Giorgio Audrito

Curriculum Vitae

ORCID: ***0000-0002-2319-0375***
Research ID: ***S-4613-2018***
Date of Birth: 17/12/1986
Nationality: Italian
http://giorgio.audrito.info/#!/research

Abstract

Giorgio Audrito published 60 works, including 19 journal papers, for an Hirsch-index 13 in Scopus and 16 in Google Scholar, and a total of 531 citations in Scopus and 715 in Google Scholar. One of his papers won the best paper award at the international conference COORDINATION 2017. He won the INdAM grant for young researchers, the Seal of Excellence for a MSCA-IF-GF proposal in 2019, two bronze medals at the International Olympiads in Informatics (2004 and 2005) and other prizes. He participated in the 7th Heidelberg Laureate Forum, where the recipients of the most prestigious awards in mathematics and computer science meet 200 young researchers selected worldwide. In 2021 he obtained the Italian habilitation as associate professor (ASN) in Computer Engineering (09/H1).

He collaborated with different groups of researchers on different topics. His major collaborations in computer science comprise four topics: *aggregate computing* (J. Beal, S. Dasgupta, F. Damiani, M. Viroli), *didactics of informatics* (L. Laura, E. Giovannetti, R. Rizzi), and *speedup of dynamic programming algorithms* (P. Ferragina, M. Pinotti).

He participated to projects: MIUR-PRIN *"Common-Wears"* (leader of task *"Verification Tools"*, WP *"Engineering"*), Ateneo/CSP *"NewEdge"* (leader of WP *"Algorithms"*), Ateneo/CSP *"Aggregate Computing"* (leader of WP *"Algorithms"*); COST Action IC1402 *"ARVI: Runtime Verification beyond Monitoring"*; H2020 RIA *"HyVar: Scalable Hybrid Variability for Distributed Evolving Software Systems"*; Ateneo/CSP project *"RunVar: Evolving Distributed Software Systems at Runtime by Scalable Hybrid Variability"* (leader of WP *"Technical Design"*).

Research positions

01/10/2022 **Assistant Professor ("RTDB") in computer science (INF/01)**, *Università di Torino*.

01/09/2020 **Research Fellow ("RTDA") in computer science (INF/01)**, *Università di Torino*.

07/05/2020–31/08/2020 **Research Grant Holder ("borsista post-doc") on *"Aggregate Programming"***, *Supervisor: Prof. Ferruccio Damiani, Università di Torino*.

01/04/2019–30/04/2020 **Research Assistant ("assegnista di ricerca") on *"Aggregate Programming"***, *Supervisor: Prof. Ferruccio Damiani, Università di Torino, Prof. Soura Dasgupta, University of Iowa*, research internazionalization grant 2018, Compagnia di San Paolo.

01/04/2018–31/03/2019 **Research Assistant ("assegnista di ricerca") on *"Formal methods for the Internet of Things"***, *Supervisor: Prof. Ferruccio Damiani, Università di Torino*.

01/12/2017–31/03/2018 **Research Grant Holder ("borsista post-doc") on *"Formal methods for the Internet of Things"***, *Supervisor: Prof. Ferruccio Damiani, Università di Torino*.

01/01/2016–30/11/2017 **Research Assistant ("assegnista di ricerca") on *"Formal methods for the Internet of Things"***, *Supervisor: Prof. Ferruccio Damiani, Università di Torino*.

01/01/2015–31/12/2015 **Research Assistant ("assegnista di ricerca") on *"Design and development of algorithms and data structures for compressed data, with applications"***, *Supervisor: Prof. Paolo Ferragina, Università di Pisa*.

Education

14/04/2021 **Abilitazione a professore di II fascia (ASN)**, *settore concorsuale 09/H1*.

02/03/2016 **Ph.D. in Mathematics *(logic and set theory)***, *Supervisor: Prof. Matteo Viale, Università degli Studi di Torino.*

06/04/2011 **Master of Science in Mathematics**, *Supervisor: Prof. Matteo Viale, Università degli Studi di Torino*, grade 110/110 cum laude and honorable mention.

07/10/2008 **Bachelor's degree in Mathematics**, *Supervisor: Prof. Guido Magnano, Università degli Studi di Torino*, grade 110/110 cum laude.

14/07/2005 **Scientific PNI High School Diploma**, *L.S. "M. Curie"*, Pinerolo, grade 100/100.

Non-scientific education

2016 Group Leader training for European Youth Exchanges, *Municipality of Torino*, 9 days.

2007–2011 Diplomas in Composition, Piano, Organ, *Conservatorio "G. Verdi"*, Torino.

Networking events, schools and long visiting periods

2023 **Erasmus+ Teaching Staff**, *Western Norway University of Applied Sciences*, Bergen, February 13th to 24th (2 weeks).

2021 **Training course on university teaching IRIDI start**, *Università degli Studi di Torino.*

2019 **Research visit**, *University of Iowa*, Iowa City – US, September 30th to March 14th (6 months). Prof. Soura Dasgupta, Department of Electrical and Computer Engineering.

2019 **Heidelberg Laureate Forum**, *Networking conference*, Heidelberg – DE, 6 days.
https://www.heidelberg-laureate-forum.org/forum/past-hlfs/7th-hlf-2019.html

2016 **ARVI COST Action summer school**, Madrid – ES, 3 days.
http://rv2016.imag.fr/?page_id=128

2016 **International School on Formal Methods**, Bertinoro – IT, 5 days.
http://www.sti.uniurb.it/events/sfm16quanticol

2012–2015 **Winter School in Abstract Analysis**, Hejnice – CZ, 4 editions, 1 week each.
https://winterschool.eu

2012 **Thematic Program on Forcing and its Applications**, *Fields Institute*, Toronto – CA, September 7th to December 16h (3 months).
https://www.fields.utoronto.ca/programs/scientific/12-13/forcing/participants.html

Honours and awards

2022 Distinguished Artifact Award at the conference ECOOP (GGS A+), with *Functional Programming for Distributed Systems with XC* [C5].

2022 Best Artefact Award at the conference COORDINATION, with *Extensible 3D Simulation of Aggregated Systems with FCPP* [C4].

2020 INdAM grant for young researchers, *"Reactive Aggregate Programming"* project.

2019 Seal of Excellence for the *"Model, Algorithms and Tools for the Internet of Things"* (MAT4IoT) project proposal, H2020-MSCA-IF-2019 call.

2017 Best Paper Award at the conference COORDINATION, with *Optimally-Self-Healing Distributed Gradient Structures through Bounded Information Speed* [C23].

2011 Winner of the *"Optime"* prize, *Unione Industriale* award for best graduates in Torino.

2008 First place in the national competition for scholarships *INdAM* for master's degree.

2005 First place in the national competition for scholarships *INdAM* for bachelor's degree.

2004–2005 Bronze medal at the *International Olympiads in Informatics*, both editions 2004 (Athens – GR) and 2005 (Nowi Sacz – PL).

2002–2005 Two gold medals, one silver medal and a honorable mention at the *Italian Mathematical Olympiads*, Cesenatico – IT.

Major scientific collaborations

- On the topic **Aggregate Computing**, collaboration with:
  - Dr. Jacob Beal. *Raytheon BBN Technologies*, USA.
  - Prof. Soura Dasgupta. *Dept. of Electr. and Comp. Engineering*, University of Iowa, USA.
  - Prof. Ferruccio Damiani. *Dept. of Computer Science*, University of Torino, Italy.
  - Prof. Mirko Viroli. *Dept. of Computer Science and Eng.* (DISI), University of Bologna, Italy.

  G.A. contributed to the development of the Field Calculus model of Aggregate Computing (surveyed in [J12,C21]) and of its incarnations in the Protelis external Java DSL, ScaFi internal Scala DSL, FCPP internal C++ DSL (`https://{protelis,scafi,fcpp}.github.io`). He is currently playing a pivotal role in the design of the denotational semantics [J13; C16], the investigation of the expressive power of the model and its extensions [J10,11; C5,6,8,11,14,15,20; W3,11], the design of efficient algorithms for aggregate computing [J7,9,14; C9,12,17,22,23; W4,7,9,10] possibly with real-time constraints [C18] or stabilisation properties [J15], the integration of field calculus with runtime verification techniques [J6,8; W5,6,8], the FCPP implementation of the model in C/C++ for microcontrollers [C4,10].

- On the topic **Speedup of Dynamic Programming Algorithms**, collaboration with:
  - Prof. Paolo Ferragina. *Dept. of Computer Science*, University of Pisa, Italy.
  - Prof. Cristina M. Pinotti. *Dept. of Computer Science*, University of Perugia, Italy.

  G.A. worked with Prof.s Ferragina and Pinotti on the speed up of dynamic programming algorithms for optimal managing of resources in broadcast networks [J16; C24].

- On the topic **Didactics of Informatics**, collaboration with:
  - Dr. Luigi Laura. *DIAG Department*, "Sapienza" University of Roma, Italy.
  - Prof. Elio Giovannetti. *Dept. of Computer Science*, University of Torino, Italy.
  - Prof. Romeo Rizzi. *Dept. of Computer Science*, University of Verona, Italy.

  G.A. works with a team in the Informatics Olympiads on new ways to foster informatics education in secondary education, including online platforms and team contests [C7,13,19,25; B3].

Project participation

- **MIUR-PRIN project: *Common-Wears*** (start: 2022, duration: 36 months). The project concerns the development of models, architectures, and engineering tools for multi-user collectives of smart wearables and body sensor networks. G.A. leads Task *Verification Tools* of Work Package *Engineering*, concerning tool support for static analyses, model checking and distributed runtime verification of behavioral properties.

- **Ateneo/CSP project: *NewEdge*** (start: 31/12/2021, duration: 24 months). The project concerns exploiting aggregate computing for the management of robotic swarms, especially in the context of autonomous motion and green IoT. G.A. leads Work Package *Algorithms* on the development of aggregate algorithms for autonomous motion.

- **Ateneo/CSP project: *Aggregate Programming*** (`http://ap-project.di.unito.it`, start: 01/03/2019, duration: 24 months). The project concerns an alternate approach to the device-centric development methodology, aiming to dramatically simplify the design, creation, and maintenance of complex and large scale software systems, in the context of (Industrial) IoT, cyber-physical systems, pervasive computing, robotic swarms, and large-scale situated systems.

G.A. led Work Package *Algorithms* on the development of novel aggregate algorithms.

- **COST Action IC1402 ARVI: *Runtime Verification beyond Monitoring*** (https://www.cost-arvi.eu, start: 17/12/2014, duration: 48 months). The project concerns the employment of Runtime Verification techniques in novel areas, generalising the concept to systems that are not traditional computer programs, such as hardware, devices, cloud computing, and human centric systems. G.A. worked, in the context of Working Group *Core Runtime Verification* on exploiting aggregate computing for distributed runtime verification. He attended the ARVI summer school in 2016.
- **H2020 RIA project HyVar: *Scalable Hybrid Variability for Distributed Evolving Software Systems*** (http://www.hyvar-project.eu, start: 01/02/2015, duration: 36 months). The project addressed continuous software evolution in distributed systems through a framework for hybrid variability, consisting of a domain specific variability language to describe software evolution as a product line, together with cloud infrastructures for monitoring and customised over-the-air upgrade technologies. G.A. worked on Work Package *Design of the Domain Specific Variability Language* led by Prof. Ferruccio Damiani.
- **Ateneo/CSP project RunVar: *Evolving Distributed Software Systems at Runtime by Scalable Hybrid Variability*** (http://runvar-project.di.unito.it, start: 01/07/2015, duration: 30 months). The project was aimed at investigating development frameworks for runtime evolution of distributed software applications, through behavioural types, delta-oriented programming of software product lines and field-based programming of collective adaptive systems. G.A. led Work Package *Technical Design* and worked on runtime updates of distributed systems specified by the field calculus.

Project and fund responsibility

2022 UniTO *"Grant for Internationalisation"* (11 000€, 01/07/2022 – 22/12/2023).

2020 INdAM grant for young researchers, *"Reactive Aggregate Programming"* project (1300€, 24/09/2020 – 23/09/2021).

Experience in project proposal writing (not funded, threshold passed)

2020 Participation in the DTM4TIES proposal, H2020-ICT-2018-20 call.

2020 Participation in the ACUMEN proposal, H2020-JPI-EN-UAC call.

2019 Preparation of the MAT4IoT proposal, H2020-MSCA-IF-2019 call (seal of excellence).

2019 Participation in the NewEdge proposal, H2020-ICT-2018-20 call.

2018 Preparation of the MAT4IoT proposal, H2020-MSCA-IF-2018 call.

Membership in scientific organizations and committees

Conference and workshop committees

2023 Main Local Organizer, *"Leveraging Competitivity Platforms for Computer Science Education" workshop*, Torino – IT.

2023 Posters co-chair, *ECOOP/ISSTA conference*, Seattle – US.
https://conf.researchr.org/home/ecoop-issta-2023

2023 Co-chair, *VORTEX workshop*, Seattle – US.
https://conf.researchr.org/track/ecoop-issta-2023/vortex-2023

2023 PC member, *FACS conference*, online.
https://facs-conference.github.io/2023/

2023 PC member, *RV conference*, Thessaloniki – GR.
https://rv23.csd.auth.gr

2023 PC member, *ACSOS conference*, Toronto – CA.
https://2023.acsos.org

2023 PC member, *ASMECC workshop*, Toronto – CA.
https://2023.acsos.org/track/acsos-2023-workshops#asmecc

2023 PC member, *DISCOLI workshop*, Coral Bay – CY.
https://discoli-workshop.github.io/2023

2023 Publicity Chair, *COORDINATION conference*, Lisbon – PT.
https://www.discotec.org/2023/coordination

2023 PC member, *COORDINATION conference*, Lisbon – PT.
https://www.discotec.org/2023/coordination

2022 PC member, *REBLS workshop, SPLASH conference*, Auckland – NZ.
https://2022.splashcon.org/home/rebls-2022

2022 PC member, *eCAS workshop, ACSOS conference*, Los Angeles – US (online).
https://ecas-workshop.github.io/2022

2022 PC member, *ACSOS conference*, Los Angeles – US (online).
https://conf.researchr.org/home/acsos-2022

2022 PC member, *VORTEX workshop, ECOOP conference*, Berlin – DE.
https://2022.ecoop.org/home/vortex-2022

2022 PC member, *DISCOLI workshop, ICDCS conference*, Bologna – IT.
https://discoli-workshop.github.io/2022/committees

2022 Publicity Chair, *DisCoTec federated conference*, Lucca – IT.
https://www.discotec.org/2022

2022 AEC (Artifact Evaluation Committee) member, *COORDINATION conference*, Lucca – IT. https://www.discotec.org/2022/coordination

2021 PC member, *eCAS workshop, ACSOS conference*, Washington DC – US (online).
http://ecas2021.apice.unibo.it

2021 PC member, *ACSOS conference*, Washington DC – US (online).
https://conf.researchr.org/home/acsos-2021

2021 PC member, *VORTEX workshop, ECOOP conference*, Aarhus – DK (online).
https://2021.ecoop.org/track/ecoop-issta-2021-vortex

2021 Tool Track Chair and PC member, *COORDINATION conference*, Valletta – MT (online). https://www.discotec.org/2021/coordination

2020 Chair, *eCAS workshop, ACSOS conference*, Washington DC – US (online).
http://ecas2020.apice.unibo.it

2019 PC member, *VORTEX workshop, ECOOP conference*, London – UK.
https://2019.ecoop.org/home/vortex-2019

2018 AEC (Artifact Evaluation Committee) member, *OOPSLA track, SPLASH conference*, Boston – US. GGS A+ https://2018.splashcon.org

2018 PC member, *FAS* conference Posters and Demos*, Trento – IT.
https://saso2018.fbk.eu

2017 AEC (Artifact Evaluation Committee) member, *OOPSLA track, SPLASH conference*, Vancouver – CA. GGS A+ https://2017.splashcon.org

2017 Local Organization Co-Chair, *iFM conference*, Torino – IT.
http://ifm2017.di.unito.it

2017 PC member, *ALP4IoT workshop, iFM conference*, Torino – IT.
http://apice.unibo.it/xwiki/bin/view/ALP4IoT2016/WebHome

2017 PC member, *eCAS workshop, SASO conference*, Tucson – US.
http://ecas2017.apice.unibo.it

2013 Local Organizer, *Young Set Theory Workshop*, Oropa – IT.
https://ests.wordpress.com/2012/12/21/6th-young-set-theory-workshop

Conference and journal revisions

2017–present Reviewer for the journals: Journal of Systems and Software (Q1), ACM Transactions on Autonomous and Adaptive Systems (Q1), Knowledge-Based Systems (Q1), Applied Intelligence (Q2), Mathematical Problems in Engineering (Q2), Science of Computer Programming (Q3), Algorithms (Q3), Journal of Object Technology (Q4), Open Science Journal

2021 Reviewer, *RTSS conference*, Dortmund – DE (online).
http://2021.rtss.org

2020 Reviewer, *IFAC world congress*, Berlin – DE (online).
https://www.ifac2020.org

2019 Reviewer, *RV conference*, Porto – PT.
https://www.react.uni-saarland.de/rv2019

2019 Reviewer, *eCAS workshop, SASO conference*, Umeå – SE.
https://apice.unibo.it/xwiki/bin/view/ECAS2019

2016 Reviewer, *eCAS workshop, SASO conference*, Augsburg – DE.
https://apice.unibo.it/xwiki/bin/view/ECAS2016

Editorial activity

2022 Guest Editor for the special issue on *Selected Tool Papers of COORDINATION 2020 and 2021*, Original Software Publications track, *Science of Computer Programming*, Elsevier.

Institutional roles

2021–present Member of the *Department Council*, Computer Science department, University of Turin

Governing bodies of scientific organizations

2020–present Member of the *Olympic Committee* for the *Italian Olympiads in Informatics*, as representative of the Italian University.
https://www.olimpiadi-informatica.it/index.php/oii/organizzazione.html

Scientific associations

2022–present Member of the *IEEE* (Institute of Electrical and Electronic Engineers). https://ieee.org

2021–present Member of the *ACM* (Association for Computing Machinery). https://acm.org

2020–present Member of the *EAPLS* (European Association for Programming Languages and Systems). https://eapls.org

2020–present Member of the *GNCS* (Gruppo Nazionale per il Calcolo Scientifico), *INdAM* (Istituto Nazionale di Alta Matematica). https://www.altamatematica.it/gncs/aderenti

Publications

Giorgio Audrito published 60 works, including 19 journal papers, for an Hirsch-index 13 in Scopus and 16 in Google Scholar, and a total of 531 citations in Scopus and 715 in Google Scholar.Each work is listed together with the number of citations in Scopus (s#) and in Google Scholar (g#), the SCImago Journal Rank (SJR) and Source Normalized Impact per Paper (SNIP) for journal papers, and the GII-GRIN-SCIE (GGS) rating for conference proceedings (referred to the publication year).

Journal papers (peer-reviewed)

[J1] *FCPP+Miosix: Scaling Aggregate Programming to Embedded Systems.* Giorgio Audrito, Federico Terraneo, William Fornaciari. *IEEE Transactions on Parallel and Distributed Systems* 34(3), 2023. DOI: 10.1109/TPDS.2022.3232633.

[J2] *Computation Against a Neighbour: Addressing Large-Scale Distribution and Adaptivity with Functional Programming and Scala.* Giorgio Audrito, Roberto Casadei, Ferruccio Damiani, Mirko Viroli. *Logical Methods in Computer Science* 19(1), 2023. DOI: 10.46298/lmcs-19(1:6)2023.

[J3] *A Field-based Computing Approach to Sensing-driven Clustering in Robot Swarms.* Gianluca Aguzzi, Giorgio Audrito, Roberto Casadei, Ferruccio Damiani, Gianluca Torta, Mirko Viroli. *Swarm Intelligence*, 2022. DOI: 10.1007/s11721-022-00215-y

[J4] *Near-Optimal Knowledge-Free Resilient Leader Election.* Yuanqiu Mo, Giorgio Audrito, Soura Dasgupta, Jacob Beal. *Automatica* 146, 2022. DOI: 10.1016/j.automatica.2022.110583.

[J5] *Aggregate Processes as Distributed Adaptive Services for the Industrial Internet of Things.* Lorenzo Testa, Giorgio Audrito, Ferruccio Damiani, Gianluca Torta. *Pervasive and Mobile Computing* 85, 2022. DOI: 10.1016/j.pmcj.2022.101658. SJR 1.062 SNIP 1.223

[J6] *Distributed Runtime Verification by Past-CTL and the Field Calculus.* Giorgio Audrito, Ferruccio Damiani, Volker Stolz, Gianluca Torta, Mirko Viroli. *Journal of Systems and Software* 187, 2022. DOI: 10.1016/j.jss.2022.111251. SJR 0.64 SNIP 2.16

[J7] *Optimal Resilient Distributed Data Collection in Mobile Edge Environments.* Giorgio Audrito, Roberto Casadei, Ferruccio Damiani, Danilo Pianini, Mirko Viroli. *Computers and Electrical Engineering* 96, 2021. DOI: 10.1016/j.compelec.2021.107580. SJR 0.63 SNIP 1.61

[J8] *Adaptive Distributed Monitors of Spatial Properties for Cyber-Physical Systems.* Giorgio Audrito, Roberto Casadei, Ferruccio Damiani, Volker Stolz, Mirko Viroli. *Journal of Systems and Software* 175, 2021. DOI: 10.1016/j.jss.2021.110908. SJR 0.64 SNIP 2.16 s#8 g#11

[J9] *Aggregate Centrality Measures for IoT-based Coordination.* Giorgio Audrito, Danilo Pianini, Ferruccio Damiani, Mirko Viroli. *Science of Computer Programming* 203, 2021. DOI: 10.1016/j.scico.2020.102584. SJR 0.31 SNIP 1.07 s#1 g#2

[J10] *Engineering Collective Intelligence at the Edge with Aggregate Processes.* Roberto Casadei, Mirko Viroli, Giorgio Audrito, Danilo Pianini, Ferruccio Damiani. *Engineering Applications of Artificial Intelligence* 97, 2021. DOI: 10.1016/j.engappai.2020.104081. SJR 1.11 SNIP 2.26 s#9 g#16

[J11] *Field-based Coordination with the share Operator.* Giorgio Audrito, Jacob Beal, Ferruccio Damiani, Danilo Pianini, Mirko Viroli. *Logical Methods in Computer Science* 16(4), pp. 1–41, 2020. DOI: 10.23638/LMCS-16(4:1)2020. SJR 0.48 SNIP 0.89 s#2 g#4

[J12] *From Distributed Coordination to Field Calculus and Aggregate Computing.* Mirko Viroli, Jacob Beal, Ferruccio Damiani, Giorgio Audrito, Roberto Casadei, Danilo Pianini. *Journal of Logical and Algebraic Methods in Programming* 109, 2019. DOI: 10.1016/j.jlamp.2019.100486. SJR 0.43 SNIP 0.92 s#22 g#30

[J13] *A Higher-order Calculus of Computational Fields.* Giorgio Audrito, Mirko Viroli, Ferruccio Damiani, Danilo Pianini, Jacob Beal. *ACM Transactions on Computational Logic* 20(1), pp. 5:1–5:55, 2019. DOI: 10.1145/3285956. SJR 0.57 SNIP 1.05 s#37 g#56

[J14] *Optimal Single-Path Information Propagation in Gradient-based Algorithms.* Giorgio Audrito, Ferruccio Damiani, Mirko Viroli. *Science of Computer Programming* 166, pp. 146–166, 2018. DOI: 10.1016/j.scico.2018.06.002. SJR 0.32 SNIP 1.41 s#17 g#21

[J15] *Engineering Resilient Collective Adaptive Systems by Self-Stabilisation.* Mirko Viroli, Giorgio Audrito, Jacob Beal, Ferruccio Damiani, Danilo Pianini. *ACM Transactions on Modeling and Computer Simulation* 28(2), pp. 16:1–16:28, 2018. DOI: 10.1145/3177774. SJR 0.31 SNIP 1.24 s#53 g#72

[J16] *Maximizing the Overall End-User Satisfaction of Data Broadcast in Wireless Mesh Networks.* Giorgio Audrito, Alan A. Bertossi, Alfredo Navarra, Cristina M. Pinotti. *Journal of Discrete Algorithms* 45C, pp. 14–25, Elsevier, 2017. DOI: 10.1016/j.jda.2017.07.002. SJR 0.55 SNIP 1.17 s#7 g#7

[J17] *Absoluteness via Resurrection.* Giorgio Audrito, Matteo Viale. *Journal of Mathematical Logic* 17(2), World Scientific, 2017. DOI: 10.1142/S0219061317500052. SJR 2.17 SNIP 2.55 s#8 g#19

[J18] *Generic Large Cardinals and Systems of Filters.* Giorgio Audrito, Silvia Steila. *Journal of Symbolic Logic* 82(3), pp. 860–892, Cambridge University Press, 2017. DOI: 10.1017/jsl.2017.27. SJR 1.06 SNIP 1.30 s#1 g#3

[J19] *Enumeration of the adjunctive hierarchy of hereditarily finite sets.* Giorgio Audrito, Alexandru I. Tomescu, Stephan Wagner. *Journal of Logic and Computation* 25(3), pp. 943–963, Oxford University Press, 2015. DOI: 10.1093/logcom/exu062. SJR 0.38 SNIP 0.78 s#1 g#10

Conference proceedings (peer-reviewed)

[C1] *Programming Distributed Collective Processes for Dynamic Ensembles and Collective Tasks.* Giorgio Audrito, Roberto Casadei, Ferruccio Damiani, Gianluca Torta, Mirko Viroli. *Coordination Models and Languages (COORDINATION)*, 2023, *to appear*.

[C2] *On the Dynamic Evolution of Distributed Computational Aggregates.* Giorgio Audrito, Roberto Casadei, Gianluca Torta. *IEEE International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS)*, pp. 37–42, 2022. DOI: 10.1109/ACSOSC56246.2022.00024.

[C3] *Bringing Aggregate Programming towards the Cloud.* Giorgio Audrito, Ferruccio Damiani, Gianluca Torta. *International Symposium On Leveraging Applications of Formal Methods, Verification and Validation (ISOLA)*, pp. 301–317, 2022. DOI: 10.1007/978-3-031-19759-8_19.

[C4] *Extensible 3D Simulation of Aggregated Systems with FCPP.* Giorgio Audrito, Luigi Rapetta, Gianluca Torta. *Coordination Models and Languages (COORDINATION)*, pp. 55–71, 2022. DOI: 10.1007/978-3-031-08143-9_4.

[C5] *Functional Programming for Distributed Systems with XC.* Giorgio Audrito, Roberto Casadei, Ferruccio Damiani, Guido Salvaneschi, Mirko Viroli. *European Conference on Object-Oriented Programming (ECOOP)*, pp. 20:1–20:28, 2022. DOI: 10.4230/LIPIcs.ECOOP.2022.20. GGS A+

[C6] *Towards Integration of Multi-Agent Planning with Self-Organising Collective Processes.* Giorgio Audrito, Roberto Casadei, Gianluca Torta. *IEEE International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS)*, poster, pp. 297–298, 2021. DOI: 10.1109/ACSOS-C52956.2021.00042.

[C7] *The Italian Job: Moving (Massively) Online a National Olympiad.* Giorgio Audrito, William Di Luigi, Luigi Laura, Edoardo Morassutto, Dario Ostuni. *Olympiads in Informatics* 15, pp. 3–12, 2021. DOI: 10.15388/ioi.2021.01.

[C8] *Tuple-based Coordination in Large-Scale Situated Systems.* Roberto Casadei, Mirko Viroli, Alessandro Ricci, Giorgio Audrito. *Coordination Models and Languages (COORDINATION)*, pp. 149–167, 2021. DOI: 10.1007/978-3-030-78142-2_10.

[C9] *A Resilient Leader Election Algorithm Using Aggregate Computing Blocks.* Yuanqiu Mo, Giorgio Audrito, Soura Dasgupta, Jacob Beal. *IFAC PapersOnLine*, 53(2), pp. 3336–3341, 2020. DOI: 10.1016/j.ifacol.2020.12.1497. s#1 g#2

[C10] *FCPP: an efficient and extensible Field Calculus framework.* Giorgio Audrito. *IEEE International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS)*, pp. 153–159, 2020. DOI: 10.1109/ACSOS49614.2020.00037. s#5 g#9

[C11] *FScaFi: a Core Calculus for Collective Adaptive Systems Programming.* Roberto Casadei, Mirko Viroli, Giorgio Audrito, Ferruccio Damiani. *International Symposium On Leveraging Applications of Formal Methods, Verification and Validation (ISOLA)*, Lecture Notes in Computer Science 12477, pp. 344–360, 2020. DOI: 10.1007/978-3-030-61470-6_21. s#6 g#12

[C12] *Resilient Distributed Collection through Information Speed Thresholds.* Giorgio Audrito, Sergio Bergamini, Ferruccio Damiani, Mirko Viroli. *International Conference on Coordination Languages and Models (COORDINATION)*, Lecture Notes in Computer Science 12134, pp. 211–229, Springer, 2020. DOI: 10.1007/978-3-030-50029-0_14. s#2 g#3

[C13] *Recommending Tasks in Online Judges.* Giorgio Audrito, Tania Di Mascio, Paolo Fantozzi, Luigi Laura, Gemma Martini, Umberto Nanni, Marco Temperini. *International Conference on Methodologies and Intelligent Systems for Technology Enhanced Learning (MIS4TEL)*, Advances in Intelligent Systems and Computing 1007, pp. 129–136, Springer, 2019. DOI: 10.1007/978-3-030-23990-9_16. s#4 g#5

[C14] *The Share Operator for Field-Based Coordination.* Giorgio Audrito, Jacob Beal, Ferruccio Damiani, Danilo Pianini, Mirko Viroli. *International Conference on Coordination Languages and Models (COORDINATION)*, Lecture Notes in Computer Science 11533, pp. 54–71, Springer, 2019. DOI: 10.1007/978-3-030-22397-7_4. s#4 g#6

[C15] *Aggregate Processes in Field Calculus.* Roberto Casadei, Mirko Viroli, Giorgio Audrito, Danilo Pianini, Ferruccio Damiani. *International Conference on Coordination Languages and Models (COORDINATION)*, Lecture Notes in Computer Science 11533, pp. 200–217, Springer, 2019. DOI: 10.1007/978-3-030-22397-7_12. s#7 g#11

[C16] *On a Higher-Order Calculus of Computational Fields.* Giorgio Audrito, Mirko Viroli, Ferruccio Damiani, Danilo Pianini, Jacob Beal. *International Conference on Formal Techniques for Distributed Objects, Components, and Systems (FORTE)*, Lecture Notes in Computer Science 11535, pp. 289–292, Springer, 2019. DOI: 10.1007/978-3-030-21759-4_17. Journal-first track (four pages summary of [J13]). GGS B-

[C17] *Effective Collective Summarisation of Distributed Data in Mobile Multi-Agent Systems.* Giorgio Audrito, Sergio Bergamini, Ferruccio Damiani, Mirko Viroli. *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pp. 1618–1626, ACM, 2019. DOI: 10.5555/3306127.3331882. GGS A+ s#10 g#14

[C18] *Distributed Real-Time Shortest-Paths Computations with the Field Calculus.* Giorgio Audrito, Ferruccio Damiani, Mirko Viroli, Enrico Bini. *IEEE Real-Time Systems Symposium (RTSS)*, pp. 23–34, 2018. DOI: 10.1109/RTSS.2018.00013. GGS A+ s#7 g#10

[C19] *Fostering Informatics Education through Teams Olympiad.* Nadia Amaroli, Giorgio Audrito, Luigi Laura. *Olympiads in Informatics* 12, pp. 133-146, 2018. DOI: 10.15388/ioi.2018.11. s#2 g#3

[C20] *Space-Time Universality of Field Calculus.* Giorgio Audrito, Jacob Beal, Ferruccio Damiani, Mirko Viroli. *International Conference on Coordination Languages and Models (COORDINATION)*, Lecture Notes in Computer Science 10852, pp. 1–20, Springer, 2018. DOI: 10.1007/978-3-319-92408-3_1. s#16 g#26

[C21] *From Field-Based Coordination to Aggregate Computing.* Mirko Viroli, Jacob Beal, Ferruccio Damiani, Giorgio Audrito, Roberto Casadei, Danilo Pianini. *International Conference on Coordination Languages and Models (COORDINATION)*, Lecture Notes in Computer Science 10852, pp. 252–279, Springer, 2018. DOI: 10.1007/978-3-319-92408-3_12. s#22 g#33

[C22] *Compositional Blocks for Optimal Self-Healing Gradients.* Giorgio Audrito, Roberto Casadei, Ferruccio Damiani, Mirko Viroli. *11th IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO)*, pp. 91–100, 2017. DOI: 10.1109/SASO.2017.18. s#31 g#41

[C23] *Optimally-Self-Healing Distributed Gradient Structures through Bounded Information Speed.* Giorgio Audrito, Ferruccio Damiani, Mirko Viroli. *International Conference on Coordination Languages and Models (COORDINATION)*, Lecture Notes in Computer Science 10319, pp. 59–77, Springer, 2017. DOI: 10.1007/978-3-319-59746-1_4. GGS B s#14 g#19

[C24] *Optimal Skewed Allocation on Multiple Channels for Broadcast in Smart Cities.* Giorgio Audrito, Daniele Diodati, Cristina M. Pinotti. *IEEE International Conference on Smart Computing (SMARTCOMP)*, pp. 1–8, 2016. DOI: 10.1109/SMARTCOMP.2016.7501711. g#1

[C25] *The Role of Contests in Changing Informatics Education, a Local View.* Giorgio Audrito, G. Barbara Demo, Elio Giovannetti. *Olympiads in Informatics* 6, pp. 3–20, 2012. s#9 g#16

Workshop proceedings and post-proceedings (peer-reviewed)

[W1] *Towards Automated Engineering for Collective Adaptive Systems: Vision and Research Directions.* Giorgio Audrito, Roberto Casadei, Ferruccio Damiani, Danilo Pianini, Gianluca Torta, Mirko Viroli. *Workshop on COMMunity-OrieNted WEARrable Computing Systems (COMMON-WEARS)*, 2022. DOI: 10.1109/DASC/PiCom/CBDCom/Cy55231.2022.9927839.

[W2] *Aggregate Drone Monitoring of Wildfires.* Giorgio Audrito, Marco Ottina. *Workshop on COMMunity-OrieNted WEARrable Computing Systems (COMMON-WEARS)*, 2022. DOI: 10.1109/DASC/PiCom/CBDCom/Cy55231.2022.9927785.

[W3] *Fostering Resilient Execution of Multi-Agent Plans through Self-Organisation*. Giorgio Audrito, Roberto Casadei, Gianluca Torta. *Workshop on Engineering Collective Adaptive Systems (eCAS)*, pp. 81–86, 2021. DOI: 10.1109/ACSOS-C52956.2021.00076.

[W4] *Effect of Monotonic Filtering on Graph Collection Dynamics*. Hunza Zainab, Giorgio Audrito, Soura Dasgupta, Jacob Beal. *Workshop on Engineering Collective Adaptive Systems (eCAS)*, pp. 68–73, 2021. DOI: 10.1109/ACSOS-C52956.2021.00036.

[W5] *Towards Aggregate Monitoring of Spatio-temporal Properties*. Giorgio Audrito, Gianluca Torta. *Verification and mOnitoring at Runtime EXecution (VORTEX)*, pp. 26–29, 2021. DOI: 10.1145/3464974.3468448. g#1

[W6] *RM for Users' Safety and Security in the Built Environment*. Giorgio Audrito, Ferruccio Damiani, Giuseppe Di Giuda, Silvia Meschini, Laura Pellegrini, Elena Seghezzi, Lavinia Chiara Tagliabue, Lorenzo Testa, Gianluca Torta. *Verification and mOnitoring at Runtime EXecution (VORTEX)*, pp. 13–16, 2021. DOI: 10.1145/3464974.3468445. g#1

[W7] *Improving Collection Dynamics by Monotonic Filtering*. Hunza Zainab, Giorgio Audrito, Soura Dasgupta, Jacob Beal. *Workshop on Engineering Collective Adaptive Systems (eCAS)*, IEEE International Conference on Autonomic Computing and Self-Organizing Systems Companion, pp. 127–132, 2020. DOI: 10.1109/ACSOS-C51401.2020.00043. s#1 g#3

[W8] *On distributed runtime verification by aggregate computing.* Giorgio Audrito, Ferruccio Damiani, Volker Stolz, Mirko Viroli. Post-proceedings of *Verification of Objects at Runtime Execution (VORTEX 2018)*, Electronic Proceedings in Theoretical Computer Science 302, pp. 47–61, 2019. DOI: 10.4204/EPTCS.302.4. s#2 g#4

[W9] *Aggregate Graph Statistics.* Giorgio Audrito, Ferruccio Damiani, Mirko Viroli. *Workshop on Architectures, Languages and Paradigms for IoT (ALP4IoT)*, Electronic Proceedings in Theoretical Computer Science 264, pp. 18–22, 2018. EPTCS. DOI: 10.4204/EPTCS.264.2. s#4 g#5

[W10] *Resilient Blocks for Summarising Distributed Data.* Giorgio Audrito, Sergio Bergamini. *Workshop on Architectures, Languages and Paradigms for IoT (ALP4IoT)*, Electronic Proceedings in Theoretical Computer Science 264, pp. 23–26, 2018. DOI: 10.4204/EPTCS.264.3. s#7 g#9

[W11] *Run-Time Management of Computation Domains in Field Calculus.* Giorgio Audrito, Ferruccio Damiani, Mirko Viroli, Roberto Casadei. *Workshop on Engineering Collective Adaptive Systems (eCAS)*, pp. 192–197, 2016. DOI: 10.1109/FAS-W.2016.50. s#12 g#19

Books and book chapters

[B1] *Preface*. Giorgio Audrito, Omar Inverso, Hugo Torres Vieira. In "Special issue on tool papers of the 23rd International Conference on Coordination Models and Languages", *Original Software Publications* track, Science of Computer Programming, *Elsevier*, 2023. DOI: 10.1016/j.scico.2022.102899

[B2] *Aggregate Programming for Customized Building Management and Users Preference Implementation*. Giorgio Audrito, Ferruccio Damiani, Stefano Rinaldi, Lavinia Chiara Tagliabue, Gianluca Torta, Lorenzo Testa. In "IoT Edge Solutions for Cognitive Buildings - Technology, Communications and Computing", *Springer*, 2023. DOI: 10.1007/978-3-031-15160-6_7

[B3] *Le olimpiadi di informatica in Italia*. Giorgio Audrito, Romeo Rizzi. In "Vedere la matematica... alla maniera di Mimmo Luminati", *ETS - Pisa*, 2015. ISBN: 9788846742797.

[B4] *Esplorazione dei solidi e oltre: fare geometria con gli Zometool*. Giorgio Audrito, Ubertino Battisti, Massimo Borsero, Alberto Raffero, Saverio Tassoni, Luisa Testa, edited by Ornella Robutti. *Ledizioni*, 2016. ISBN: 9788867054114.

[B5] *Dispense di matematica olimpionica*. Andrea Astolfi, Giorgio Audrito, Alberto Carignano, Fabio Tanturri. *Quaderni di matematica dell'associazione subalpina Mathesis*, 2010.

Talks

30/08/2023 *Giochi di Fibonacci: Competitive Programming for Young Students*. IOI conference, Szeged – HU. https://ioi2023.hu/ioi-conference

18/07/2023 *Runtime Monitoring of Human Behaviour with Aggregate Computing on Android*. VORTEX, Seattle – US. https://conf.researchr.org/program/ecoop-issta-2023/program-ecoop-issta-2023

18/07/2023 *Combining Static and Runtime Verification with AC and COQ*. VORTEX, Seattle – US. https://conf.researchr.org/program/ecoop-issta-2023/program-ecoop-issta-2023

26/10/2022 *Bringing Aggregate Programming towards the Cloud*. ISOLA, Rhodes – GR. https://isola-conference.org/isola2022/overview

15/10/2022 *Effective Programming of Microcontroller Swarms with FCPP*. GEMEEE, Invited Keynote, Paris – FR. https://www.mscholarconferences.com/GEMEEE/26/home.html

13/09/2022 *Aggregate Drone Monitoring of Wildfires*. COMMON-WEARS, Falerna Marina – IT. https://cyber-science.org/2022/program

28/06/2022 *Reactive Aggregate Programming*. Convegno del Gruppo Nazionale per il Calcolo Scientifico dell'INdAM, Invited talk, Montecatini Terme – IT. https://www.altamatematica.it/gncs/2021/11/11/convegno-e-assemblea-gncs-2022

23/06/2022 *Functional Programming for Distributed Systems with XC*. VCOOP, online. https://2022.ecoop.org/program/program-ecoop-2022

14/06/2022 *Extensible 3D Simulation of Aggregated Systems with FCPP*. COORDINATION, Lucca – IT. https://www.discotec.org/2022/programme

08/06/2022 *Functional Programming for Distributed Systems with XC*. ECOOP, Berlin – DE. https://2022.ecoop.org/program/program-ecoop-2022

06/06/2022 *Predictive Semantics for Past-CTL Runtime Monitors*. VORTEX, Berlin – DE. https://2022.ecoop.org/home/vortex-2022#program

12/07/2021 *Towards Aggregate Monitoring of Spatio-temporal Properties*. VORTEX, Aarhus – DK (online). https://2021.ecoop.org/track/ecoop-issta-2021-vortex#program

19/08/2020 *FCPP: an efficient and extensible field calculus framework*. ACSOS, Washington – US (online). https://2020.acsos.org/info/program

18/06/2020 *Resilient Distributed Collection through Information Speed Thresholds*. COORDINATION, Valletta – MT (online). https://www.discotec.org/2020/programme

19/07/2019 *A Field Calculus Implementation of Spatial Logic*. VORTEX, London – UK. https://2019.ecoop.org/home/vortex-2019#program

18/06/2019 *The share operator for field-based coordination*. COORDINATION, Copenhagen – DK. http://www.discotec.org/2019/programme

17/05/2019 *Effective Collective Summarisation of Distributed Data in Mobile Multi-Agent Systems*. AAMAS, Montreal – CA. http://aamas2019.encs.concordia.ca/detailedprogram.html

12/12/2018 *Distributed Real-Time Shortest-Paths Computations with the Field Calculus*. RTSS, Nashville – US. http://2018.rtss.org/program

12/12/2018 *Simulation of Field Calculus-based IoT Applications with Real-Time Guarantees*. RTSS@Work, Nashville – US. http://2018.rtss.org/rtsswork

03/09/2018 *Fostering Informatics Education through Teams Olympiad*. IOI conference, Tsukuba – JP. https://ioi2018.jp/wp-content/uploads/2018/08/Agenda-IOI-Conference_2018.pdf

18/06/2018 *Space-Time Universality of Field Calculus*. COORDINATION track, DisCoTec, Madrid – ES. http://2018.discotec.org/pdf/program_conferences.pdf

18/09/2017 *Aggregate Graph Statistics*. ALP4IoT workshop, iFM, Torino – IT. http://apice.unibo.it/xwiki/bin/view/ALP4IoT2016/WebHome

19/06/2017 *Optimally-Self-Healing Distributed Gradient Structures through Bounded Information Speed*. COORDINATION track, DisCoTec, Neuchâtel – CH. http://2017.discotec.org/program.html

19/04/2017 *Memoization of Parity Games: a practical proposal*. Seminari del Dipartimento di Informatica, Verona – IT. http://www.di.univr.it/?ent=seminario&id=3956

12/09/2016 *Run-time Management of Computation Domains in Field Calculus*. eCAS workshop, SASO, FAS*, Augsburg – DE. http://apice.unibo.it/xwiki/bin/view/ECAS2016/Program

28/10/2015 *Systems of Filters*, poster. Young Set Theory Workshop, Jerusalem – IL.

08/09/2015 *Generic absoluteness and resurrection axioms*. XX congresso dell'UMI, Siena – IT. http://umi.dm.unibo.it/congresso2015/programma

01/02/2015 *Resurrection axioms and generic absoluteness*. Winterschool in Abstract Analysis, Hejnice – CZ. https://www.winterschool.eu/2015/program

18/08/2014 *Absoluteness via Resurrection*. SetTop, Novi Sad – RS. http://www.dmi.uns.ac.rs/settop/2014/talks.html

15/04/2014 *Absoluteness via Resurrection*. XXV incontro dell'AILA, Pisa – IT. http://ailapisa2014.weebly.com/programme.html

02/04/2014 *Dimostrabilità, assolutezza generica e assiomi di resurrezione*, seminar. Seminari dei dottorandi, Torino – IT. https://www.mathematics-phdseminars.unito.it/past-seminars

Teaching and mentoring experiences

PhD program

2022–present Co-supervisor for the PhD thesis of Muhammad Yasir Shabir.
Dottorato in Informatica, ciclo 37, Università degli Studi di Torino, Italy (ongoing).

2020–present Teacher for *"Aggregate Programming for the Internet of Things"*.
Dottorato in Informatica, Università degli Studi di Torino, Italy.
https://dott-informatica.campusnet.unito.it/do/corsi.pl/Show?_id=ws7g

2020–present Co-supervisor for the PhD thesis of Lorenzo Testa.
Dottorato in Informatica ciclo 36, Università degli Studi di Torino, Italy (ongoing).

2020–present Co-supervisor for the PhD thesis of Hunza Zainab.
Electrical Engineering major, University of Iowa, US (ongoing).

2019/20 Primary Instructor for *"Aggregate Programming for the Internet of Things"*. *Dept. of Electrical and Computer Engineering*, University of Iowa (Iowa City, IA, USA).
https://myui.uiowa.edu/my-ui/courses/details.page?id=906087&ci=148347

Master program

2016/17–present Invited lecturer for the *Mobile Device Programming* course **(20 hours of frontal lessons)**. *Laurea Magistrale in Informatica*, Università degli Studi di Torino.

2022 Supervisor for the Master thesis of Luca Di Buono, co-supervisor for the Master thesis of Daniele Bortoluzzi. *Laurea Magistrale in Informatica*, Università degli Studi di Torino, Italy.

2021/22 Teacher for *"Informatica"*. *Laurea in Farmacia* e *Chimica e Tecniche Farmaceutiche*, Università degli Studi di Torino, Italy.

2021/22 Teacher for *"Informatica applicata alla comunicazione multimediale"*. *Laurea in Lingue Straniere per la Comunicazione Internazionale*, Università degli Studi di Torino, Italy.

2020 Co-supervisor for the Master thesis of Lorenzo Testa and Mirko Guani. *Laurea Magistrale in Informatica*, Università degli Studi di Torino, Italy.

Bachelor program

2022/23–present Teacher for *"Algoritmi e Strutture Dati (laboratorio)"*. *Laurea in Informatica*, Università degli Studi di Torino, Italy.

2021/22–present Teacher for *"Informatica"*. *Laurea in Scienze dell'Educazione*, Università degli Studi di Torino, Italy.

2023 Supervisor for the Bachelor thesis of Daniel Haures and Federico Giacardi, co-supervisor for the Bachelor thesis of Daniel Minutolo.
Laurea in Informatica, Università degli Studi di Torino, Italy.

2022 Supervisor for the Bachelor thesis of Gianmarco Rampulla, co-supervisor for the Bachelor thesis of Simone Convertini and Luca Sanfilippo.
Laurea in Informatica, Università degli Studi di Torino, Italy.

2021 Supervisor for the Bachelor thesis of Luigi Rapetta.
Laurea in Informatica, Università degli Studi di Torino, Italy.

2020 Co-supervisor for the Bachelor thesis of Matteo Miceli and Matteo Zattoni.
Laurea in Informatica, Università degli Studi di Torino, Italy.

2018 Co-supervisor for the Bachelor thesis of Sergio Bergamini and Luca Serena.
Laurea in Informatica, Università degli Studi di Torino, Italy.

2016/17–2018/19 Adjunct Professor for the *Object-Oriented Programming* course. *Laurea in Informatica*, Università del Piemonte Orientale (Vercelli, Italy). In the academic years 2016/17, 2017/18, 2018/19 **he taught 144 hours total of frontal lessons, and examined about 80 students.** https://upobook.uniupo.it/personale/1486

2016/17 Teaching assistant "articolo 76" for the *Informatics* course **(25 hours of frontal lessons)**. *Laurea in Matematica*, Università degli Studi di Torino.

University orientation for high-school students

2011/12 Teaching assistant "articolo 33" for the *University Orientation* course **(25 hours of frontal lessons)**. *Dipartimento di Informatica*, Università degli Studi di Torino.

2010/11 Teaching assistant "articolo 13" for the *University Orientation* course **(25 hours of frontal lessons)**. *Dipartimento di Informatica*, Università degli Studi di Torino.

Teaching for the olympiads in informatics

2022–present Main organizer of the *Giochi di Fibonacci* (https://fibonacci.olinfo.it), a national-level competition for lower grade students (more than 10k participants per year). Main role: writing competition rules, selecting tasks for the competitions, contacting schools, managing subscriptions and student selections.

2020–present Organizer of the *Italian Olympiads in Informatics*, a national-level competition for high school students (more than 10k participants per year). Main role: writing competition rules, selecting tasks for the competitions, managing student subscriptions and selections.
https://www.olimpiadi-informatica.it/index.php/oii/organizzazione.html

2017–present Technical coordinator of the 1st, 4th and 5th editions of the *International Informatics Olympiad in Teams* (IIOT, http://iio.team), an international-level competition, Bologna – IT. Main role: preparing tasks for the competitions.

2014–present Technical coordinator of the *Italian Informatics Olympiads in Teams* (OIS, http://oisquadre.it), a national-level competition for high school students (more than 3k participants per year). Main role: selecting tasks for the competitions, managing team subscriptions and selections.

2013–present Team leader at the *International Olympiads in Informatics* (IOI, http://ioinformatics.org), editions 2013 (Brisbane – AU), 2014 (Taipei – TW), 2015 (Almaty – KZ), 2016 (Kazan – RU), 2017 (Tehran – IR), 2018 (Tsukuba – JP), 2019 (Baku – AZ), 2020 (Singapore – SG, online), 2021 (Singapore – SG, online). Main role: represent Italy in the IOI assembly, translate tasks in Italian, accompany the Italian contestants.

2006–present Teaching assistant in national-level classes for the *Italian Informatics Olympiads* (OII, https://olimpiadi-informatica.it, https://olinfo.it). Main role: giving lectures, preparing tasks and selecting the Italian team for the IOI.

Teaching for the olympiads in mathematics

2014–2016 Lecturer and organizer for project PLSTO10 in *"Piano Lauree Scientifiche" (scientific degrees plan)*, a national program for scientific education in high schools.

2006–2014 Teacher in olympic mathematic classes, Associazione Subalpina Mathesis.

Mentoring for the olympiads in informatics and other events

2013–present Mentoring the Italian team at the International Olympiad in Informatics (one week to 4 students each year). Main role: accompanying and training the contestants.
https://www.olimpiadi-informatica.it

2016–present Mentoring groups (of 15 people total) in three European Youth Exchanges.

Software design and development

FCPP Aggregate computing language and simulator *(main designer and developer)*

ScaFi Aggregate computing language *(semantic fixes and implementation of constructs)*

Protelis Aggregate computing language *(implementation of language constructs)*

Alchemist Pervasive systems simulator *(integration of functionalities)*

Other technical skills

Advanced	C/C++	Google Test *framework (test-driven development)*, OpenGL *(3D graphical interfaces)*, openmp *and* MPI *(parallel programming)*, sdsl-lite *library (succinct data structures)*, Bazel *and* CMake *tools (automated building and testing)*, doxygen *tool (documentation)*.
	Python, Bash	sqlalchemy *library (database management)*, django *framework (web sites and applications)*, pygtk/pygobject *library (graphical user interface)*.
	Java	JUnit *framework (test-driven development)*, Swing *library (graphical user interfaces)*, javadoc *tool (documentation)*.
	C#	Unity *(cross-platform game engine)*.
	Maple	*symbolic calculations, data plotting and interpolation*.
	Asymptote	*vector graphics*.
Intermediate	Html, Javascript	AngularJS, VueJS, Bootstrap *(web site design)*.
	Pascal	*didactic programming*.
Basic	Matlab, Statistica	*linear algebra and statistical computations*.
	Scheme	*batch image processing language for* GIMP.
	AviSynth	*video-processing scripting language*.

Languages written and spoken

Italian	Mother tongue	
English	Advanced	*self-assessed european level C1*.
French	Intermediate	*self-assessed european level B1*.
Spanish	Basic	*self-assessed european level A2*.