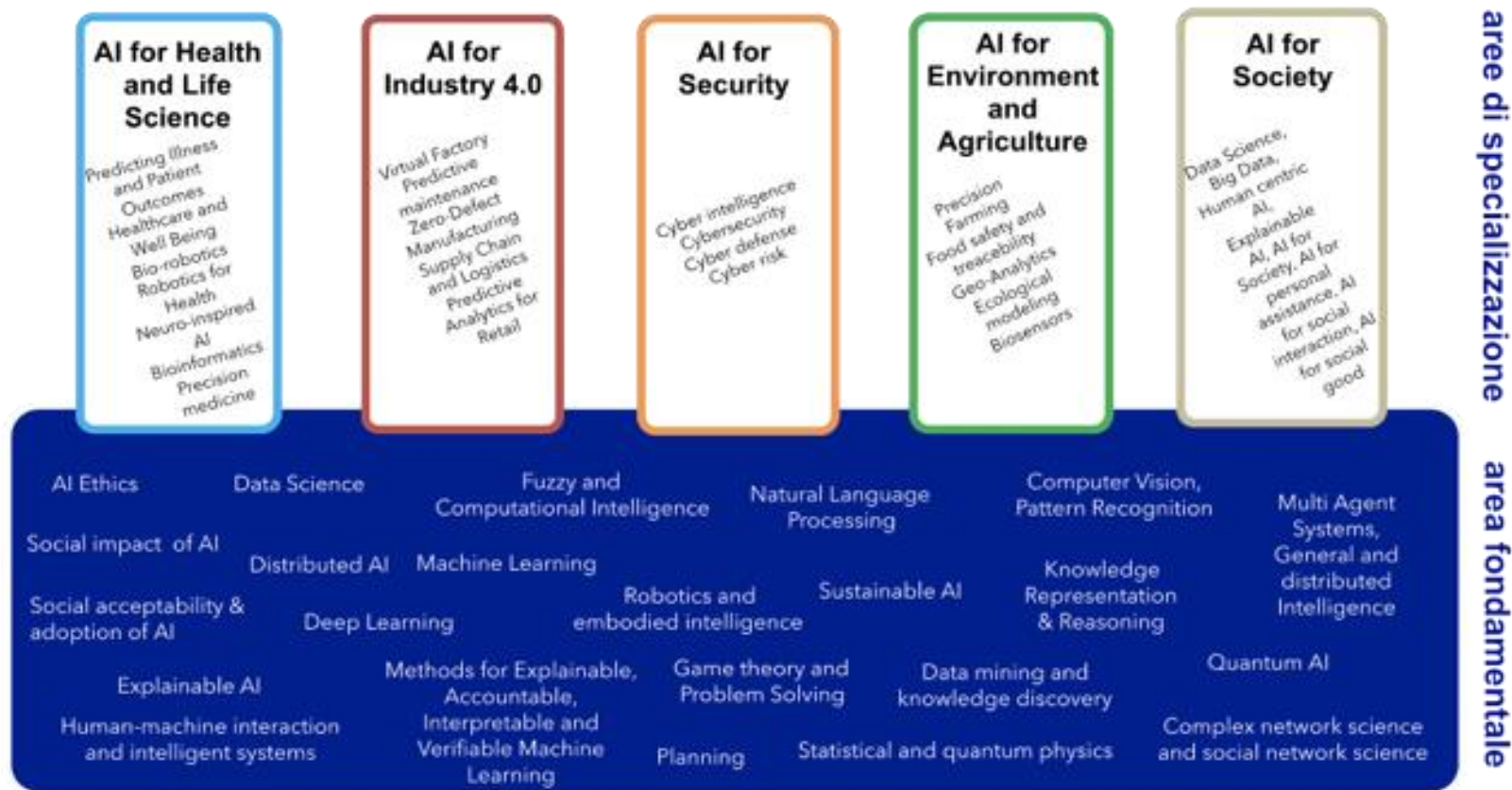HOME   MODELLO ORGANIZZATIVO   NEWS   CRONOPROGRAMMA   CONTATTI   🔍

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 (UNIPI 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

+3   more cycles likely supported by recovery funds

Interim National Coordination Committee

- Dino Pedreschi, Univ. Pisa
- Marco Conti, CNR
- Barbara Caputo, Poli TO
- Daniele Nardi, Univ. Roma La Sapienza
- Eugenio Guglielmelli, Univ. Campus Biomedico Roma
- Francesco Loreto, Univ. Napoli Federico II

UNIVERSITÀ CAMPUS BIO-MEDICO DI ROMA

Politecnico di Torino

SAPIENZA UNIVERSITÀ DI ROMA

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

UNIVERSITÀ DI PISA

Consiglio Nazionale delle Ricerche

UNIVERSITÀ DI PISA

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 treacebility
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
Sustainable AI
Knowledge Representation & Reasoning

Social acceptability & adoption of AI
Deep Learning
Robotics and embodied intelligence

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

AI & 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 **inter-disciplinary 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-centric AI**, the development of advanced forms of **person-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.

HUMAN**E** AI

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

HUMANE AI NET

„understanding" humans

interacting in complex social settings

enhance human capabilities

empower individuals and society as a whole

respecting human autonomy and self-determination
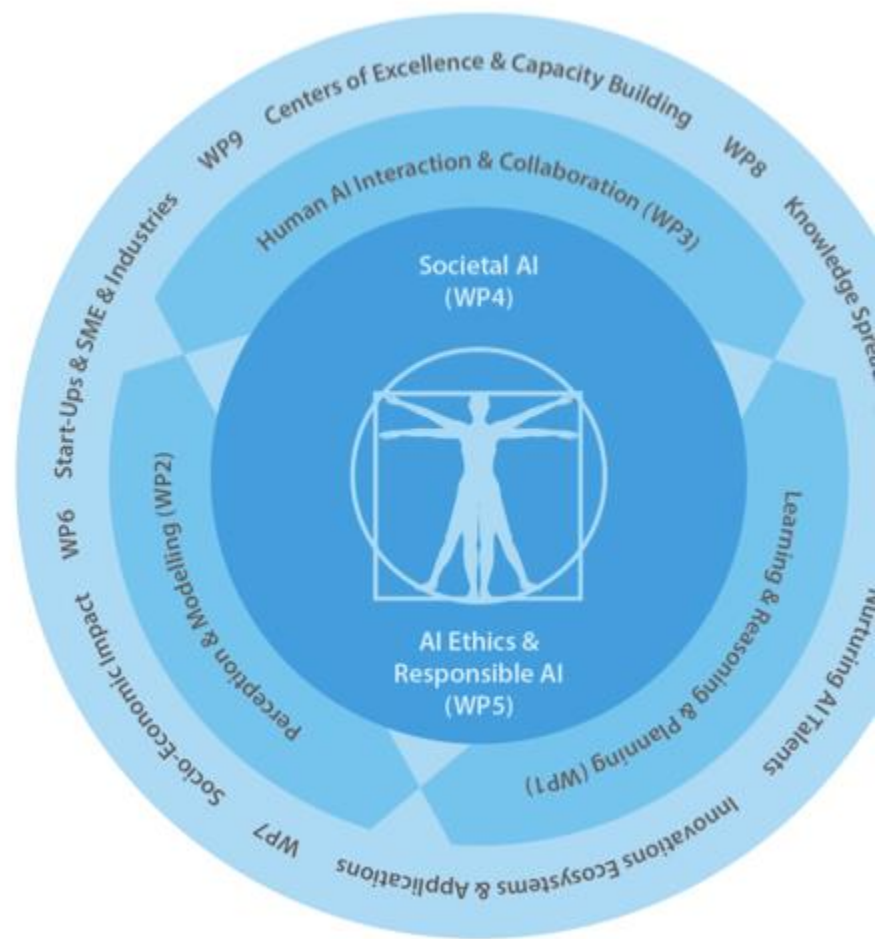
Fundamental Scientific Problems

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.

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 di **Bologna**, Università **Cattolica** del Sacro Cuore, Università **dell'Aquila**, Università degli Studi di **Napoli L'Orientale**, Università di **Sassari**, Università di **Trieste**, INDAM (Istituto Nazionale di Alta Matematica "F. Severi")
- **Borse bandite a.a. 2021-2022: 43 (+1** finanziata da Open Fiber SpA)

AI & Society: numbers

Applications: **178**

Admitted to interview: **122**

Ranked: **92**

Fellowships: **43**

Extra positions:

3 "assegnisti di ricerca"

1 dipendente pubblico

5 Early Stage Researchers - Marie-Curie program LeADS

Not only computer scientists/engineers:

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

Responsible AI:
from principles to practice

Virginia Dignum

Our keynote speaker: **Virginia Dignum**

Virginia is professor in social and ethical AI at Umeå University, and Wallenberg chair on Responsible Artificial Intelligence.

Scientific Director of WASP-HS (Humanities and Society).

Author of "*Responsible Artificial Intelligence*", Springer 2019

Member of the European Commission High Level Expert Group on Artificial Intelligence, the World Economic Forum Council on AI, the IEEE Global Initiative on Ethically Aligned Design of Autonomous and Intelligent Systems, and more ...

PhD course organization

Dino Pedreschi and Anna Monreale

Assignment of PhD Students to scholarship/institution

Formal assignment approved by the PhD Board

Each PhD students is assigned to a host institution

The reference workplace (desk) of each PhD student is provided by the host institution

UNIPI/CS dept. provide 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 additional 60 hours** of training activities 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 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.

Study Plan

Each PhD student compiles a study plan in collaboration with her supervisors and the PhD coordinator within December 21/January 22.

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

Most activities are being made available in hybrid mode (onsite+online)

Check with your supervisors/reference persons what is available onsite at your location

https://phd-ai-society.di.unipi.it/training/

Research Activity & PhD Thesis

Individual Panel for each PhD student

- Co-supervision to cover the multidisciplinary nature of thesis
- 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
    - Panel approved from PhD Board

Evaluation Steps for the PhD activities

- **Thesis Proposal** (end of the first year) - submission of the proposal to the panel + presentation and evaluation
- **Thesis Progress** (end of the second year) - presentation of the research progress to the panel + evaluation
- **Final Thesis** (end of the third year) - 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: € 46.029,84 over 3 years (01.11.2021 - 31.10.2024)

Mobility (second and third year): € 7.671,65

Other funding (available since first year): € 1.264,01

Possibility of periods of study/research abroad: up to 12 months

   Fellowship increased 50%

Q&A

Best wishes to our PhD students!