

# Annual Research Report 2023

Department of Computer Science  
University of Pisa

30 September 2024

## Preface

This report summaries the main research activities and achievements at the Computer Science Department of the University of Pisa in 2023. Specifically, after a short introduction to the Department, we list: (i) the funded projects active in 2023 that were managed by the Department; (ii) the editorship of journals or special issues pursued by members of the Department; (iii) the scientific associations and societies that involved members of the Department in their managing boards; (iv) the scientific events involving members of the Department in 2023; (v) the new research positions that have been opened in 2023 with their specific themes; (vi) the description of PhD schools managed by the Department in 2023, and of a PhD participated by the Department; (vii) the visiting fellows that were welcomed in 2023; and finally (viii) information on the scientific publications having members of the Department as co-authors in the same year.

All of this testifies the relevant activity and the extensive scientific results that were achieved by the community of researchers of the Computer Science Department in 2023. As shown in this report, such a community has been enhanced in the considered year via the opening of several young researcher and PhD student positions, as well as of new faculty positions.

## 1 The Department

During the academic year 1969/1970, the University of Pisa activated a graduation program in Computer Science, named *Corso di Laurea in Scienze dell'Informazione*, the first one in Italy and one of the very first ones in Europe. Simultaneously, the Computer Science Institute ISI (*Istituto di Scienze dell'Informazione* in Italian) of the University of Pisa was founded, collecting the designers of the Calcolatrice Elettronica Pisana (CEP) together with several researchers coming from other universities, mostly with engineering and mathematics background, all characterised by a great interest and passion towards the Computer Science themes and challenges. This Institute is the ancestor of the current Computer Science Department.

Starting from the scientific results achieved in those pioneering years, the research activities of the Computer Science Department have been continuously enhanced and evolved, spanning now across all the sectors of the Computer Science discipline (INF/01) as well as to areas of applied mathematics. Specifically, since 2012 all the faculties of the University of Pisa in the area of Operations Research (MAT/09) are now with the Computer Science Department, as well as several researchers in Numerical Analysis (MAT/08).

Within the above mentioned scientific sectors, at the beginning of 2023 the composition of the Department was as follows:

- 21 Full Professors (17 INF/01, 1 MAT/08 and 3 MAT/09)
- 27 Associate Professors (21 INF/01, 2 MAT/08, 3 MAT/09 and 1 SECS-P/07)
- 3 Assistant Professors (RTI)(3 INF/01)
- 24 Temporary Assistant Professors (RTD) (23 INF/01, 1 MAT/09):

- 17 RTD-A (16 INF/01, 1 MAT/09)
- 7 RTD-B (7 INF/01)
- 2 Emeritus Professors (2 INF/01)

On the other hand, at the end of 2023 the Department was composed of:

- 24 Full Professors (20 INF/01, 1 MAT/08 and 3 MAT/09)
- 25 Associate Professors (19 INF/01, 2 MAT/08, 3 MAT/09 and 1 SECS-P/07)
- 2 Assistant Professors (RTI)(2 INF/01)
- 28 Temporary Assistant Professors (RTD) (25 INF/01, 3 MAT/09):
  - 22 RTD-A (19 INF/01, 3 MAT/09)
  - 6 RTD-B (6 INF/01)
- 2 Emeritus Professors (2 INF/01)

In details, during 2023:

- no Full or Associate professor retired;
- three INF/01 Associate Professors upgraded to Full Professors;
- one INF/01 RTD-B upgraded to Associate Professor;
- one INF/0 RTD-A left;
- there were six new entries as RTD-A (4 INF/01, 2 MAT/09)).

## 2 Research projects in 2023

The researchers of the Department have been involved in several projects, at international, national, and regional level. We report here the list of projects funded after an open competitive call, with funds that have been, or will be, managed by the Department, and that were active during 2023. We classify them according to their type of funding.

We also list projects funded by private companies, hence without an open call, but rather a direct contract with a Principal Investigator (PI) affiliated with the Department, as well as Research Agreements, Collaborations, and Prizes characterised by a related budget. Data of this section are taken from the research office of the Department, integrated with information from PIs when needed.

In all of the tables below, with the exception of the table related to the PNRR projects, the BUDGET column indicates the fraction of the total budget of the project (that is, for the whole duration, not just during year 2023) that has been assigned to the Department. On the other hand, the BUDGET column for the PNRR projects refers to the budget assigned to the University of Pisa for each of the listed projects.

### 2.1 International projects

NAME	PI UNIPI	PROGRAMME	ROLE UNIPI	DURATION	BUDGET
XAI	Pedreschi	UE - ERC	partner	10/19 - 09/25	€ 1.022.000,00
HumMingBird	Sirbu	UE - H2020	partner	12/19 - 05/24	€ 159.312,50
TEACHING	Bacciu	UE - H2020	coordinator	01/20 - 06/23	€ 657.371,25
NoBIAS	Ruggieri	UE - H2020	partner	01/20 - 06/24	€ 522.999,36
SoBigData++	Pedreschi	UE - H2020	partner	01/20 - 12/24	€ 580.735,00
Humane AI-NET	Pedreschi	UE - H2020	partner	09/20 - 08/24	€ 140.000,00
TAILOR	Bacciu	UE - H2020	partner	09/20 - 08/24	€ 103.437,50
SMS++4OuU	Frangioni	PGMO	coordinator	10/20 - 08/24	€ 50.000,00
PLANET4	Mazzei	UE - EPLUS	coordinator	11/20 - 10/23	€ 199.594,00
ALPACA	Pisanti	UE - H2020	partner	01/21 - 12/24	€ 261.499,68
SAI	Pedreschi	UE - CHISTERA	partner	01/21 - 06/24	€ 45.937,50
ADMIRE	Torquati	UE - H2020	third part of CINI	04/21 - 06/24	€ 98.750,00
TEXTAROSSA	Danelutto	UE - H2020	third part of CINI	04/21 - 03/24	€ 28.560,00
SMS++M2EO	Frangioni	PGMO	coordinator	09/21 - 08/23	€ 25.000,00
EUPEX	Torquati	UE - H2020	third part of CINI	01/22 - 12/25	€ 135.875,00
EUMASTER4HPC	Danelutto	UE - H2020	third part of CINI	01/22 - 12/25	€ 29.556,25
ACCORDION	Dazzi	UE - H2020	third part of CNR	06/22 - 04/23	€ 80.000,00
AInCP	Prencipe	UE - HE	co-coordinator	06/22 - 05/27	€ 693.750,00
EMERGE	Bacciu	UE - HE	coordinator	10/22 - 09/26	€ 1.046.551,00
SoBigData RI PPP	Pedreschi	UE - HE	partner	10/22 - 09/25	€ 98.777,50
FINDHR	Ruggieri	UE - HE	partner	11/22 - 10/25	€ 360.250,00
TANGO	Monreale	UE - HE	partner	10/23 - 09/27	€ 403.380,00

## 2.2 National projects

CALL	PI UNIPI	DURATION	BUDGET UNIPI (COMPUTER SCIENCE DEPT.)	MUR CONTRIBUTION
PRIN	Bonchi	08/19 - 08/23	€ 195.600,00	€ 159.600,00
PRIN	Ferragina	08/19 - 08/23	€ 124.727,00	€ 108.217,00
PRIN	Gadducci	08/19 - 08/23	€ 158.000,00	€ 128.000,00
PRIN	Grossi	08/19 - 08/23	€ 101.134,00	€ 76.385,00
PRIN	Venturini	08/19 - 08/23	€ 174.511,00	€ 136.305,00
PRIN	Frangioni	09/23 - 09/25	€ 78.000,00	€ 48.000,00
PRIN	Gadducci	09/23 - 09/25	€ 72.000,00	€ 61.000,00
PRIN	Gallicchio	09/23 - 09/25	€ 125.924,00	€ 99.999,00
PRIN	Grossi	09/23 - 09/25	€ 66.088,00	€ 40.549,00
PRIN	Guidotti	09/23 - 09/25	€ 74.618,00	€ 62.482,00
PRIN	Mencagli	09/23 - 09/25	€ 77.989,00	€ 50.746,00
PRIN	Pedreschi	09/23 - 09/25	€ 81.689,00	€ 63.433,00
PRIN	Pisanti	09/23 - 09/25	€ 67.768,00	€ 65.188,00
PRIN	Ricci	09/23 - 09/25	€ 101.936,00	€ 73.141,00
PRIN	Sirbu	09/23 - 09/25	€ 85.088,00	€ 55.108,00
PRIN	Soldani	09/23 - 09/25	€ 87.295,00	€ 69.334,00
PRIN	Venturini	09/23 - 09/25	€ 77.604,00	€ 67.951,00
POS T4 A4.1	Milazzo	02/23 - 02/27	€ 937.500,00	€ 937.500,00
PON GOVERNANCE 14-20 Asse 1 Az 1.4.1	Ferragina	04/22 - 09/23	€ 106.193,68	€ 106.193,68

## 2.3 PNRR projects

As pointed out at the beginning of this section, do note that we show the overall UNIPI budget, not only the part granted to members of the department.

TYPOLOGY	STAFF COMPUTER SCIENCE DEPT.	DURATION	BUDGET UNIPI
CN1-SPOKE 1	Danelutto (PI), Cisternino, Ferragina Gemignani, Manzini, Mencagli, Torquati	09/2022 - 08/25	€ 3.324.013,00
CN1-SPOKE 6	Poloni	09/2022 - 08/25	€ 3.324.013,00
CN1-SPOKE 10	Bernasconi, Bonchi, Del Corso, Gadducci	09/2022 - 08/25	€ 3.324.013,00
CN2-SPOKE 5	Gallicchio	09/2022 - 08/25	€ 3.875.752
CN2-SPOKE 9	Chessa	09/2022 - 08/25	€ 3.875.752
CN4-SPOKE 10	Scutellà (WP leader)	09/2022 - 08/25	€ 6.593.032,01
THE-SPOKE 3	Prencipe (PI), Bacciu, Ferragina Gervasi, Priami, Sirbu	12/2022 - 11/25	€ 17.662.130,40
THE-SPOKE 5	Mastroeni (WP leader)	12/2022 - 11/25	€ 17.662.130,40
THE-SPOKE 6	Pisanti (PI), Gori, Grossi, Micheli Milazzo, Manzini, Rosone, Venturini	12/2022 - 11/25	€ 17.662.130,40
IR-SOBIGDATA	Monreale (PI)	11/2022 - 04/25	€ 1.439.800
PE2-SPOKE 8	Frangioni	12/2022 - 11/25	€ 7.172.469,44
PE1-SPOKE 1	Pedreschi (PI), Bacciu, Micheli, Monreale, Ruggieri, Guidotti, Lomonaco, Malizia, Podda, Setzu	01/2023 - 12/25	€ 4.387.128,20
PNRR PNC - Fit4MedRob	Prencipe (PI), Mazzei, Malizia	12/2022 - 07/26	€ 1.852.578,00
PRIN 2022 PNRR	Chessa (PI)	11/2023 - 11/25	€ 78.374,05
PRIN 2022 PNRR	Di Francesco Maesa (PI)	11/2023 - 11/25	€ 79.481,75
PRIN 2022 PNRR	Bonchi (PI)	11/2023 - 11/25	€ 65.073,10
PRIN 2022 PNRR	Prencipe (PI)	11/2023 - 11/25	€ 71.250,95
PRIN 2022 PNRR	Sirbu (PI)	11/2023 - 11/25	€ 39.112,45
PRIN 2022 PNRR	Leporini (PI)	10/2023 - 10/25	€ 142.968,00

## 2.4 Regional projects

NAME	PI UNIPI	CALL	DURATION	BUDGET
BRAID	Micheli	RICERCA-SALUTE 2018	09/20 - 09/24	€ 158.566,31
I-POTERI	Prencipe	POR	01/21 - 01/23	€ 105.285,38
MYBREATHINGHEART	Gervasi	Regionale covid	02/21 - 02/24	€ 72.000,00
OPTIMISED	Bacciu	Regionale Covid	02/21 - 02/24	€ 21.227,37
CLMs4BPO	Passaro	5g-FSC	12/22 - 11/23	€ 28.000,00
CLOUDADVISOR	Lomonaco	BandoAssegni Regione Toscana 2023	12/23 - 12/25 <sup>1</sup>	€ 60.000,00
EPICMAC	Gervasi	BandoAssegni Regione Toscana 2023	12/23 - 12/25 <sup>2</sup>	€ 60.000,00

## 2.5 University projects

COORDINATOR	CALL	DURATION	BUDGET
Broggi	PRA 2022	up to 12/24	€ 52.770,00
Prencipe	PRA 2022	up to 12/24	€ 39.700,00
Gadducci	PRA 2022	up to 12/24	€ 33.620,00
Broggi	BIHO 2022 AZ. 2	up to 12/23	€ 30.000,00
Dazzi	BIHO 2023 AZ. 2	up to 12/25	€ 50.000,00
Bacciu	BIHO 2022 AZ. 2	up to 12/24	€ 50.000,00
Bacciu	BIHO 2022 AZ. 3	up to 12/24	€ 75.000,00

## 2.6 Industrial projects

PI UNIPI	INDUSTRY PARTNER	DURATION	BUDGET
Ferragina	European Broadcasting Union	02/2020 - 12/2026	€ 180.000,00
Priami	GSK	09/2020 - 06/2024	€ 196.000,00
Ferragina	Sadas srl	04/2021 - 04/2022	€ 47.520,00
Priami	Chiesi	05/2021 - 01/2024	€ 155.000,00
Frangioni	MAIOR	02/2022 - 12/2024	€ 60.000,00
Micheli	MAIOR	09/2022 - 09/2023	€ 6.000,00
Ferragina	Sadas srl	05/2022 - 09/2023	€ 47.520,00
Gallicchio	Danieli Automation spa	05/2023 - 11/2023	€ 25.000,00
Ruggieri	Sadas srl	02/2023 - 02/2026	€ 72.000,00

## 2.7 Research Agreements/Collaborations/Prizes

PI UNIPI	ENTITY - PARTNER	DURATION	BUDGET
Di Francesco Maesa	Ethereum Foundation	07/2022 - 11/2023	\$ 24.000,00
Lomonaco	META	since 08/2022	\$ 50.000,00
Dazzi	ISTI-CNR	09/2022 - 09/2025	€ 27.000,00
Venturini	ISTI-CNR	12/2022 - 12/2023	€ 15.000,00
Ferrari	Regione Toscana	12/2023 - 12/2024	€ 50.000,00
Bruni, Gori	META	since 12/2023	€ 46.130,26

<sup>1</sup>Recruitment ongoing.

<sup>2</sup>Recruitment ongoing.

### 3 Editorships of journals

We list here the editorial boards and the special issues of journals that involved members of the Department in 2023.

#### 3.1 Editorial Boards

In 2023, the members of the Department joined the editorial board, or were an area editor, associate editor, or academic editor, of the following journals.

**Bacciu** Senior Editor of *IEEE Transactions on Neural Networks and Learning Systems* by IEEE (since 2022)

Print ISSN: 2162-237X

Online ISSN: 2162-2388,

<https://cis.ieee.org/publications/t-neural-networks-and-learning-systems>

**Bigi** Associate Editor of *INFORMS Journal of Computing* by INFORMS (since 2021)

ISSN: 1091-9856,

<https://pubsonline.informs.org/journal/ijoc>

**Brogi** Associate Editor of *IEEE Transactions on Cloud Computing* by IEEE (since 2019)

Online ISSN: 2168-7161,

<https://www.computer.org/csdl/journal/cc>

**Brogi** Editorial Board Member of *Journal of Computer Languages* by Elsevier (since 2019)

ISSN: 2590-1184,

<https://www.journals.elsevier.com/journal-of-computer-languages>

**Brogi** Editorial Board Member of *Electronics* by MDPI (since 2020)

Online ISSN: 2079-9292,

<https://www.mdpi.com/journal/electronics>

**Di Francesco Maesa** Section Editor of *Springer Nature Computer Science, "SECTION IV- Innovation in Blockchain and Distributed Ledgers"* by Springer (since 2023)

Online ISSN: 2661-8907,

<https://link.springer.com/journal/42979/updates/17470758>

**Ferragina** Editorial Board Member of *Journal of Graph Algorithms and Applications* by Brown University (since 2011)

ISSN: 1526-1719,

<https://jgaa.info/>

**Ferragina** Editorial Board Member of *Encyclopedia of Algorithms* by Springer (since 2008)

ISSN: 978-0-387-36061-4,

<https://link.springer.com/referencework/10.1007/978-0-387-30162-4>

**Ferragina** Editorial Board Member of *Encyclopedia of Big Data Technologies* by Springer (since 2019)

ISSN: 978-3-319-77525-8,

<https://link.springer.com/referencework/10.1007/978-3-319-77525-8>

**Forti** Academic Editor of *PLOS ONE* by Plos (since 2022)

ISSN: 1932-6203,

<https://journals.plos.org/plosone/>

- Forti** Associate Editor of *ACM SIGSOFT Software Engineering Notes* by ACM (since 2022)  
ISSN: 0163-5948,  
<https://www.sigsoft.org/SEN/>
- Frangioni** Area “Design and Analysis of Algorithms - Continuous” Editor of *Journal on Computing*  
by INFORMS (since 2019)  
ISSN: 1091-9856,  
<https://pubsonline.informs.org/journal/ijoc>
- Frangioni** Associate Editor of *4OR - A Quarterly Journal of Operations Research* by Springer (since 2015)  
ISSN: 1619-4500,  
<http://www.4or.be>
- Frangioni** Associate Editor of *Open Journal of Mathematical Optimization* by Centre Mersenne (since 2019)  
ISSN: 2777-5860,  
<https://ojmo.centre-mersenne.org>
- Frangioni** Associate Editor of *INFOR: Information Systems and Operational Research* by Taylor & Francis (since 2008)  
Print ISSN: 0315-5986  
Online ISSN: 1916-0615,  
<https://www.tandfonline.com/journals/tinf20>
- Gallicchio** Associate Editor of *Intelligenza Artificiale* by IOSPress (since 2022)  
ISSN: 1724-8035,  
<https://www.iospress.com/catalog/journals/intelligenza-artificiale>
- Gallicchio** Associate Editor of *Transactions on Neural Networks and Learning Systems* by IEEE (since 2022)  
ISSN: 2162-237X,  
<https://cis.ieee.org/publications/t-neural-networks-and-learning-systems>
- Gemignani** Editorial Board Member of *Mathematics* by MDPI (since 2020)  
ISSN: 2227-7390,  
<https://www.mdpi.com/journal/mathematics>
- Gervasi** Editorial Board Member of *Expert Systems: The Journal of Knowledge Engineering* by Wiley (since 2006)  
ISSN: 1468-0394,  
<https://onlinelibrary.wiley.com/journal/14680394>
- Grossi** Editorial Board Member of *Theory of Computing Systems* by Springer (since 2009)  
Print ISSN: 1432-4350  
Online ISSN: 1433-0490,  
<https://www.springer.com/journal/224>
- Guidi** Academic Editor of *PLOS ONE* by Plos (since 2020)  
ISSN:1932-6203,  
<https://journals.plos.org/plosone/>

- Guidi** Associate Editor of *Communications* by SciencePG (since 2020)  
ISSN:2328-5923,  
<http://www.sciencepublishinggroup.com/journal/index?journalid=139>
- Guidi** Associate Editor of *IEEE Access* (since 2022)  
ISSN: 2169-3536,  
<https://ieeaccess.ieee.org/>
- Guidi** Associate Editor of *IET Networks* by the Institution of Engineering and Technology (since 2021)  
Print ISSN: 2047-4954  
Online ISSN: 2047-4962,  
<https://digital-library.theiet.org/content/journals/iet-net>
- Guidi** Academic Editor of *Wireless Communications and Mobile Computing* by Hindawi (since 2021)  
Print ISSN: 1530-8669  
Online ISSN: 1530-8677,  
<https://www.hindawi.com/journals/wcmc/>
- Guidi** Associate Editor of *Peer-to-Peer Networking and Applications* by Springer (since 2023)  
Print ISSN: 1936-6442  
Online ISSN: 1936-6450,  
<https://link.springer.com/journal/12083>
- Guidotti** Editorial Board Member of *Data Mining and Knowledge Discovery* by Springer (since 2022)  
Print ISSN: 1384-5810  
Online ISSN: 1573-756X,  
<https://www.springer.com/journal/10618/>
- Malizia** Associate editor of *ACM Ubiquity* by ACM (since 2019)  
ISSN: 1530-2180,  
<https://ubiquity.acm.org/>
- Malizia** Editorial Board Member of *Interacting with Computers* by Oxford Academic (since 2021)  
ISSN: 0953-5438,  
<https://academic.oup.com/iwc>
- Mencagli** Editorial Board Member of *Future Generation Computer Systems* by Elsevier (since 2019)  
ISSN: 0167-739X,  
<https://www.sciencedirect.com/journal/future-generation-computer-systems>
- Mencagli** Editorial Board Member of *Cluster Computing* by Springer (since 2019)  
ISSN: 1386-7857,  
<https://www.springer.com/journal/10586>
- Micheli** Associate Editor of *Transactions on Neural Networks and Learning Systems* by IEEE (since 2019)  
ISSN: 2162-237X,  
<https://cis.ieee.org/publications/t-neural-networks-and-learning-systems>



- Micheli** Editorial Board Member of *Intelligenza Artificiale* by IOS Press (since 2015)  
Print ISSN: 1724-8035  
ISSN: 1724-8035,  
<http://www.iospress.nl/journal/intelligenza-artificiale/>
- Micheli** Editorial Board Member of *Neural Networks* by Elsevier (since 2023)  
ISSN: 0893-6080,  
<https://www.sciencedirect.com/journal/neural-networks>
- Michienzi** Editorial Board Member of *Journal of Computer Science* by (since 2022)  
Print ISSN: 1549-3636  
Online ISSN: 1552-6607,  
<https://www.thescipub.com/jcs>
- Michienzi** Academic Editor of *Security and Communication Networks* by Hindawi (since 2022)  
Print ISSN: 1939-0114  
Online ISSN: 1939-0122,  
<https://www.hindawi.com/journals/scn/>
- Monreale** Editorial Board Member of *Transactions on Data Privacy* by University of Skovde (since 2013)  
Print ISSN: 1888-5063  
Online ISSN: 2013-1631,  
<http://www.tdp.cat>
- Monreale** Editorial Board Member of *Intelligent Information Systems: Integrating Artificial Intelligence and Database Technologies* by Springer (since 2019)  
Print ISSN: 0925-9902  
Online ISSN: 1573-7675,  
<https://www.springer.com/journal/10844>
- Monreale** Associate Editor of *EPJ Data Science* by Springer (since 2023)  
ISSN: 2193-1127,  
<https://epjdatascience.springeropen.com>
- Paganelli** Associate Editor of *IEEE Transactions on Network and Service Management* by IEEE (since 2019)  
ISSN: 1932-4537,  
<https://www.comsoc.org/publications/journals/ieee-tnsm>
- Paganelli** Associate Editor of *Future Internet* by MDPI (since 2016)  
ISSN: 1999-5903,  
<https://www.mdpi.com/journal/futureinternet>
- Paganelli** Associate Editor of *Telecom* by MDPI (since 2020)  
ISSN: 2673-4001,  
<https://www.mdpi.com/journal/telecom>
- Pappalardo** Editorial Board Member of *Minimax theory and its applications* by Helderermann (since 2016)  
Print ISSN: 2199-1413  
Online ISSN: 2199-1421,  
<https://www.helderermann.de/MTA/mtacover.htm>

- Passacantando** Editorial Board Member of *Mathematics* by MDPI (since 2021)  
 ISSN: 2227-7390,  
<https://www.mdpi.com/journal/mathematics>
- Passaro** Editorial Board Member of *IJCoL · Italian Journal of Computational Linguistics* by Accademia University Press (since 2022)  
 Online ISSN: 2499-4553,  
<https://journals.openedition.org/ijcol/>
- Passaro** Editorial Board Member of *Language Resources and Evaluation* by Springer (since 2023)  
 Print ISSN: 1574-020X  
 Online ISSN: 1574-0218,  
<https://link.springer.com/journal/10579>
- Pisanti** Editorial Board Member of *International Journal of Computer Science and Application* by Science and Engineering Publishing Company USA (since 2012)  
 ISSN: 2324-7134,  
<https://www.destechpub.com/product/ijcsa/>
- Pisanti** Editorial Board Member of *Network Modeling Analysis in Health Informatics and Bioinformatics* by Springer (since 2017)  
 Print ISSN: 21926662  
 Online ISSN: 21926670,  
<https://www.springer.com/journal/13721>
- Poloni** Editorial Board Member of *Linear and Multilinear Algebra* by Taylor & Francis (since 2020)  
 Print ISSN: 0308-1087  
 Online ISSN: 1563-5139,  
<https://www.tandfonline.com/action/journalInformation?journalCode=glma20>
- Poloni** Editorial Board Member of *Stochastic Models* by Taylor & Francis (since 2020)  
 Print ISSN: 1532-6349  
 Online ISSN: 1532-4214,  
<https://www.tandfonline.com/action/journalInformation?show=editorialBoard&journalCode=lstm20>
- Prencipe** Editorial Board Member of *Electronics* by MDPI, Section Board for Computer Science & Engineering (since 2019)  
 ISSN: 2079-9292,  
[https://www.mdpi.com/journal/electronics/sectioneditors/computer\\_science\\_engineering](https://www.mdpi.com/journal/electronics/sectioneditors/computer_science_engineering)
- Ricci** Editor Board Member of *ACM Distributed Ledger Technologies* by ACM (since 2021)  
 ISSN 2096-7209,  
<https://dl.acm.org/journal/dlt>
- Ricci** Associate Editor of *Blockchain: Research and Applications* by Elsevier (since 2020)  
 ISSN 2098-7300,  
<https://www.journals.elsevier.com/blockchain-research-and-applications>
- Ricci** Section Editor of *Innovation in Blockchain and Distributed Ledgers*, SN in Computer Science by Springer (since 2020)  
 ISSN 0967-0912,  
<https://www.springer.com/journal/42979/updates/17470758>

- Ruggieri** Editorial Board Member of *Intelligenza Artificiale*, by IOS Press (since 2016)  
ISSN 1724-8035,  
<https://www.iospress.com/catalog/journals/intelligenza-artificiale>
- Scutellà** Associate Editor of *Networks* by Wiley (since 2013)  
Online ISSN:1097-0037,  
<https://onlinelibrary.wiley.com/journal/10970037>
- Scutellà** Editorial Advisory Board Member of *Computers & Operations Research* by Elsevier (since 2004)  
ISSN: 0305-0548,  
<http://www.journals.elsevier.com/computers-and-operations-research/>
- Sirbu** Editorial Board Member of *Journal of Data Science and Analytics* by Springer (since 2022)  
Electronic ISSN: 2364-4168, Print ISSN: 2364-415X,  
<https://www.springer.com/journal/41060>
- Soldani** Editor-in-Chief of *ACM SIGSOFT Software Engineering Notes* by ACM (since 2022)  
ISSN: 0163-5948,  
<https://www.sigsoft.org/SEN/>
- Soldani** Associate Editor of *Frontiers in Computer Science* by Frontiers Media S.A. (since 2022)  
ISSN: 2424-9898,  
<https://www.frontiersin.org/journals/computer-science>
- Soldani** Academic Editor of *PLOS ONE* by Plos (since 2019)  
ISSN: 1932-6203,  
<https://journals.plos.org/plosone/>
- Soldani** Editorial Board Member of *Mathematics and Computer Science* by SciencePG (since 2020)  
ISSN: 2575-6028,  
<http://www.sciencepublishinggroup.com/j/mcs>
- Soldani** Associate Editor of *Journal of Systems and Software* by Elsevier (since 2022)  
ISSN: 0164-1212,  
<https://www.journals.elsevier.com/journal-of-systems-and-software>
- Torquati** Editorial Board Member of *Journal of Supercomputing* by Springer (since 2023)  
Print ISSN: 0920-8542  
Online ISSN: 1573-0484,  
<https://link.springer.com/journal/11227>
- Torquati** Editorial Board Member of *Future Generation Computer Systems* by Elsevier (since 2023)  
Print ISSN: 0167-739X  
Online ISSN: 1872-7115,  
<https://www.sciencedirect.com/journal/future-generation-computer-systems>

### 3.2 Guest editorship of special issues

The members of the Department managed as guest editors the following special issues, which were active during 2023.

**Di Francesco Maesa** Special Issue of *ACM Distributed Ledgers Technologies: Research and Practice*, ACM, “Blockchain-based Pervasive Systems: Theory, Applications, and Challenges”, opened in 2022 and closing in April 2023

Online ISSN: 2769-6480,

<https://dl.acm.org/journal/dlt/calls-for-papers>

**Forti** Special issue of *MDPI*, “Electronics”, opened in 2022 and published in 2023.

ISSN: 1999-5903,

[https://www.mdpi.com/journal/electronics/special\\_issues](https://www.mdpi.com/journal/electronics/special_issues)

**Guidi** Special issue of *MDPI Sensors*, MDPI, “Social Media Sensing: Methodologies and Applications”, opened in June 2022 and closing in February 2023.

ISSN:1424-8220

[https://www.mdpi.com/journal/sensors/special\\_issues/Social\\_Media\\_Sensing](https://www.mdpi.com/journal/sensors/special_issues/Social_Media_Sensing)

**Guidi** Special issue of *Sensors*, MDPI, “Advances in Blockchain Challenges and Opportunities”, opened in December 2022 and closing in August 2023.

ISSN:1424-8220,

[https://www.mdpi.com/journal/sensors/special\\_issues/0E9R83J7XJ](https://www.mdpi.com/journal/sensors/special_issues/0E9R83J7XJ)

**Guidi** Special issue of *ACM Transactions on the Web*, ACM, opened in 2023 and closing in 2024.

ISSN: 1559-1131,

[https://dl.acm.org/pb-assets/static\\_journal\\_pages/tweb/pdf/TWEB-CFP-Advances-Social-Media-Technologies-Analysis-1691087357443.pdf](https://dl.acm.org/pb-assets/static_journal_pages/tweb/pdf/TWEB-CFP-Advances-Social-Media-Technologies-Analysis-1691087357443.pdf)

**Micheli** Special issue of *Transactions on Neural Networks and Learning Systems*, IEEE, “Deep Neural Networks for Graphs: Theory, Models, Algorithms and Applications”, opened in 2021 and closing in 2023.

ISSN:2162-237X,

<https://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=5962385>

**Michienzi** Special issue of *MDPI Sensors*, MDPI, “Social Media Sensing: Methodologies and Applications”, opened in June 2022 and closing in February 2023.

ISSN:1424-8220,

[https://www.mdpi.com/journal/sensors/special\\_issues/Social\\_Media\\_Sensing](https://www.mdpi.com/journal/sensors/special_issues/Social_Media_Sensing)

**Michienzi** Special issue of *ACM Transactions on the Web*, ACM, opened in 2023 and closing in 2024.

ISSN: 1559-1131,

[https://dl.acm.org/pb-assets/static\\_journal\\_pages/tweb/pdf/TWEB-CFP-Advances-Social-Media-Technologies-Analysis-1691087357443.pdf](https://dl.acm.org/pb-assets/static_journal_pages/tweb/pdf/TWEB-CFP-Advances-Social-Media-Technologies-Analysis-1691087357443.pdf)

**Passaro** Special Issue of *Intelligenza Artificiale*, IOS press, opened in 2022 and closing in december 2023.

ISSN: 1724-8035,

<https://ip.ios.semcs.net/articles/intelligenza-artificiale/ia230057>

**Ricci** Special Issue of *ACM Distributed Ledgers Technologies: Research and Practice*, ACM, “Blockchain-based Pervasive Systems: Theory, Applications, and Challenges”, opened in 2022 and closing in April 2023

Online ISSN: 2769-6480,

<https://dl.acm.org/journal/dlt/calls-for-papers>

**Ricci** Special issue of *ACM Transactions on the Web*, ACM, opened in 2023 and closing in 2024.

ISSN: 1559-1131,

[https://dl.acm.org/pb-assets/static\\_journal\\_pages/tweb/pdf/TWEB-CFP-Advances-Social-Media-Technologies-Analysis-1691087357443.pdf](https://dl.acm.org/pb-assets/static_journal_pages/tweb/pdf/TWEB-CFP-Advances-Social-Media-Technologies-Analysis-1691087357443.pdf)

**Ruggieri** Special Issue of *Elsevier Data Mining and Knowledge Discovery journal*, Elsevier, on “Bias and Fairness in AI”, opened in 2021 and closing in 2023.

ISSN: 1384-5810,

[https://link.springer.com/journal/10618/topicalCollection/AC\\_a1fcffade3e6523787edc3a6f15017ae](https://link.springer.com/journal/10618/topicalCollection/AC_a1fcffade3e6523787edc3a6f15017ae)

**Torquati** Special issue of *Journal of Supercomputing*, Springer, “Parallel, Distributed, and Network-Based Processing”, opened in 2022 and closed in 2023.

ISSN: 0920-8542,

<https://link.springer.com/collections/ijgdajhfff>

## 4 Managing Boards of Scientific Associations and Societies

We list here the scientific associations and societies that involved members of the Department, in their managing boards, in 2023.

**Bacciu** Associazione Italiana per l'Intelligenza Artificiale (Vice-president, since 2015)

<https://aixia.it/organizzazione/>

**Bacciu** IEEE Technical Committee on Neural Networks (Vice-chair, since 2021)

<https://cis.ieee.org/activities/technical-activities/neural-networks-technical-committee/30-technical-committees/132-neural-networks-members>

**Bacciu** IEEE Task Force on Learning for Structured Data (Chair, since 2020)

[www.learning4graphs.org](http://www.learning4graphs.org)

**Bigi** EUROPT (Chair, since 2018)

<https://www.euro-online.org/websites/continuous-optimization/>

**Gadducci** AICA Associazione Italiana per l'Informatica e il Calcolo Automatico (Comitato Direttivo, since 2021)

<https://www.aicanet.it/>

**Gadducci** GRIN Gruppo di Informatica (Chair, since 2020)

<http://www.grin-informatica.it/opencms/opencms/grin>

**Gadducci** IFIP Working Group 1.3 “Foundations of System Specification” (Chair, since 2022)

<http://ifipwg13.cs.ovgu.de/>

**Galicchio** IEEE Task Force on Reservoir Computing (TFRC) (Co-chair and co-founder, since 2018)

<https://sites.google.com/view/reservoir-computing-tf>

**Galicchio** IEEE Task Force on Randomization-Based Neural Networks and Learning Systems (RandNN) (Vice-chair and co-founder, since 2021)

<https://sites.google.com/view/randnn-tf>

**Guidi** IEEE SIG on Metaverse (Founding Member since November 2022)

<https://www.ieee-metacom.org/sigmata/>

**Malizia** SIGCHI Italy Extended Board (The Italian ACM SIGCHI Chapter) (Delegate for Education since 2023)

<https://sigchitaly.eu/>

**Micheli** European Neural Network Society (Executive committee, since 2020)

<https://e-nns.org/current-enns-executive-committee/>

**Micheli** IEEE Task Force on Reservoir Computing (TFRC) (Co-chair and co-founder, since 2018)

<https://sites.google.com/view/reservoir-computing-tf>

**Micheli** AIxIA MLDM (Machine Learning and Data Mining) group (National coordinator, since 2014)

<https://aixia.it/en/gruppi/mldm/>

**Micheli** AIIS - CINI National Lab (Artificial Intelligence and Intelligent Systems) (Director of Pisa group, since 2021)

<https://www.consortio-cini.it/index.php/it/artificial-intelligence-and-intelligent-systems>

**Pisanti** Human Pangenome Reference Consortium (member since 2023)

<https://humanpangenome.org>

**Poloni** Outreach and Membership Committee of the International Linear Algebra Society (member since 2020)

<https://ilasic.org/ilas-officers/>

**Poloni** Commissione Olimpiadi dell'Unione Matematica Italiana (member since 2009)

<https://umi.dm.unibo.it/comitati/>

**Priami** Fondazione The Microsoft Research - University of Trento Centre of Computational and Systems Biology (Advisory board, since 2020)

<https://www.cosbi.eu>

**Priami** Digital Health - CINI National Lab (Advisory board, since 2021)

<https://www.consortio-cini.it/index.php/it/laboratori-nazionali/digital-health>

**Ricci** IEEE TEMS TC on Blockchain and Distributed Ledger Technologies (Founding member)

<https://www.ieee-tems.org/tc-blockchain-dlt/>

## 5 Scientific events

Here we report the list of the scientific events, such as conferences, workshops, and PhD schools, that took place in 2023 and involved members of the Department in their scientific and/or technical organisation. The events are classified according to the role of the involved researchers.

### 5.1 Chairing of conferences

Chairing, co-chairing, track chairing, steering or organising committee membership of international conferences in Computer Science settings.

**Conte** SPIRE 2023 (30th annual Symposium on String Processing and Information Retrieval ), Pisa, Italy, 2023

<http://spire2023.isti.cnr.it/>

**Dazzi** JCC 2023 (IEEE JCC 2023 : 14th IEEE International Conference on JointCloud Computing), Athens, Greece, 2023

<https://www.jointcloud.cloud/JCC2023/Home/Index>

**Guerrini** SPIRE 2023 (30th annual Symposium on String Processing and Information Retrieval, Pisa, Italy, 2023

<http://spire2023.isti.cnr.it/>

**Micheli** ICANN (32nd International Conference on Artificial Neural Networks), Crete, Greece, 2023

<https://e-nns.org/icann2023/>

**Pisanti** BIBM 2023 (IEEE International Conference on Bioinformatics and Biomedicine), Istanbul, Turchia, 2023

<https://bidma.cpsc.ucalgary.ca/IEEE-BIBM-2023/>

**Pisanti** WABI 2023 (23rd Conference on Algorithms in Bioinformatics), Houston, Texas, USA, 2023

<https://acm-bcb.org/WABI/2023/> <https://www.wabi-conference.org/>

**Pisanti** SPIRE 2023 (30th annual Symposium on String Processing and Information Retrieval ), Pisa, Italy, 2023

<http://spire2023.isti.cnr.it/>

**Pisanti** RECOMB-Seq (13th RECOMB Satellite Conference on Biological Sequence Analysis), Istanbul, Turchia, 2023

<http://recomb2023.bilkent.edu.tr>

**Ricci** ICBTA 2023 (6th Conference on Blockchain Technology and Applications), Xi'an, China, 2023

<https://www.icbta.net/icbta2023.html>

**Ricci** ICBC 2023 (IEEE International Conference on Blockchain and Cryptocurrency), Dubai, United Arab Emirates, May 2023

<https://icbc2023.ieee-icbc.org/>

**Rosone** SPIRE 2023 (30th annual Symposium on String Processing and Information Retrieval ), Pisa, Italy, 2023

<http://spire2023.isti.cnr.it/program/>

**Semini** SPLC'23 (27TH ACM INTERNATIONAL SYSTEMS AND SOFTWARE PRODUCT LINE CONFERENCE), Tokyo, 2023

<https://2023.splc.net/>



- Soldani** ESOC 2023 (10th European Conference On Service-Oriented And Cloud Computing ), Larnaca, Cyprus, 2023  
<https://cyprusconferences.org/esocc2023/>
- Soldani** IEEE SOSE 2023 (17th IEEE International Conference on Service-Oriented System Engineering ), Athens, Greece, 2023  
<https://ieeesose.com>
- Soldani** Microservices 2023 (International Conference on Microservices), Pisa, Italy, 2023  
<https://www.conf-micro.services/2023/index.html>
- Torquati** PDP 2023 (31st Euromicro International Conference on Parallel, Distributed, and Network-Based Processing), Naples, Italy, 2023  
<https://www.pdp2023.org/>
- Torquati** Euro-Par 2023 (29th International European Conference on Parallel and Distributed Computing), Limassol, Cyprus, 2023  
<https://2023.euro-par.org/>
- Venturini** SPIRE 2023 (30th annual Symposium on String Processing and Information Retrieval ), Pisa, Italy, 2023  
<http://spire2023.isti.cnr.it>
- Vinciguerra** SPIRE 2023 (30th annual Symposium on String Processing and Information Retrieval ), Pisa, Italy, 2023  
<http://spire2023.isti.cnr.it>

## 5.2 Chairing of workshops and symposia

Chairing, co-chairing, steering or organising committee membership of workshops, symposia, or national conferences.

- Bigi** EUROPT 2023 (20th EUROPT Workshop on Advances in Continuous Optimization), Budapest, Hungary, 2023  
[europt.hu](http://europt.hu)
- Bigi** EUROPT 2023 (20th Workshop on Advances in Continuous Optimization), Budapest, Hungary, 2023  
<http://europt.p-graph.org/>
- Dazzi** BigHPC @ ITADATA 2023 (The 2nd Italian Conference on Big Data and Data Science), Naples, Italy, 2023  
<https://www.itadata.it/2023/bighpc2023>
- Di Francesco Maesa** BRAIN 2023 @ PerCom 2023 (4th Workshop on Blockchain theoRy and ApplicatIoNs, full day workshop parte di “PerCom 2023 - 21th International Conference on Pervasive Computing and Communications”), Atlanta, USA, 2023  
<https://sites.google.com/view/brain-2023/>
- Forti** ASMECC 2023 (Workshop on Autonomic and Self-\* Management for the Edge-Cloud Continuum), Toronto, Canada, 2023  
<https://asmecc-workshop.github.io/2023/>
- Gallicchio** Machine Learning for Irregular Time Series (ML4ITS2023) (Machine Learning for Irregular Time Series (ML4ITS2023): Advances in Generative Models, Global Models and Self-Supervised Learning), Turin, Italy, 2023  
<https://ml4its.github.io/ml4its2023/>

- Galicchio** DLMNH 2023 (Deep Learning meets Neuromorphic Hardware: Workshop of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, ECML-PKDD 2023 ), Turin, 2023  
<https://sites.google.com/unipi.it/dlnh-ecmlpkdd23/home-page>
- Galicchio** Ambient AI (The 1st Workshop on Ambient AI Multimodal Wearable Sensor Understanding. Workshop of the ICASSP 2023 conference), Rhodes, Greece, 2023
- Gervasi** EmpiRE 2023 (8th International Workshop on Empirical Requirements Engineering), Hannover, Germany, 2023  
<https://sites.google.com/unitn.it/empire2023>  
<https://sites.google.com/view/ambientaiicassp2023/home>
- Guerrini** WCTA2023 (18th Workshop on Compression, Text, and Algorithms), Pisa, 2023  
<http://spire2023.isti.cnr.it/wcta/>
- Guidi** OASIS 2023, Open Challenges in Online Social Networks, Roma, Italy, 2023  
<https://ht.acm.org/ht2023/oasis/>
- Guidotti** XKDD 2023 (ECML PKDD International Workshop on eXplainable Knowledge Discovery in Data Mining), Turin, Italy, 2023  
<http://xkdd2023.isti.cnr.it/>
- Mazzei** PLANET4 Conference (The final conference of the PLANET4 project with a focus on perspectives in filling the gap between scientific research on Artificial Intelligence (AI) and Machine Learning (ML) and its industrial application as enabling technology for the Industry 4.0 paradigm, will be held on the 2nd of October 2023 in Pisa (Largo Bruno Pontecorvo 3, Computer Science Department, University of Pisa), Italy. ), Pisa, 2023  
<https://www.planet4project.eu/final-conference/>
- Micheli** MLDM.it 2023 (12th Italian Workshop on Machine Learning and Data Mining), Rome, Italy, 2023  
<https://sites.google.com/view/mldm2023/>
- Micheli** Ital-IA - WS Medicina e Salute (Ital-IA: Workshop AI per la Medicina e la Salute), Pisa, Italy, 2023  
<https://www.ital-ia2023.it/>
- Michienzi** OASIS 2023, Open Challenges in Online Social Networks, Roma, Italy, 2023  
<https://ht.acm.org/ht2023/oasis/>
- Milazzo** DataMod 2023 (11th International Symposium “From Data to Models and Back”), Eindhoven, 2023  
<https://datamod2023.github.io/>
- Monreale** RKDE 2023 (The 1st International Tutorial and Workshop on Responsible Knowledge Discovery in Education ), Torino, 2023  
<http://rkde2023.isti.cnr.it/>
- Monreale** HLDM (The 1st International Workshop on Hybrid Human-Machine Learning and Decision Making” , European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, ECML-PKDD 2023), Torino, 2023  
<https://sml.disi.unitn.it/hldm23.html>
- Monreale** ITAL-IA 2023 ( Ital-IA è il terzo Convegno Nazionale CINI sull’Intelligenza Artificiale, ), Pisa, Italy, 2023  
<https://www.ital-ia2023.it/>

**Ricci** BRAIN 2023 @ PerCom 2023 (4th Workshop on Blockchain theORy and ApplicatIoNs, full day workshop parte di “PerCom 2023 - 21th International Conference on Pervasive Computing and Communications”), Atlanta, USA, 2023

**Ricci** OASIS 2023, Open Challenges in Online Social Networks, Roma, Italy, 2023  
<https://ht.acm.org/ht2023/oasis/>

**Torquati** WSCC 2023 (1st International Workshop on Scalable Compute Continuum), Limassol, Cyprus, 2023  
<https://wscc2023.di.unipi.it/>

### 5.3 Direction of PhD Schools, symposia, and summer schools

**Bigi** ESS 2023 (EUROPT Summer School on Derivative-free optimization and fixed point algorithms), Budapest, Hungary, 2023  
<https://www.euro-online.org/websites/continuous-optimization/europtschool23/>

**Ferragina** Lipari school (Lipari PhD School Computational Complex and Social Systems, topic of 2023 edition “Spreading and Accessing Information”), Lipari (Italy), 2023  
<https://complex23.liparischool.it/>

### 5.4 Program Committee membership of conferences, workshops and symposia

Program Committee (PC) membership of the following conferences or workshops in Computer Science and Operations Research settings.

**Bacciu** NeurIPS 2023 (Conference on Neural Information Processing Systems,), New Orleans , 2023  
<https://neurips.cc/>

**Bacciu** ESANN 2023 (30th ESANN European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning), Bruges, Belgium, 2023  
<https://www.esann.org/pastesann>

**Bacciu** ICLR 2023 (International Conference on Learning Representations), Kigali, Ruanda, 2023  
<https://iclr.cc/Conferences/2023>

**Bacciu** AAAI 2023 (AAAI Conference on Artificial Intelligence), Washington, USA, 2023  
<https://aaai-23.aaai.org/>

**Bernasconi** IWLS 2023 (32nd International Workshop on Logic & Synthesis), EPFL Lausanne, Switzerland, 2023  
<https://www.iwls.org/iwls2023/>

**Bernasconi** DDECS 2023 (26th International Symposium on Design and Diagnostics of Electronic Circuits and Systems), Tallinn, Estonia, 2023  
<https://ddecs2023.taltech.ee/>

**Bigi** NUMTA 2023 (Numerical Computations: Theory and Algorithms - the 4th International Conference and Summer School), Pizzo Calabro (VV), Italy, 2023  
<https://www.numta.org/>

**Bigi** ICORES 2023 (12th International Conference on Operations Research and Enterprise Systems), Lisboa, Portugal, 2023  
<https://icores.scitevents.org/?y=2023>

- Bigi** NUMTA 2023 (Numerical Computations: Theory and Algorithms - the 4th international conference and summer school), Pizzo Calabro (VV), 2023  
<https://www.numta.org/>
- Bodei** ICISSP (ICISSP 2023 : 9th International Conference on Information Systems Security and Privacy), Lisbon, 2023  
<https://icissp.scitevents.org/?y=2023>
- Bondielli** ACL 2023 (The 61st Annual Meeting of the Association for Computational Linguistics), Toronto, Canada, 2023  
<https://2023.aclweb.org/>
- Bondielli** EMNLP 2023 (The 2023 Conference on Empirical Methods in Natural Language Processing), Singapore, 2023  
<https://2023.emnlp.org/>
- Bondielli** NL4AI 2023 (Workshop on Natural Language for Artificial Intelligence, Co-located @ AIXIA conference), Rome, Italy, 2023  
<http://sag.art.uniroma2.it/NL4AI/people-2023/>
- Chessa** IPIN 2023 (13th International Conference on Indoor Positioning and Indoor Navigation ), Nuremberg (Germany), 2023  
<https://ipin-conference.org/2023/>
- Chessa** IE23 (19th International Conference on Intelligent Environments ), Mauritius, 2023  
<https://intelligentenvironments.github.io/ie2023/>
- Chessa** LATINCOM 2023 (IEEE Latin-American Conference on Communications), Panama City, Panama, 2023  
<https://latincom2023.ieee-latincom.org/>
- Chessa** ICC 2023 (IEEE International Conference on Communications (ICC)), Rome, Italy, 2023  
<https://icc2023.ieee-icc.org/>
- Chessa** MoCS 23 (13th Workshop on Management of Cloud and Smart City Systems (MoCS 2023)), Tunis, Tunisia, 2023  
<https://sites.google.com/view/mocs2023>
- Chessa** ISCC 2023 (27th IEEE Symposium on Computers and Communications (ISCC 2023)), Tunis, Tunisia, 2023  
<https://2023.ieee-iscc.org/>
- Chessa** PIMRC 23 (IEEE 34th Annual International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC)), Toronto, Canada, 2023  
<http://pimrc2023.ieee-pimrc.org>
- Chessa** ACM MobiWac 2023 (21st ACM International Symposium on Mobility Management and Wireless Access ), Montreal, Canada, 2023  
<http://mobiwac-symposium.org>
- Chessa** ICTS4eHealth 23 (IEEE Conference on ICT Solutions for eHealth ), Tunis, Tunisia, 2023  
<https://icts4ehealth.icar.cnr.it/>
- conte** AAAI 2023 (The Thirty-Seventh AAAI Conference on Artificial Intelligence), Washington DC, USA, 2023  
<https://aaai-23.aaai.org/>

- Dazzi** EuroPar 2023 (29th International European Conference on Parallel and Distributed Computing), LIMASSOL, CYPRUS, 2023  
<https://2023.euro-par.org/>
- Dazzi** CLOUD 2023 (16th IEEE INTERNATIONAL CONFERENCE ON CLOUD COMPUTING ), CHICAGO, ILLINOIS USA, 2023  
<https://conferences.computer.org/cloud/2023/>
- Dazzi** ECMLPKDD 2023 (2023 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases), Turin, Italy, 2023  
<https://2023.ecmlpkdd.org/>
- Dazzi** FRAME 2023 (3rd workshop on Flexible Resource and Application Management on the Edge), Orlando, USA, 2023  
<https://www.accordion-project.eu/frame2023/>
- Dazzi** IoTDI23 (8th ACM/IEEE Conference on Internet of Things Design and Implementation), San Antonio, Texas, 2023  
<https://conferences.computer.org/iotDI/2023/>
- Di Francesco Maesa** FRAME 2023 (3rd workshop on Flexible Resource and Application Management on the Edge), Orlando, USA, 2023  
<https://www.accordion-project.eu/frame2023/>
- Di Francesco Maesa** FiDeFix 2023 (1st Workshop on Fintech and Decentralized Finance), Hong Kong, China, 2023  
<https://sites.google.com/uniurb.it/dex-2023/home>
- Di Francesco Maesa** ICBC 2023 (IEEE International Conference on Blockchain and Cryptocurrency), Dubai, Emirati Arabi Uniti, 2023  
<https://icbc2023.ieee-icbc.org/>
- Forti** ESOC 2023 (European Conference On Service-Oriented And Cloud Computing), Larnaca, Cipro, 2023  
<https://cyprusconferences.org/esoc2023/>
- Forti** ASMECC 2023 (Workshop on Autonomic and Self-\* Management for the Edge-Cloud Continuum), Toronto, Canada, 2023  
<https://asmecc-workshop.github.io/2023/>
- Forti** WSACC 2023 (International Workshop on Smart and Circular Cities), Bucarest, Romania, 2023  
<https://sites.google.com/view/wsacc23/home>
- Forti** JCC 2023 (IEEE International Conference on JointCloud Computing), Atene, Grecia, 2023  
<http://mobile.jointcloud.cloud/JCC2023/>
- Forti** SOSE 2023 (IEEE International Conference on Service-Oriented System Engineering,, ), Atene, Grecia, 2023  
<https://ieeesose.com>
- Forti** ICTS4eHealth 2023 (IEEE Conference on ICT Solutions for eHealth), Tunisi, Tunisia, 2023  
<https://icts4ehealth.icar.cnr.it>
- Forti** CLOUD COMPUTING 2023 (International Conference on Cloud Computing, GRIDS, and Virtualization), Nice, Saint-Laurent-du-Var, France, 2023  
<https://www.iaria.org/conferences2023/CLOUDCOMPUTING23.html>

- Forti** SIOtec 2023 (Workshop on Secure IoT, Edge and Cloud systems), Bangalore, India, 2023  
<https://siotec.netsons.org/2023/index.html>
- Gallicchio** Machine Learning for Irregular Time Series (ML4ITS2023) (Machine Learning for Irregular Time Series (ML4ITS2023): Advances in Generative Models, Global Models and Self-Supervised Learning), Turin, Italy, 2023  
<https://ml4its.github.io/ml4its2023/>
- Gallicchio** DLMNH 2023 (Deep Learning meets Neuromorphic Hardware: Workshop of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, ECML-PKDD 2023 ), Turin, 2023  
<https://sites.google.com/unipi.it/dlnh-ecmlpkdd23/home-page>
- Gallicchio** Ambient AI (The 1st Workshop on Ambient AI Multimodal Wearable Sensor Understanding. Workshop of the ICASSP 2023 conference), Rhodes, Greece, 2023  
<https://sites.google.com/view/ambientaicassp2023/home>
- Gervasi** REFSQ 2023 (29th International Working Conference on Requirement Engineering: Foundation for Software Quality), Barcelona, Spain, 2023  
<https://2023.refsq.org/>
- Gervasi** RE'23 (31st IEEE International Requirements Engineering 2023 conference), Hannover, Germany, 2023  
<https://conf.researchr.org/home/RE-2023/>
- Gervasi** ABZ 2023 (9th International Conference on Rigorous State Based Methods), Nancy, France, 2023  
<https://abz2023.loria.fr/>
- Gervasi** AIRE23 (Tenth International Workshop on Artificial Intelligence and Requirements Engineering), Hannover, Germany, 2023  
<https://aire-ws.github.io/aire23/>
- Gervasi** CrowdRE'23 (The 7th International Workshop on Crowd-Based Requirements Engineering), Hannover, Germany, 2023  
<https://crowdre.github.io/ws-2023/index.html>
- Gervasi** ER 2023 (42nd International Conference on Conceptual Modeling), Lisbon, Portugal, 2023  
<https://er2023.inesc-id.pt/>
- Guerrini** BIBM 2023 (17th IEEE International Conference on Bioinformatics and Biomedicine (BIBM)), Istanbul, Turkey, 2023  
<https://bidma.cpsc.ucalgary.ca/IEEE-BIBM-2023/>
- Guidi** ACM GoodIT 2023 (ACM International Conference on Information Technology for Social Good), Lisbon, Portugal, 2023  
<http://goodit.campusfc.unibo.it/committee/>
- Guidi** HT 2023 (HT '23: 33rd ACM Conference on Hypertext and Social Media), Barcelona, Spain, 2023  
<https://ht.acm.org/ht2022/>
- Guidi** CCNC (IEEE Consumer Communications Networking Conference), Las Vegas, USA, 2023  
<https://ccnc2023.ieee-ccnc.org/committees/technical-program-committee>
- Guidi** OASIS 2023 (Workshop on Open Challenges in Online Social Networks (OASIS)), online, 2023  
<https://ht.acm.org/ht2023/oasis/program-committee/>

- Guidi** WSDM 2023 (The 16th ACM International’s Conference on Web Search and Data Mining), Singapore, 2023  
<https://www.wsdm-conference.org/2023/organizers/program-committee>
- Micheli** ICANN (32nd International Conference on Artificial Neural Networks), Crete, Greece, 2023  
<https://e-nns.org/icann2023/>
- Micheli** AIxIA 2023 (22nd International Conference of the Italian Association for Artificial Intelligence), Rome, Italy, 2023  
<https://www.aixia2023.cnr.it/>
- Micheli** ESANN 2023 (31st European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning ), Bruges, Belgium, 2023  
<https://www.esann.org/proceedings/2023>
- Milazzo** DataMod 2023 (11th International Symposium “From Data to Models and Back”), Eindhoven, 2023  
<https://datamod2023.github.io/>
- Milazzo** Biostec/Bioinformatics 2023 (14th International Conference on Bioinformatics Models, Methods and Algorithms), Lisbon, Portugal, 2023  
<https://bioinformatics.scitevents.org/Home.aspx?y=2023>
- Milazzo** CIFMA 2023 (5th International Workshop on Cognition: Interdisciplinary Foundations, Models and Applications), Eindhoven, The Netherlands, 2023  
<https://cifma.github.io/>
- Milazzo** MFCS 2023 (48th International Symposium on Mathematical Foundations of Computer Science), Bordeaux, France, 2023  
<https://mfcs2023.labri.fr/>
- Milli** DATA ANALYTICS 2023 (The Twelfth International Conference on Data Analytics), Porto, Portugal, 2023  
<https://www.iaria.org/conferences2023/DATAANALYTICS23.html>
- Milli** COMPLEX NETWORKS 2023 (12th International Conference on Complex Networks and their Applications 2023), Menton Riviera, France, 2023  
<https://complexnetworks.org/>
- Pisanti** RECOMB 2023 (27th Annual International Conference on Research in Computational Molecular Biology), Istanbul, Turkey, 2023  
<http://recomb2023.bilkent.edu.tr>
- Pisanti** WABI 2023 (23rd Conference in Algorithms in Bioinformatics), Houston, Texas, USA, 2023  
<https://www.wabi-conference.org/> <https://acm-bcb.org/WABI/2023/>
- Pisanti** BIBM 2023 (17th IEEE International Conference on Bioinformatics and Biomedicine), Istanbul, Turkey, 2023  
<https://bidma.cpsc.ucalgary.ca/IEEE-BIBM-2023/>
- Pisanti** SPIRE 2023 (30th annual Symposium on String Processing and Information Retrieval ), Pisa, Italy, 2023  
<http://spire2023.isti.cnr.it/>
- Pisanti** ISBRA 2023 (19th International Symposium on Bioinformatics Research and Applications ), Lukasiewicz, Poland, 2023  
<https://port.lukasiewicz.gov.pl/en/conference-isbra-2023/>

- Rosone** ICTCS 2023 (24th Italian Conference on Theoretical Computer Science), Palermo, Italy, 2023  
<https://ictcs2023.unipa.it/>
- Rosone** WABI 2023 (Workshop on Algorithms in Bioinformatics), Houston, TX, 2023  
<https://acm-bcb.org/WABI/2023/>
- Rosone** CPM 2023 (34th Annual Symposium on Combinatorial Pattern Matching), Marne-la-Vallée, France, 2023  
<https://cpm2023.u-pem.fr/>
- Rosone** SPIRE 2023 (30th annual Symposium on String Processing and Information Retrieval ), Pisa, Italy, 2023  
<http://spire2023.isti.cnr.it/program/>
- Rosone** BIBM 2023 (17th IEEE International Conference on Bioinformatics and Biomedicine), Istanbul, Turkey, 2023  
<https://bidma.cpsc.ucalgary.ca/IEEE-BIBM-2023/>
- Ruggieri** AISTATS 2023 (Artificial Intelligence and Statistics Conference), Valencia Spain, 2023  
<https://aistats.org/aistats2023/>
- Ruggieri** AIxIA 2023 (22nd International Conference of the Italian Association for Artificial Intelligence), Rome, Italy, 2023  
<https://www.aixia2023.cnr.it/>
- Ruggieri** BIAS 2023 (3rd Workshop on Bias and Fairness in AI at ECML PKDD 2023), Torino, Italy, 2023  
<https://sites.google.com/view/bias2023/homepage>
- Ruggieri** UAI 2023 (39th Conference on Uncertainty in Artificial Intelligence), Pittsburgh, USA, 2023  
<https://www.auai.org/uai2023/>
- Ruggieri** WebConf 2023 (The Web Conference), Austin, USA, 2023  
<https://archives.iw3c2.org/www2023/>
- Ruggieri** XAI.it 2023 (4th Italian Workshop on Explainable Artificial Intelligence, co-located with AIxIA 2023), Roma, Italy  
<https://beyondaccuracy-userprofiling.github.io/xai-it-2023/>
- Ruggieri** NeurIPS 2023 (37th Annual Conference on Neural Information Processing Systems), New Orleans, USA, 2023  
<https://neurips.cc/Conferences/2023>
- Ruggieri** ECML-PKDD 2023 (2023 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases), Turin, Italy, 2023  
<https://2023.ecmlpkdd.org/>
- Scutellà** ODS 2023 (International Conference on Optimization and Decision Science 2023), Ischia (Italy), 2023  
<http://www.airoconference.it/ods2023/>
- Semini** FormaliSE 2023 (International Conference on Formal Methods in Software Engineering), Melbourne, Victoria, Australia, 2023  
<https://formalise2023.github.io/>
- Semini** SPLC'23 (27TH ACM INTERNATIONAL SYSTEMS AND SOFTWARE PRODUCT LINE CONFERENCE), Tokyo, 2023  
<https://2023.splc.net/>



- Sirbu SHIPS 2023** (The 1st International Workshop on the Environmental Sustainability of High-Performance Software), Denver, CO, USA, , 2023  
<https://site.unibo.it/ships23/en>
- Sirbu IJCAI 2023** (THE 32nd INTERNATIONAL JOINT CONFERENCE ON ARTIFICIAL INTELLIGENCE, Special Track on AI for Social Good ), Macao, S.A.R., 2023  
<https://ijcai-23.org/>
- Sirbu ICWSM 2023** (The 17th International Conference on Web & Social Media), Limassol, Cyprus, 2023  
<https://www.icwsm.org/2023/index.html/#intro>
- Soldani ESOC 2023** (10th European Conference On Service-Oriented And Cloud Computing ), Larnaca, Cyprus, 2023  
<https://cyprusconferences.org/esoc2023/>
- Soldani IEEE SOSE 2023** (17th IEEE International Conference on Service-Oriented System Engineering ), Athens, Greece, 2023  
<https://ieeesose.com>
- Soldani Microservices 2023** (International Conference on Microservices), Pisa, Italy, 2023  
<https://www.conf-micro.services/2023/index.html>
- Soldani SEAA 2023** (49th Euromicro Conference Series on Software Engineering and Advanced Applications (SEAA)), Durres, Albania, 2023  
<https://dsc-seaa2023.com/seaa/>
- Soldani AI4Health** (IEEE International Workshop on Artificial Intelligence for Health), Limassol, Cyprus, 2023  
<https://www.ai4health.icar.cnr.it>
- Soldani ASMECC 2023** (1st ASMECC Workshop on Autonomic and Self-\* Management for the Edge-Cloud Continuum), Toronto, Canada, 2023  
<https://asmecc-workshop.github.io/2023/>
- Soldani APCT 2023** (2nd Asia-Pacific Computer Technologies Conference), Wuhan, China, 2023  
<https://www.apct.net/>
- Soldani BDIOT 2023** (7th International Conference on Big Data and Internet of Things ), Beijing, China, 2023  
<http://www.bdiot.org/bdiot23.html>
- Soldani CCIOT 2023** (8th International Conference on Cloud Computing and Internet of Things), Okinawa, Japan, 2023  
<http://www.cciot.org/2023.html>
- Soldani CLOSER 2023** (13th International Conference on Cloud Computing and Services Science), Prague, Czech Republic, 2023  
<https://closer.scitevents.org/Home.aspx?y=2023>
- Soldani CNIOT 2023** (5th International Conference on Computing, Networks and Internet of Things), Tokyo, Japan, 2023  
<http://www.cniot2023.net/>
- Soldani CoopIS** (International Conference on Cooperative Information Systems), Groningen, The Netherlands, 2023  
<https://coopisconference.org/2023/>

- Soldani** CyMaEn 2023 (International Conference on Cyber Management and Engineering), Bangkok, Thailand, 2023  
<https://cymaen.org>
- Soldani** ECSA 2023 (17th European Conference on Software Architecture), Istanbul, Turkey, 2023  
<https://conf.researchr.org/home/ecsa-2023>
- Soldani** eLmL 2023 (15th International Conference on Mobile, Hybrid, and On-Line Learning), Venice, Italy, 2023  
<https://www.iaria.org/conferences2023/ComeLmL23.html>
- Soldani** FastContinuum 2023 (FastContinuum Workshop), Coimbra, Portugal, 2023  
<https://sites.google.com/view/fastcontinuum-2023/>
- Soldani** ICTS4eHealth (IEEE International Conference on ICT Solutions for eHealth), Tunis, Tunisia, 2023  
<https://icts4ehealth.icar.cnr.it>
- Soldani** SERVICE COMPUTATION 2023 (15th International Conference on Advanced Service Computing), Nice, France, 2023  
<https://www.iaria.org/conferences2023/SERVICECOMPUTATION23.html>
- Soldani** SIOTEC 2023 (4th International Workshop on Secure IoT, Edge and Cloud systems), Bangalore, India, 2023  
<https://siotec.netsons.org/2023/index.html>
- Soldani** SITIS 2023 (17th International Conference on Signal Image Technology and Internet-based Systems), Bangkok, Thailand, 2023  
<https://www.sitis-conference.org/2023>
- Torquati** Euro-Par 2023 (29th International European Conference on Parallel and Distributed Computing), Limassol, Cyprus, 2023  
<https://2023.euro-par.org/>
- Torquati** ICCAD 2023 (42nd IEEE/ACM International Conference on Computer-Aided Design ), San Francisco, California, USA, 2023  
<https://2023.iccad.com/>
- Torquati** Cluster 2023 (IEEE Cluster 2023), Santa Fe, New Mexico, USA., 2023  
<https://clustercomp.org/2023/>
- Torquati** HiPC 2023 (30th IEEE International Conference on High Performance Computing, Data, and Analytics), Goa, India, 2023  
<https://hipc.org/>
- Vinciguerra** BIBM 2023 (IEEE International Conference on Bioinformatics & Biomedicine), Istanbul, Turkey, 2023  
<https://bidma.cpsc.ucalgary.ca/IEEE-BIBM-2023/>
- Vinciguerra** WSDM 2023 (16th ACM International Conference on Web Search and Data Mining), Singapore, 2023  
<https://www.wsdm-conference.org/2023/>

## 5.5 Invited and keynote speakers at conferences and workshops

**Bacciu** DeLTA 2023 (4th International Conference on Deep Learning Theory and Applications ), Rome, Italy, 2023

<https://delta.scitevents.org/>

**Bruni** CALCO 2023 (10th Conference on Algebra and Coalgebra in Computer Science), Bloomington, Indiana, USA, 2023

<https://www.coalg.org/calco-mfps-2023/>

**Danelutto** FRAME 2023 (3rd workshop on Flexible Resource and Application Management on the Edge), Orlando, USA, 2023

<https://www.accordion-project.eu/frame2023/>

**Dazzi** FRAME 2023 (3rd workshop on Flexible Resource and Application Management on the Edge), Orlando, USA, 2023

<https://www.accordion-project.eu/frame2023/>

**Guerrini** BBW 2023 (Brunel Bioinformatics Workshop 2023), London, UK, 2023

<https://bbw2023.co.uk/>

**Micheli** AI Forum 2023 (AI Forum 2023 - Il Forum dell'Associazione Italiana per l'Intelligenza Artificiale dedicato alle imprese), Milano, Italy, 2023

<https://www.aiforum.eu/2023/>

**Micheli** DL2023 (DEEP LEARNING: Theory, Algorithms, and Applications), Trento, Italy, 2023

<https://dl2023.fbk.eu/>

**Micheli** MAIOR UM 2023 (MAIOR User Meeting 2023), Firenze, Italy, 2023

<https://www.maior.it/it/eventi/maior-user-meeting-2023/>

**Ricci** AIBC 2023 4th International Artificial Intelligence and Blockchain Conference, Aizu-Wakamatsu, Japan, 2023

<https://www.aibc.org/2023.html>

**Vinciguerra** A Tutorial Workshop on ML for Systems and Systems for ML @ BTW 2023 (A Tutorial Workshop on ML for Systems and Systems for ML, co-located with the 20th Conference on Database Systems for Business, Technology and Web (BTW 2023)), Dresden, Germany, 2023

<https://sites.google.com/view/btw-2023-tud/program/workshops/w1-ml-for-systems-and-systems-for-ml>

## 5.6 Tutorial speakers at conferences

**Di Francesco Maesa** IEEE ICBC 2023 (IEEE International Conference on Blockchain and Cryptocurrency), Dubai, UAE, 2023

<https://icbc2023.ieee-icbc.org/>

**Galicchio** ECML-PKDD 2023 (European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases), Turin, Italy, 2023.

<https://2023.ecmlpkdd.org/>

**Galicchio** ECML-PKDD 2023 (European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases), Turin, Italy, 2023.

<https://2023.ecmlpkdd.org/>

**Galicchio** IJCNN 2023 (The International Joint Conference on Neural Networks), Gold Coast, Queensland, Australia, 2023

<https://2023.ijcnn.org/>

**Gallicchio** AAI 2023 (AAAI Conference on Artificial Intelligence), Washington, DC, USA, 2023  
<https://aaai-23.aaai.org/>

## 5.7 Local events organisation

Local organisation in Pisa of the following conferences or workshops in Computer Science settings.

**Guerrini** SPIRE 2023 (30th annual Symposium on String Processing and Information Retrieval), Pisa, Italy, 2023  
<http://spire2023.isti.cnr.it/>

**Mazzi** PLANET4 Conference (The final conference of the PLANET4 project with a focus on perspectives in filling the gap between scientific research on Artificial Intelligence (AI) and Machine Learning (ML) and its industrial application as enabling technology for the Industry 4.0 paradigm, will be held on the 2nd of October 2023 in Pisa (Largo Bruno Pontecorvo 3, Computer Science Department, University of Pisa), Italy. ), Pisa, 2023  
<https://www.planet4project.eu/final-conference/>

**Pisanti** SPIRE 2023 (30th annual Symposium on String Processing and Information Retrieval), Pisa, Italy, 2023  
<http://spire2023.isti.cnr.it/>

**Rosone** SPIRE 2023 (30th annual Symposium on String Processing and Information Retrieval ), Pisa, Italy, 2023  
<http://spire2023.isti.cnr.it/program/>

**Vinciguerra** SPIRE 2023 (30th annual Symposium on String Processing and Information Retrieval), Pisa, Italy, 2023  
<http://spire2023.isti.cnr.it>

## 6 Research positions

In order to enhance the research activity of the Department, several research fellow positions have been assigned in 2023 so as to favour the participation of researchers at the very beginning of their scientific career, as well as to foster international collaborations. Specifically (data source: administrative secretariat of the Department):

1. 11 Junior Research grant positions (*Borse di studio e approfondimento* in Italian) have been opened on the following topics:
  - (a) *Sviluppo e implementazione di un'applicazione per smartphone per il monitoraggio remoto di problemi cardio-respiratori durante crisi pandemica*
  - (b) *Studio e implementazione di strutture dati ottimizzate per KNN approssimato*
  - (c) *Progettazione e realizzazione di handler di effetti*
  - (d) *Engineering continual learning as a software service*
  - (e) *Human-centered, Explainable Artificial Intelligence for Collaborative Decision Making*
  - (f) *Strutture dati compresse per l'indicizzazione di dataset di chiavi a lunghezza variabile*
  - (g) *Graph theoretic methods for deep graph networks*
  - (h) *Models and algorithms for network interdiction*
  - (i) *Sviluppo e implementazione di un'applicazione per smartphone per il monitoraggio remoto di problemi cardio-respiratori durante una crisi pandemica*
  - (j) *Progettazione e realizzazione di una dashboard e di un database RedCap per la raccolta ed elaborazione dei dati nella diagnosi e riabilitazione di bambini affetti da paralisi cerebrale (2 grants)*
2. 14 Senior Research grant positions (*Borse di ricerca* in Italian) have been opened on the following topics:
  - (a) *Svolgimento di attività per il miglioramento dell'efficienza degli uffici giudiziari grazie a tecnologie ICT, per l'innovazione del sistema giustizia e l'implementazione dell'Ufficio per il Processo (3 grants)*
  - (b) *Competition for the award of n. 3 research grants based on qualifications and curriculum, with an interview where required. Specifically, the research grant will contribute to the improvement of the courts' efficiency based on ICT tools and technologies, innovation of the judicial system and implementation of the so called "Ufficio per il Processo" (3 grants)*
  - (c) *Sustainable management of distributed software systems*
  - (d) *Continual learning per Neural Machine Translation*
  - (e) *Definizione della metodologia di raccolta ed elaborazione dei dati nella diagnosi e riabilitazione di bambini affetti da paralisi cerebrale*
  - (f) *Reti neurali per grafi in problemi di ottimizzazione*
  - (g) *Implementazione ed interfacciamento di approcci risolutivi in SMS++*
  - (h) *Continual learning per Neural Machine Translation*
  - (i) *Tackling Bias in AI through Explainability and Causal Approaches (2 grants)*
3. 21 Research fellow positions (*Assegni di ricerca* in Italian) have been opened:
  - (a) *Causality analysis of data for domain-specific bias understanding (2 grants)*
  - (b) *Modeling and Numerical Simulation of Complex System*
  - (c) *Costruzione e analisi con metodi di Intelligenza Artificiale di un dataset relativo alla riabilitazione cardiaca nella fase post-chirurgica*
  - (d) *Apprendimento Automatico Continuo per la Manutenzione Predittiva*

- (e) *Conditional Language Models for Business Process Optimization: generazione automatica di testo in linguaggio naturale guidata da vincoli fattuali di natura industriale attraverso tecniche di Artificial Intelligence, Natural Language Processing and Generation*
- (f) *Sviluppo di un sistema di Machine Learning per l'analisi automatica di ECG*
- (g) *Reservoir Computing e Reti Neurali per la modellazione di processi dinamici emergenti*
- (h) *Studio e sviluppo di modelli di IA spiegabili rispettosi della privacy*
- (i) *Vocal Biomarkers & Language Intelligence for Health*
- (j) *Apprendimento continuo per ambienti e dati dinamici*
- (k) *Approcci Data Driven per Servizi di Trasporto Resilienti E Sostenibili*
- (l) *Matching to and between pan-genomes*
- (m) *Single Cells analysis for PANS*
- (n) *Sviluppo di tecniche basate su Intelligenza Artificiale per supportare diagnosi e terapia di bambini affetti da paralisi cerebrale*
- (o) *A clear win-win case:interfacing SMS++with PyPSa*
- (p) *Deep learning for graphs*
- (q) *Human-centered, Explainable Artificial Intelligence for Collaborative Decision Making*
- (r) *Explainable and Fair Ranking Methods in Artificial Intelligence for HR Decision Making: advanced eXplainable AI (XAI) paradigms in support of hiring decision making algorithms and processes*
- (s) *Sviluppo di tecniche basate su Intelligenza Artificiale per supportare diagnosi e terapia di bambini affetti da paralisi cerebral*
- (t) *Interpretable methods for ranking student behaviors and performance*

## 7 PhD Schools

We report here some basic information on the two PhD Schools managed by the Department, i.e., the one in *Computer Science* and the one in *Artificial Intelligence for Society*. Furthermore, we report on the consortium of the national interest PhD *Blockchain and Distributed Ledger Technology*: the Department participates to this consortium by coordinating its Curriculum 2: *Social systems and smart societies*.

For additional information we refer to the respective web sites:

- PhD School in Computer Science: <https://dottorato.di.unipi.it/>
- National PhD in Artificial Intelligence for Society: <https://phd-ai-society.di.unipi.it/>
- National PhD in Blockchain and Distributed Ledger Technology: <https://isas.unicam.it/dni/blockchain-and-DLT>

We specify that the National PhD in Artificial Intelligence for Society is part of the National PhD in Artificial Intelligence, see <https://www.phd-ai.it/> for details.

### 7.1 PhD School in Computer Science

In 2023, the board of the PhD School in Computer Science included the following members:

- **Antonio Brogi, Coordinator**, Davide Bacciu, Stefano Chessa, Marco Danelutto, Paolo Ferragina, Gian-Luigi Ferrari, Antonio Frangioni, Luca Gemignani, Roberto Grossi, Danilo Numeroso, Paolo Milazzo, Corrado Priami, Laura Emilia Maria Ricci, Maria Grazia Scutellà, from the Department of Computer Science of the University of Pisa.
- Michele Boreale, Rosario Pugliese, from the University of Florence.
- Sara Brunetti from the University of Siena.
- Fabio Martinelli (CNR-IIT, Institute of Informatics and Telematics), Chiara Renso (CNR-ISTI, Information Science and Technology Institute), Paolo Santi (CNR-IIT), Roberto Scopigno (CNR-ISTI), from the National Research Council of Italy (*Consiglio Nazionale delle Ricerche* in Italian).
- Ricardo Baeza-Yates (Northeast University), Sajal Das (Missouri University of Science and Technology), Joshua Guttman (Worcester Polytechnic Institute and MITRE Corporation), Daria Mochly-Rosen (Stanford University), from USA.
- Leo Liberti and Catuscia Palamidessi from Ecole Polytechnique and CNRS, from France.
- Frank Leymann, from the University of Stuttgart, Germany.

Across 2023, the PhD students enrolled in the Computer Science PhD were (arranged per cycle):

- Cycle XXXV: Baccini Federica, Bocci Alessandro, Citraro Salvatore, Di Sarli Daniele, Iadarola Giacomo, Lagani Gabriele, Landolfi Francesco, Lisi Andrea, Machado Bruno, Manolas Iason, Molinari Alessio, Oliveira Fernanda, Palma Giulia, Punzi Giulia, Rotelli Daniela, Rulli Cosimo, Sansone Francesco, Sattar Asma, Tortelli Tarlis, Valenti Andrea, Vogel Adriano Jose, Zedda Eleonora.
- Cycle XXXVI: Berti Alessandro, Boffa Antonio, Bussi Laura, Cornacchia Giuliano, De Caro Valerio, Di Giorgio Alessandro, Fuchs Andrew, Gravina Alessio, Loporchio Matteo, Numeroso Danilo, Pedrotti Andrea, Resta Michele, Rucci Davide, Tortorella Domenico, Tosoni Francesco.
- Cycle XXXVII: Alabasi Wesam Nitham, Ascari Flavio, Cardia Marco, Cinquini Martina, Corbucci Luca, Di Pasquale Federica, Gaglianese Marco, Guerra Andrea, Lomurno Giuseppe, Massa Jacopo, Massidda Riccardo, Mwaniki Moses Njagi, Ottimo Alberto, Pugliese Chiara, Ramjattan Reshawn, Semola Rudy, Tonci Nicolo', Tortola Domenico.

- Cycle XXXVIII: Awais Ch Muhammad, Bisicchia Giuseppe, Coleman Eric Nuertey, De Vincenzi Marco, Gharb Hamid, Joubbi Sara, Molo Mbasaa Joaquim, Pham Tran Huong Giang, Piccoli Elia, Piras Valentina, Scandurra Elena, Simone Lorenzo, Tedeschi Gabriele, Waheed Tauheed.
- Cycle XXXIX: Giacomo Antonioli, Valerio Besozzi, Giovanni Buzzega, Lorenzo Carfagna, Gabriel Carmona, Ben William Cullen, Niko Dalla Noce, Alessandro Dipalma, Lorenzo Gazzella, Filippo Lari, Lanpei Li, Mauro Madeddu, Silvio Martinico, Mattia Odorisio, Camilla Poggianti, Khalil Ur Rehman, Maria Giovanna Rotundo, Giacomo Vaiani.

## 7.2 National PhD in Artificial Intelligence for Society

In 2023, the board of the PhD in Artificial Intelligence for Society included the following members, plus two elected representatives of the PhD students:

- **Dino Pedreschi, Coordinator, Anna Monreale, Vice-coordinator**, Davide Bacciu, Ilario Belloni, Roberta Bracciale, Marco Cococcioni, Adriano Fabris, Paolo Ferragina, Fabio Gadducci, Benedetta Galgani, Claudio Gallicchio, Riccardo Guidotti, Alessandro Lenci, Alessio Malizia, Francesco Marcelloni, Alessio Micheli, Nadia Pisanti, Monica Pratesi, Giuseppe Prencipe, Caterina Rizzo, Chiara Maria Angela Roda, Salvatore Ruggieri from the University of Pisa.
- Fosca Giannotti, Fabrizio Lillo, Francesco Raimondi from Scuola Normale Superiore, Pisa.
- Francesca Chiaromonte, Giovanni Comandè, Tommaso Cucinotta, Giorgio Fagiolo, Andrea Piccaluga, Andrea Vandin from Scuola Sant’Anna, Pisa.
- Chiara Boldrini, Marco Conti, Andrea Passarella, Maurizio Tesconi from CNR-IIT.
- Fabrizio Falchi, Claudio Gennaro, Mirco Nanni, Franco Maria Nardini, Luca Pappalardo, Raffaele Perego, Salvatore Rinzivillo, Giulio Rossetti, Fabrizio Sebastiani, Umberto Straccia from CNR-ISTI.
- Felice Dell’Orletta from ILC-CNR.
- Giuseppe Manco from ICAR-CNR.
- Alessandra Retico, Riccardo Torre from INFN.
- Michelangelo Ceci, Rosa Lanzilotti, Donato Malerba, Nicole Novielli, Giovanni Semeraro from the University of Bari.
- Maurizio Gabbrielli, Michela Milano, Valentina Presutti from the University of Bologna.
- Cinzia Di Dio, Giuseppe Riva from Università Cattolica del Sacro Cuore.
- Michela Baccini, Andrew Bagdanov, Marco Lippi, Paolo Nesi from the University of Florence.
- Stefania Costantini from University of L’Aquila.
- Diego Garlaschelli, Tommaso Gili, Tiziano Squartini, from Scuola IMT Lucca.
- Rita Cucchiara, Costantino Grana from University of Modena e Reggio Emilia.
- Johanna Monti, Roberta Montinaro from Università degli Studi di Napoli L’Orientale.
- Valentina Poggioni from the University of Perugia.
- Adriano Barra from the University of Rome ‘La Sapienza’.
- Massimo Tistarelli from Università degli Studi di Sassari.
- Marco Gori, Stefano Melacci from the University of Siena.
- Andrea Passerini, Elena Pavan, Niculae Sebe from the University di Trento.
- Paola Inverardi, Patrizio Pelliccione from Gran Sasso Science Institute.



Across 2023, the PhD students enrolled in the National PhD in Artificial Intelligence for Society were (arranged per cycle):

- Cycle XXXVII: Costanza Alfieri, Maddalena Amendola, Giada Anastasi, Alberto Baldrati, Simone Barandoni, Isacco Beretta, Valerio Bonsignori, Gianpaolo Bontempo, Giovanni Camarda, Eleonora Cappuccio, Francesco Carli, Irina Carnat, Roberto Casaluze, Enrico Collini, Tommaso Crepax, Nicola Dall'Asen, Daniele D'Armineto, Michele Fontana, Simone Gallo, Mitisha Gaur, Gianluca Guidi, Muhammad Imran, Daniele Lotito, Lorenzo Mannocci, Marta Marchiori Manerba, Emanuele Marconato, Giovanni Mauro, Marco Minici, Davide Morelli, Virginia Morini, Cosimo Palma, Emanuele Parisini, Vittorio Pippi, Robert Lee Poe, Samuele Poppi, Nischay Purnkear, Andrea Rafanelli, Bin Ren, Guido Rocchietti, Muhammad Waheed Sabir, Elena Sajno, Quirino Saraceni, Gaia Saveri, Giuseppe Saviano, Gianluca Sperduti, Edoardo Urettini, Serena Versino, Qifan Yang, Filippo Zimmaro, Maciej Krzysztof Zuziak.
- Cycle XXXVIII: Abramski Katherine Elizabeth, Alessandrelli Andrea, Aliyev Gurban, Arzilli Guglielmo, Balzan Francesco, Banerjee Debodeep, Baraldi Lorenzo, Barbera Cesare, Berti Barbara, Cabras Alessandro, Calderonio Vincenzo, Caponecchia Vittoria, Carmisciano Luca, Cau Erica, Cocchi Federico, Colavito Giuseppe, Daole Mattia, De Gasperi Stefano, Dini Irene, Domenichini Diana, Failla Andrea, Fantini Alessia, Favilli Andrea, Fedele Andrea, Figliè Roberto, Fontanesi Michele, Gambetta Daniele, Garofalo Marco, Gibelli Nicolò, Grande Elio, Gregorini Matteo, Ignesti Giacomo, Jameel Usama, Landi Cristiano, Lazzari Nicolas, Lorello Luca Salvatore, Maggio Alessandro, Maggioni Edoardo, Mainas Francesca, Mannari Chiara, Marini Lorenzo, Masini Stefano, Maslennikova Aleksandra, Mazzoni Federico, Mekam Pouatcha Mathurin Aime, Monaldini Andrea, Munarini Monique, Nespoli Alice, Palmieri Luigi, Paperini Elisa, Pipoli Vittorio, Poggiali Alessandro, Punzi Clara, Quarantiello Luigi, Reis De Almeida Passos Nelson Aloysio, Romeo Carlo, Rossi Michele, Ruffini Fabrizio, Sacco Federica, Sanchi Marco, Tonati Samuele, Tramacere Stefano, Volpi Giulia, Zafaranchi Arman, Zeshan Muhammad Umar.
- Cycle XXXIX Arras Giovanni, Bendetti Francesco, Bushipaka Praveen, Cassese Maria, Castaldo Antonio, Cosci Cristian, Curci Antonio, De Biase Paolo, De Ninno Gianluca Nicola, Di Cursi Francesco, Di Maio Christian, Duong Minh Duc, Fereidooni Zahra, Gambito Mark Adrian, Giovannoni Claudio, Kurniadi Felix Indra, Mala Chandana Sree, Mauro Federica, Mazzi Claudio, Meglioli Greta, Melis Beatrice, Miglionico Giustino Claudio, Mikhaylova Daria, Morelli Andrea, Musacchio Elio, Muscato Benedetta, Nagi Ali Tariq, Negi Kajal, Parascandolo Fiorenzo, Pastore Gianmarco Antonio Pio, Perri Emanuele Fulvio, Popa Victoria, Poppi Tobia, Porcedda Riccardo, Punzo Veronica, Pupillo Chiara, Rambaldi Migliore Chiara Camilla, Rescigno Argentina Anna, Ricchi Mattia, Sanguigni Fulvio, Trenta Alessandro, Tsewalo Tondji Idriss Cabrel, Vozna Alina, Waseem Ahmad.

### 7.3 National PhD in Blockchain and Distributed Ledger Technology

In 2023, the Curriculum Social systems and smart societies of the PhD has been coordinated by Laura Ricci.

Furthermore, across 2023 the PhD students enrolled in the National PhD in Blockchain and Distributed Ledger Technology were:

- Cycle XXXVIII: Francesco Donini, Ricardo Daniel Lopes Almeida, Andrea Pelosi.
- Cycle XXXIX: Yitbarek Yimame, Giuseppe Galano.

## 8 Visiting Fellows and Students

Thanks to its scientific prestige and highly international profile, the Department of Computer Science often hosts scientific events and seminars that external researchers attend, and research staff of the Department often receives visits of colleagues from other Italian institutions and from abroad. We report here on the researchers who visited the Department during 2023 (source: direct communication with the CAI of the Department Prof. Andrea Corradini, i.e., the delegate of the Department for the international relationships).

### 8.1 Visiting Fellows

Dr. Claudia D’Ambrosio, Centre National de la Recherche Scientifique (CNRS) and Ecole Polytechnique (France), visited the Department at the invitation of Prof. Antonio Frangioni in July 2023, to work on “Mathematical Optimization, Mixed Integer Nonlinear Programming”.

Prof. Erik Peter Garrison, University of Tennessee Health Science Center, Memphis (USA), visited the Department at the invitation of Prof. Nadia Pisanti in April 2023, to work on “Efficient Pangenomes alignments”.

Prof. Chan-Hyun Youn, together with Dr. Minsu Jeon and Dr. Taewoo Kim, School of Electrical Engineering, KAIST (Republic of Korea), visited the Department at the invitation of Dr. Patrizio Dazzi from May to July 2023, to work on “Efficient exploitation of hardware accelerators in edge computing environments”.

Prof. Humberto Marques-Neto, PUC Minas – Pontifical Catholic University of Minas Gerais (Brazil), is visiting the Department at the invitation of Prof. Davide Bacciu from August 2023 to July 2024, to work on “Analyzing and Modeling Human Behavior on Online Social Networks and Mobility Open Data”.

Dr. Francisco Ponce, Universidad Técnica Federico Santa María (Chile), visited the Department at the invitation of Dr. Jacopo Soldani, from March to July 2023, to work on “Security smell analysis in microservice-based applications”.

### 8.2 Visiting Students

Esteban Gabory, PhD student CWI Amsterdam (The Netherlands), visited the Department at the invitation of Prof. Nadia Pisanti, from September to November 2023, to work on the “ALPACA” project.

Guillermo Tomás Fernández Martín, PhD student at University of Castilla-La Mancha (Spain), visited the Department at the invitation of Dr. Riccardo Guidotti, from May to July 2023, to work on “Research in Post-hoc Model-Specific XAI”.

Espen Haugsdal, PhD student at Norwegian University of Science and Technology (Norway), visited the Department at the invitation of Dr. Claudio Gallicchio, from October 2023 to March 2024, to work on “Transformer-based neural network models for time-series analysis”.

Andrii Kruttsylo, PhD student at Polish Academy of Sciences (Poland), visited the Department at the invitation of Dr. Vincenzo Lomonaco, from May to June 2023, to work on “Systematic Generalization in Deep Continual Learning”.

Saloni Kwatra, PhD student at Umea University (Sweden), visited the Department at the invitation of Prof. Anna Monreale, from September to November 2023, to work on “Privacy in Machine Learning”.

Daesoo Lee, PhD student at Norwegian University of Science and Technology (Norway), visited the Department at the invitation of Dr. Claudio Gallicchio, from September 2023 to February 2024, to work on “Deep Learning for Dynamical Data”.

José Ramón Rodríguez Ossorio, PhD student at University of León (Spain), visited the Department at the invitation of Dr. Claudio Gallicchio, from September to December 2023, to work on “Reservoir Computing for Industrial Applications”.

Alain Raymond, PhD student at Catholic University of Chile (Chile), visited the Department at the invitation of Dr. Vincenzo Lomonaco, from April to July 2023, to work on “Systematic Generalization in Deep Continual Learning”.

Cléa Rebillard, PhD student at ENSEIRB-MATMECA - Bordeaux INP (France), visited the Department at the invitation of Dr. Vincenzo Lomonaco, from June to August 2023, to work on “Using contrastive classification for continual learning”.

Felipe Ignacio Del Rio Rebolledo, PhD student at Catholic University of Chile (Chile), visited the Department at the invitation of Dr. Vincenzo Lomonaco, from April to June 2023, to work on “Study of Systematic Generalization in Continual Machine Learning”.

Hélène Siboulet, MSc student at Parisian Research Master in Computer Science (MPRI), University of Paris-Saclay (France), visited the Department at the invitation of Prof. Roberto Bruni, from February to July 2023, to carry out an internship.

Pio Sierra, PhD Student University of Cambridge, (UK), visited the Department at the invitation of Prof. Nadia Pisanti, from October to November 2023, to work on the “ALPACA” project.

## 9 Peer-reviewed publications

In this section, we report the complete list of the research products published in 2023 and having members of the Department among the authors. This section has been populated with data taken from the official file sent to the *Area 01 Committee* by the Research Office of the University in March 2023, limited to the entries published in 2023, and then integrated with information from the researchers.

### 9.1 Journal papers

The following papers have been published in peer reviewed international journals in 2023 by the members of the Department:

- [1] E. Agliari, L. Albanese, F. Alemanno, A. Alessandrelli, A. Barra, F. Giannotti, D. Lotito, and D. Pedreschi. Dense hebbian neural networks: a replica symmetric picture of supervised learning. *Physica A: Statistical Mechanics and its Applications*, 626:129076, 2023.
- [2] E. Agliari, L. Albanese, F. Alemanno, A. Alessandrelli, A. Barra, F. Giannotti, D. Lotito, and D. Pedreschi. Dense hebbian neural networks: A replica symmetric picture of unsupervised learning. *Physica A: Statistical Mechanics and its Applications*, 627:129143, 2023.
- [3] D. Ahmetovic, C. Bernareggi, B. Leporini, and S. Mascetti. Wordmelodies: Supporting the acquisition of literacy skills by children with visual impairment through a mobile app. *ACM Trans. Access. Comput.*, 16(1):5:1–5:19, 2023.
- [4] S. Ali, T. Abuhmed, S. H. A. El-Sappagh, K. Muhammad, J. M. Alonso-Moral, R. Confalonieri, R. Guidotti, J. D. Ser, N. D. Rodríguez, and F. Herrera. Explainable artificial intelligence (XAI): what we know and what is left to attain trustworthy artificial intelligence. *Inf. Fusion*, 99:101805, 2023.
- [5] R. L. Almeida, F. Baiardi, D. D. F. Maesa, and L. Ricci. Impact of decentralization on electronic voting systems: A systematic literature survey. *IEEE Access*, 11:132389–132423, 2023.
- [6] D. Altafini, D. A. Bini, V. Cutini, B. Meini, and F. Poloni. An edge centrality measure based on the kemeny constant. *SIAM J. Matrix Anal. Appl.*, 44(2):648–669, 2023.
- [7] A. Astorino, A. Frangioni, E. Gorgone, and B. Manca. Ellipsoidal classification via semidefinite programming. *Oper. Res. Lett.*, 51(2):197–203, 2023.
- [8] D. Atzeni, R. Ramjattan, R. Figliè, G. Baldi, and D. Mazzei. Data-driven insights through industrial retrofitting: An anonymized dataset with machine learning use cases. *Sensors*, 23(13):6078, 2023.
- [9] M. Baazizi, D. Colazzo, G. Ghelli, C. Sartiani, and S. Scherzinger. Negation-closure for JSON schema. *Theor. Comput. Sci.*, 955:113823, 2023.
- [10] T. Bacci, A. Frangioni, C. Gentile, and K. Tavlaridis-Gyparakis. New minlp formulations for the unit commitment problems with ramping constraints. *Optimization*, 2019.
- [11] D. Bacciu, F. Errica, A. Gravina, L. Madeddu, M. Podda, and G. Stilo. Deep graph networks for drug repurposing with multi-protein targets. *IEEE Trans. Emerg. Top. Comput.*, 12(1):177–189, 2024.
- [12] D. Bacciu, D. Morelli, and V. Pandealea. Modeling mood polarity and declaration occurrence by neural temporal point processes. *IEEE Trans. Neural Networks Learn. Syst.*, 34(4):1800–1807, 2023.
- [13] E. Baldini, S. Chessa, and A. Brogi. Estimating the environmental impact of green iot deployments. *Sensors*, 23(3):1537, 2023.
- [14] A. Bechini, A. Bondielli, P. Dell’Oglio, and F. Marcelloni. From basic approaches to novel challenges and applications in sequential pattern mining. *Applied Computing and Intelligence*, 3(1):44–78, 2023.

- [15] G. Bernardini, A. Conte, G. Gourdel, R. Grossi, G. Loukides, N. Pisanti, S. P. Pissis, G. Punzi, L. Stougie, and M. Sweering. Hide and mine in strings: Hardness, algorithms, and experiments. *IEEE Trans. Knowl. Data Eng.*, 35(6):5948–5963, 2023.
- [16] G. Bigi, L. Lampariello, S. Sagratella, and V. G. Sasso. Approximate variational inequalities and equilibria. *Comput. Manag. Sci.*, 20(1):43, 2023.
- [17] G. Bisicchia, S. Forti, and A. Brogi. Sustainable goal-oriented smart environments: a declarative programming approach. *J. Log. Comput.*, 33(4):864–899, 2023.
- [18] A. Bocci, S. Forti, G.-L. Ferrari, and A. Brogi. Declarative secure placement of faas orchestrations in the cloud-edge continuum. *Electronics*, 12(6):1332, 2023.
- [19] A. Bocci, S. Forti, R. Guancia, G. Ferrari, and A. Brogi. Secure partitioning of cloud applications, with cost look-ahead. *Future Internet*, 15(7):224, 2023.
- [20] F. Bodria, F. Giannotti, R. Guidotti, F. Naretto, D. Pedreschi, and S. Rinzivillo. Benchmarking and survey of explanation methods for black box models. *Data Min. Knowl. Discov.*, 37(5):1719–1778, 2023.
- [21] F. Bonchi, A. D. Giorgio, and A. Santamaria. Deconstructing the calculus of relations with tape diagrams. *Proc. ACM Program. Lang.*, 7(POPL):1864–1894, 2023.
- [22] M. Bondioli, M. C. Buzzi, M. Buzzi, S. Chessa, L. Jaccheri, C. Senette, and S. Pelagatti. Guidelines for research and design of software for children with asd in e-health. *Universal Access in the Information Society*, pages 1–22, 2023.
- [23] M. Bondioli, S. Chessa, A. Kocian, and S. Pelagatti. A survey on technological tools and systems for diagnosis and therapy of autism spectrum disorder. *Hum. Comput. Interact.*, 39(3-4):145–173, 2024.
- [24] S. Borsci, E. Prati, A. Malizia, M. Schmettow, A. Chamberlain, and S. Federici. Ciao AI: the italian adaptation and validation of the chatbot usability scale. *Pers. Ubiquitous Comput.*, 27(6):2161–2170, 2023.
- [25] L. Brodo, R. Bruni, M. Falaschi, R. Gori, F. Levi, and P. Milazzo. Quantitative extensions of reaction systems based on SOS semantics. *Neural Comput. Appl.*, 35(9):6335–6359, 2023.
- [26] A. Brogi et al. Microservices after covid-19. *Open Access Series in Informatics*, 111(1):1–3, 2023.
- [27] R. Bruni, R. Giacobazzi, R. Gori, and F. Ranzato. A correctness and incorrectness program logic. *J. ACM*, 70(2):15:1–15:45, 2023.
- [28] M. Cacciola, A. Frangioni, X. Li, and A. Lodi. Deep neural networks pruning via the structured perspective regularization. *SIAM J. Math. Data Sci.*, 5(4):1051–1077, 2023.
- [29] M. Cardia, S. Chessa, M. Franceschi, F. Gambineri, and A. Micheli. Machine learning for the estimation of cod from uv-vis spectrometer in leather industries wastewater. *International Journal of Environmental Pollution and Remediation*, 11:10–19, 2023.
- [30] E. Carlini, M. Coppola, P. Dazzi, L. Ferrucci, H. Kavalionak, I. Korontanis, M. Mordacchini, and K. Tserpes. Smartorc: smart orchestration of resources in the compute continuum. *Frontiers in High Performance Computing*, 1:1164915, 2023.
- [31] V. D. Caro, C. Gallicchio, and D. Bacciu. Continual adaptation of federated reservoirs in pervasive environments. *Neurocomputing*, 556:126638, 2023.
- [32] A. Carta, L. Pellegrini, A. Cossu, H. Hemati, and V. Lomonaco. Avalanche: A pytorch library for deep continual learning. *J. Mach. Learn. Res.*, 24:363:1–363:6, 2023.
- [33] S. Carta, T. Turchi, L. Pintacuda, and L. Jankovic. Recomm. measuring resilient communities: An analytical and predictive tool. *International Journal of Architectural Computing*, 21(3):536–560, 2023.

- [34] S. Chakraborty, R. Grossi, K. Sadakane, and S. R. Satti. Succinct representation for (non)deterministic finite automata. *J. Comput. Syst. Sci.*, 131:1–12, 2023.
- [35] L. Ciampi, V. Zeni, L. Incrocci, A. Canale, G. Benelli, F. Falchi, G. Amato, and S. Chessa. A deep learning-based pipeline for whitefly pest abundance estimation on chromotropic sticky traps. *Ecol. Informatics*, 78:102384, 2023.
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- [51] E. Genovese and P. Mancarella. La nascita della cnudd sotto la guida di edoardo arslan. *Audiologia e Foniatria*, 8(doc 2023):13–16, 2023.
- [52] V. Gervasi, A. Marchetto, and M. Daneva. Report of the 8th workshop on empirical requirements engineering (empire 2023). *ACM SIGSOFT Software Engineering Notes*, 49(1):27–29, 2023.
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## 9.2 Conference papers

The following papers have been published in proceedings of national and international conferences in 2023 by the members of the Department:

- [1] M. Aldinucci, E. M. Baralis, V. Cardellini, I. Colonnelli, M. Danelutto, S. Decherchi, G. D. Modica, L. Ferrucci, M. Gribaudo, F. Iannone, M. Lapegna, D. Medic, G. Muscianisi, F. Righetti, E. Sciacca, N. Tonello, M. Tortonesi, P. Trunfio, and T. Vardanega. A systematic mapping study of italian research on workflows. In *Proceedings of the SC '23 Workshops of The International Conference on High Performance Computing, Network, Storage, and Analysis, SC-W 2023, Denver, CO, USA, November 12-17, 2023*, pages 2065–2076. ACM, 2023.
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### 9.3 Books

The following books have been published in 2023 by the members of the Department:

- [1] T. Aschenbruck, J. Dickert, W. Esterhuizen, B. Filipecki, S. Grundel, C. Helmberg, T. K. Ritschel, P. Sauerteig, S. Streif, A. Wasserrab, et al. *Hierarchical Power Systems: Optimal Operation Using Grid Flexibilities*. Springer, 2023.
- [2] P. Ferragina. *Pearls of Algorithm Engineering*. Cambridge University Press, 2023.

### 9.4 Book chapters

The following book chapters have been published in 2023 by the members of the Department:

- [1] T. Bircan, A. A. Salah, and A. Sirbu. How can big data analytics help understand migrant integration. *Harnessing Data Innovation for Migration Policy: A Handbook for Practitioners*, pages 92–103, 2023.

- [2] C. Bodei, G.-L. Ferrari, L. Galletta, and P. Degano. Risk estimation in iot systems. In *Challenges of Software Verification*, pages 221–242. Springer, 2023.
- [3] L. Brodo, R. Bruni, and M. Falaschi. Verification of reaction systems processes. In *Challenges of Software Verification*, pages 243–264. Springer, 2023.
- [4] R. Bruni, R. Giacobazzi, R. Gori, and F. Ranzato. Local completeness in abstract interpretation. In *Challenges of Software Verification*, pages 145–156. Springer, 2023.
- [5] M. Buzzi, M. Buzzi, G. Della Penna, B. Leporini, F. Ricci, et al. Thinkable come strumento di sviluppo a supporto dell’accessibilità, 2023.
- [6] G. Galesi, A. Vozna, B. Leporini, et al. Esposizione multimodale e multimediale interattiva ed inclusiva per le persone con disabilità visiva, 2023.
- [7] G. Iommazzo, C. D’Ambrosio, A. Frangioni, and L. Liberti. Algorithm configuration problem. In *Encyclopedia of Optimization*, pages 1–8. Springer, 2022.
- [8] D. Zanobini, B. Leporini, M. Magrini, P. Nicolosi, et al. Un pannello multimodale interattivo per la sala delle carpe giapponesi del museo di storia naturale dell’università di pisa: un esempio di user experience inclusiva, 2023.

## 9.5 Editorships

The following proceedings have been edited in 2023 by the members of the Department:

- [1] F. Gadducci and T. Kehrer. Specification and modelling of computing systems through graphs and graph transformation, 2023.
- [2] O. Gaggi, B. Guidi, and A. M. Vegni. Information technology for social good (goodit 2021), 2023.
- [3] B. Guidi, O. Gaggi, and A. Michienzi. Guest editorial: Blockchain and decentralised solutions for social good, 2023.
- [4] B. Guidi, A. Michienzi, and L. Ricci. Oasis’23: 3rd international workshop on open challenges in online social networks. In *Proceedings of the 34th ACM Conference on Hypertext and Social Media*, pages 1–2, 2023.
- [5] F. Nardini, N. Pisanti, R. Venturini, et al. Proceedings of 30th international symposium on string processing and information retrieval, {SPIRE 2023}. *LECTURE NOTES IN COMPUTER SCIENCE*, 14240:1–409, 2023.
- [6] D. Nozza, L. Passaro, and M. Polignano. Special issue nl4ai 2022: Workshop on natural language for artificial intelligence. *Intelligenza Artificiale*, (Preprint):1–3, 2023.
- [7] E. Salvatori, S. Pelagatti, C. Mannari, et al. Pionieri fra due culture. informatica umanistica a pisa in onore di maria simi. 2023.