Roberto Casadei, PhD

CV (2023–02–07)   *Assistant Professor*

Overview (highlights)

Current position: Assistant Professor (RTD-A)   2022/02 → 2025/01
Theme Techniques & strategies for Green Autonomic Internet of Things   Università di Bologna (IT)

Education: PhD in Computer Science and Engineering   2016/11 → 2020/04
Thesis Engineering Self-* Collective Processes for Cyber-Physical Ecosystems   Università di Bologna (IT)

Research record & recent service:

Bibliometrics:	54+ in journals/conf.proceedings; H-index 18 (gscholar), 11 pubs in Q1 journals
Organisation:	DISCOLI'22/23 Workshop Chair; eCAS'21/19 Workshop Chair; ACSOS'22 Proceedings Chair; DisCoTec'23 AEC Chair; AAAI'23/SAC'23 PC member
Editorial:	SI in Robotics & AI journal; SI in Electronics journal; ACSOS'22 proceedings

Teaching

- Software Design & Development (B. in Computer Systems Technologies, UNIBO) a.y. 22-23
- Object-Oriented Programming (B. in Computer Science & Eng., UNIBO) a.y 20-21, 21-22, 22-23
- Foundations of Informatics (B. in Electrical/Biomedical Engineering) a.y. 20-21, 21-22, 22-23
- Intelligent Cyber-Physical Systems (Minor "Smart Infrastructures", UNIBO) a.y. 21-22

Open-source/academic software projects

Notably SCAFI aggregate programming toolkit (Lead Developer), Alchemist simulator (Contributor)

Research & Education experience abroad

2018	TU Wien (Austria) – Visiting PhD student (2 mo)
2017	University of St Andrews (Scotland) – Visiting PhD student (3 mo)
2012	University of Limerick (Ireland) – Erasmus Programme (4 mo)

Scholarships, awards, qualifications, and (public) competitions

Awards	ECOOP'22 Distinguished Artifact; IEEE TCSC Outstanding PhD Thesis; Prize G. Bassi'17
Scholarships	PhD scholarship (MIUR); Mobility Grants (MarcoPolo, conferences)
Qualifications	Associate professor 09/H1 (ASN 21-23); High-school professor A041
Competitions	RTD-A; STEM A041 (1st winner); PhD admission/funding (1st winner)

Recent activity

Summary I am currently a research fellow (RTD-A) at the Department of Computer Science & Engineering of the University of Bologna (UNIBO). I got the qualification as associate professor for 09/H1 (ASN Fascia II) in 2022. I have 54+ publications at international journals and conferences; my current H-Index is 18 (GScholar), 15 (SCOPUS). I got a PhD in *CS & Eng.* from UNIBO, with a thesis on awarded by the IEEE TCSC. I have been a visiting PhD student as the University of St Andrews (refereed by Prof. Simon Dobson) and at TU Wien (refereed by Prof. Schahram Dustdar). I got awards for research, service, and as a student. I am Adjunct Professor in various courses at BEng Degrees in Computer Science and Engineering.

Research Themes in a Nutshell

In a nutshell, my research interests and activity revolve around two main themes: **software engineering** and **distributed artificial intelligence**. In particular, I focus on paradigms, models, and techniques fostering intelligence and autonomy in socio-technical systems. My research may be considered in the context of fields like multi-agent systems, distributed cyber-physical systems, self-* systems, and collective intelligence.

Qualifications

(ASN Fascia II) National Scientific qualification as associate professor in the Italian higher education system (Call 2021/2023, Ministerial Decree n. 553/2021 and 589/2021) for the disciplinary field of 01/B1 - Informatics I got this qualification by passing a CV evaluation by a committee on the basis of bibliometrics, publications, and qualifications.	2023-02 → 2033-02
(ASN Fascia II) National Scientific qualification as associate professor in the Italian higher education system (Call 2021/2023, Ministerial Decree n. 553/2021 and 589/2021) for the disciplinary field of 09/H1 - Information processing systems I got this qualification by passing a CV evaluation by a committee on the basis of bibliometrics, publications, and qualifications.	2022-02 → 2031-02
Qualification for teaching *Computer Science and Technologies* (c.c. A041) in Italian Secondary School I got this qualification by passing the ordinary public competition for STEM subjects in 2021 (see section on public competitions).	since 2021

Public Competitions

1st WINNER - Public Competition for a Position of Fixed-Term Junior Researcher (RTD-A) on project "Techniques & strategies for Green Autonomic Internet of Things (GA-IoT)", Department of Computer Science and Engineering (DISI), Alma Mater Studiorum–Università di Bologna Comparative evaluation by qualifications and public discussion.	2021 Cesena
1st WINNER - Ordinary Public Competition for Recruitment (and Qualification) of Secondary School Teachers - STEM (Science, Technology, Engineering and Mathematics) - cf. D.D. n.499 21/4/2020 (art.59 c.14 d.l. 73/2021) - Competition class A041 (Computer science and technologies) - Region: Emilia-Romagna, Italy I won the public regional competition at position 1 with a score of 192/200 points after one written part (a test of 50 questions about computer science topics like computational models, operating systems, networks, programming, and web techologies) and one oral part (about the design of a didactical activity).	2021 Modena
1st WINNER - Public Competition for Admission to the PhD Programme in Computer Science and Engineering, Alma Mater Studiorum–Università di Bologna Comparative evaluation by qualifications and public discussion.	2016 Bologna

Research Community Service

Editorial roles

Frontiers in Robotics & AI (Q2) - Guest Associate Editor - "Mobile Cyber-Physical Collectives" 2021–2022

I am guest associate editor for a special issue, also called a research topic, entitled "Mobile Cyber-Physical Collectives". I have prepared, together with Prof. Lukas Esterle, the special issue proposal, contacted potential authors, run publicity campaigns, and been handling the review activity for submitted papers.

MDPI Electronics - Topical Advisory Panel 2021–

MDPI Electronics Journal

Core responsibilities include: (1) providing regular reviews; (2) setting up special issues; (3) providing support for special issues; (4) promoting the journal e.g. at conferences; (5) supporting editorial board members.

MDPI Electronics - Topic Board Member 2020–2021

MDPI Electronics Journal - Topic Editors

Event Chairing

DISCOLI'23 Workshop Chair 2022
Pafos, Cyprus

2nd DISCOLI Workshop on DIStributed COLlective Intelligence (co-located with the 19th International Conference on Distributed Computing in Smart Systems and the Internet of Things, DCOSS-IoT'23).

As Workshop Chair, I have prepared/submitted the workshop proposal, run publicity campaigns, selected the program committee, handled the peer review process, took the decisions regarding the final program, and chaired the workshop event.

DISCOLI'22 Workshop Chair 2022
Bologna, Italy

1st DISCOLI Workshop on DIStributed COLlective Intelligence (co-located with the 42nd IEEE International Conference on Distributed Computing Systems, ICDCS'22).

As Workshop Chair, I have prepared/submitted the workshop proposal, run publicity campaigns, selected the program committee, handled the peer review process, took the decisions regarding the final program, and chaired the workshop event.

eCAS'21 Workshop Chair 2021
Washington DC, USA

6th eCAS Workshop on Engineering Collective Adaptive Systems (co-located with ACSOS'21)

As Workshop Chair, I prepared/submitted the workshop proposal, run publicity campaigns, selected the program committee, handled the peer review process, and planned/run the workshop day.

eCAS'19 Workshop Chair 2019
Ulmea, Sweden

4th eCAS Workshop on Engineering Collective Adaptive Systems (co-located with SASO'19)

As Workshop Chair, I prepared/submitted the workshop proposal, run publicity campaigns, selected the program committee, handled the peer review process, and planned/run the workshop day.

— Participation in organising committees

DisCoTec'23 Artifact Evaluation Chair — 2023, Lisbon, Portugal

DisCoTec 2023 (18th International Federated Conference on Distributed Computing Techniques) is one of the major events sponsored by the IFIP and the EAPLS. It gathers three conferences: COORDINATION'23, DAIS'23, FORTE'23.
As Artifact Evaluation Chair of DisCoTec, I organise and supervise the artifact evaluation process for the entire multi-conference, coordinating with the AECs of the individual conferences, and organise a journal special issue for a selection of the artifact papers.

CyberSciTech'22 Track 3 "Cyber Physical Computing & Systems" Chair — 2022, Calabria, Italy

The 7th IEEE Cyber Science and Technology Congress
I co-chair the Track on "Cyber Physical Computing & Systems".

ACSOS'22 Publication/Proceedings Chair — 2021, Washington DC, USA

3rd IEEE International Conference on Autonomic Computing and Self-Organizing Systems
As Publication Chair, I am responsible for managing the production of all material to be published in relation to the conference. The activity requires to interact with IEEE, prepare the conference proceedings according to IEEE guidelines, and check proper inclusion of all material (accepted&presented papers, tutorial abstracts, workshop papers..) to ensure proper publication on IEEE Xplore.

eCAS'22 Web Chair — 2022, Virtual

7th eCAS Workshop on Engineering Collective Adaptive Systems

ACSOS'21 Publicity Chair — 2021, Washington DC, USA

2nd IEEE International Conference on Autonomic Computing and Self-Organizing Systems
As Publicity Chair, I was responsible to develop the communications/audience development plan along the various organisation milestones. Tasks included promoting the CfP and the conference through various channels (mailing-lists, websites, social media), sending reminders for events, and using social media to fuel participation.

SASO'18 Web Chair — 2018, Trento, Italy

12th IEEE International Conference on Self-Adaptive and Self-Organizing Systems
As a Web Chair, I was responsible for setting up and publishing content on the conference website and social media. As such, I interacted with many of the other OC members to ensure prompt publication of conference-related information.

— Participation in program committees

ACSOS'23 Program Committee Member — 2023, Toronto, Canada

4th IEEE International Conference on Autonomic Computing and Self-Organizing Systems

★ SAC'23 IRMAS track Program Committee Member — 2022-23, Tallinn, Estonia

IRMAS - Intelligent Robotics and Multi-Agent Systems technical track on the 38th ACM Symposium on Applied Computing (SAC 2023)

★ AAAI'23 Program Committee Member
37th AAAI Conference on Artificial Intelligence (AAAI 2023)
Sponsored by the Association for the Advancement of Artificial Intelligence, AAAI is an A++ conference (GGS rating).

2022-23
Washington, DC, USA

DASC/PiCOM/CBDCom/CyberSciTech'22 Program Committee Member
7th IEEE Cyber Science and Technology Congress (CyberSciTech 2022)

2022
Calabria, IT

ACSOS'22 Program Committee Member
3rd IEEE International Conference on Autonomic Computing and Self-Organizing Systems

2022
Virtual

COORDINATION'22 Artifact Evaluation Committee Member
24th International Conference on Coordination Models and Languages

2022
Lucca, Italy

eCAS'22 Program Committee Member
7th eCAS Workshop on Engineering Collective Adaptive Systems

2022
Virtual

WOA'22 Program Committee Member
23rd Workshop "From Objects to Agents"

2021
Genova, Italy

ALPACA'22 Technical Program Committee Member
1st Workshop on Adaptive, Learning PervAsive Applications (ALPACA)

2022
Pisa, Italy

ACSOS'21 Program Committee Member
2nd IEEE International Conference on Autonomic Computing and Self-Organizing Systems

2021
Virtual

COORDINATION'21 Program Committee Member
23rd International Conference on Coordination Models and Languages

2021
Valletta, Malta

★ MODELS'21 Student Research Competition Committee Member
ACM/IEEE 24th International Conference on Model Driven Engineering Languages and Systems (MODELS 2021)

2021
Virtual Conference

★ PLDI'21 Artifacts Program Committee Member
42nd ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI 2021)

2021
Virtual Conference

WOA'21 Program Committee Member
22nd Workshop "From Objects to Agents"

2021
Bologna, Italy

CLOUD COMPUTING'21 Program Committee Member
12th International Conference on Cloud Computing, GRIDs, and Virtualization

2021
Porto, Portugal

eCAS'20 Program Committee Member
5th eCAS Workshop on Engineering Collective Adaptive Systems

2020
Washington, USA

eCAS'17 Program Committee Member
2nd eCAS Workshop on Engineering Collective Adaptive Systems

2017
Tucson, USA

Talks at Conferences and Events

Presentations of peer-reviewed papers

Towards Automated Engineering for Collective Adaptive Systems: Vision and Research Directions
2022/09
Falerna, ITA
Event   1st International Workshop on COMMunity-OrieNted WEARrable Computing Systems (COMMON-WEARS 2022)

FScaFi: A Core Calculus for Collective Adaptive Systems Programming
2021/10
Rhodes, GRC
Event   10th International Symposium On Leveraging Applications of Formal Methods, Verification and Validation

Augmented Collective Digital Twins for Self-Organising Cyber-Physical Systems
2021/10
Online
Event   SISSY Workshop on Self-Improving System Integration

Tuple-Based Coordination in Large-Scale Situated Systems
2021/06
Online
Event   23rd International Conference on Coordination Models and Languages

Collective Adaptive Systems as Coordination Media: The Case of Tuples in Space-Time
2020/08
Online
Event   5th eCAS Workshop on Engineering Collective Adaptive Systems

Engineering Resilient Collaborative Edge-enabled IoT
2019/07
Milan, ITA
Event   16th IEEE International Conference on Services Computing

Aggregate Processes in Field Calculus
2019/06
Copenaghen, DNK
Event   21th International Conference on Coordination Models and Languages

On Context-Orientation in Aggregate Programming
2019/06
Umeå, SWE
Event   4th eCAS Workshop on Engineering Collective Adaptive Systems

Coordinating Computation at the Edge: a Decentralized, Self-Organizing, Spatial Approach
2019/06
Rome, ITA
Event   4th IEEE International Conference on Fog and Mobile Edge Computing

Collective Abtractions & Platforms for Large-Scale Self-Adaptive IoT
2018/09
Trento, ITA
Event   3rd eCAS Workshop on Engineering Collective Adaptive Systems

From Field-Based Coordination to Aggregate Computing
2018/06
Madrid, ESP
Event   20th International Conference on Coordination Models and Languages

Compositional Blocks for Optimal Self-Healing Gradients
2017/09
Tucson, AZ, USA
Event   11th IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO'17)

Practical Aggregate Programming in Scala
2016/10
Amsterdam, NLD
Event   Scala Symposium 2016

Programming Actor-based Collective Adaptive Systems
2016/10
Amsterdam, NLD
Event   AGERE'16 (international workshop on agents and actors)

On Execution Platforms for Large-Scale Aggregate Computing
2016/09
Heidelberg, DEU
Event   Workshop on Collective Adaptation in Very Large Scale Ubicomp: Towards a Superorganism of Wearables, Ubicomp/ISWC Adjunct

Towards Aggregate Programming in Scala
Event   1st International Workshop on Programming Models and Languages for Distributed Computing (PMLDC) – co-located with ECOOP

<div align="right">2016/06
Rome, ITA</div>

Other talks

Introduction to the 1st DISCOLI workshop on distributed collective intelligence
Event   1st DISCOLI Workshop on DIStributed COLlective Intelligence

<div align="right">2022/06
Bologna, IT</div>

6th eCAS Workshop on Engineering Collective Adaptive Systems: Introduction to the workshop
Event   6th eCAS Workshop on Engineering Collective Adaptive Systems

<div align="right">2021/10
Online</div>

Reviewer Activity

- **Excellent reviewer** according to my Web of Science™ profile(according to the feedback provided by associate editors)
- 20 verified reviews on my Web of Science™ profile

Peer review activity in international journals

- IEEE Internet of Things
- IEEE Transactions on Services Computing
- IEEE Transactions on Intelligent Transportation Systems
- ACM Transactions on Autonomous and Adaptive Systems
- Springer Software and Systems Modeling
- Elsevier Journal on Pervasive and Mobile Computing
- Autonomous Agents and Multi-Agent Systems
- Robotics
- Sensors
- Applied Sciences
- Informatics
- Scientific Programming
- International Journal of Information Technology & Decision Making

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Other review activity (books)

I am in the reviewer pool of *Manning Publications*, a well-known publisher of books on computer technology topics. The evidence of this activity lies in the "Acknowledgments" sections of the books that I reviewed. These include:

- Software Mistakes and Tradeoffs: How to make good programming decisions (Tomasz Lelek and Jon Skeet, 2022, Manning)
- Quantum Computing in Action (Johan Vos, 2022, Manning)
- Programming with Types (Vlad Riscutia, 2019, Manning)
- Classic Computer Science Problems in Python (David Kopec, 2019, Manning)

Collaborations with Research Groups

○ Participation in the research activity of the research group coordinated by **Prof. Mirko Viroli (University of Bologna, Italy)**. This is the research group with which Roberto has collaborated mostly in his career and that led to more than 30 publications in international journals and conference proceedings. (2016→)

○ Collaboration with the research group coordinated by **Prof. Ferruccio Damiani (University of Turin, Italy)** on themes related to field-based coordination and distributed computation. Output of this collaboration includes 3 articles published on international journals and 5 papers on proceedings of international conferences. (2016→)

○ Collaboration with the research group coordinated by **Prof. Giancarlo Fortino (University of Calabria, Italy)**, on themes revolving around the software engineering of opportunistic services in the Internet of Things and edge computing. Output of this collaboration includes 2 articles published on international journals and 1 paper on proceedings of international conferences. Moreover, collaboration continues in the context of the Fluidware project. (2019→)

○ Collaboration with **Danny Weyns (Katholieke Universiteit Leuven, Belgium)** on self-adaptive software architectures. Output of this collaboration includes one article accepted on an international journal and two papers in the proceedings of international conferences. (2020→)

○ Collaboration with the research group coordinated by **Prof. Franco Zambonelli (University of Modena e Reggio Emilia, Italy; IEEE Fellow, ACM Distinguished Scientist)**, especially in the context of Fluidware project. Output of this collaboration includes one article accepted on an international journal and one paper published in the proceedings of an international conference. (2019→)

○ Collaboration with **Prof. Lukas Esterle (University di Aarhus, Danimarca)**, on themes related to collective adaptive systems. Output of this collaboration includes one paper published in an international journal (ACM TAAS). We have also co-chaired the eCAS'21 workshop and co-edited one special issue. (2020→)

○ Collaboration with **Prof. Alessandro Ricci (University di Bologna, Italy)**, on themes related to coordination and multi-agent systems. Output of this collaboration includes two papers published in the proceedings of international conferences. (2020→)

○ Collaboration with **Prof. Guido Salvaneschi (University of St.Gallen)** on programming languages for distributed computing. Output of this collaboration includes two papers published in the proceedings of international conferences. (2019→)

○ Collaboration with **Prof. Volker Stolz (University of Oslo)** on themes related to distributed runtime verification and monitoring. Output of this collaboration includes one article published on an international journal. (2020→2021)

○ Collaboration with **Prof. Simon Dobson (University of St Andews)**, on themes related to sensor systems and complex networks. The collaboration included a 3-month visit period at the University of St Andrews. Output of this collaboration includes one article accepted on an international IEEE magazine. (2017→2020)

○ Collaboration with the research group coordinated by **Prof. Schahram Dustdar (TU Wien, Austria; IEEE Fellow, ACM Distinguished Scientist)**, on themes related to the engineering of resilient, collaborative, Internet of Things systems. This collaboration started with my 2-month visit at TU Wien (Austria). Output of this collaboration includes one paper published in the proceedings of an international conference. (2018)

○ Collaboration with **Prof. Antonio Bucchiarone (Fondazione Bruno Kessler, Trento, Italy)** on themes related to collective adaptive systems. Output of this collaboration includes one article accepted on an international IEEE magazine. (2019)

○ Collaboration with **Prof. Alessandro Aldini (University of Urbino Carlo Bo', Italy)**, on the intersection of computational trust techniques and collective adaptive systems. Output of this collaboration includes

one article published on an international journal and one paper in the proceedings of an international conference. (2017→2018).

- Collaboration with **Dr. Jacob Beal (Raytheon BBN Technologies, USA)** on aggregate computing. Output of this collaboration includes one article accepted on an international journal and one paper published in the proceedings of an international conference. (2018→2019)

- Collaboration with the research group coordinated by **Prof. Andrea Omicini (University of Bologna, Italy)**, on themes related to the engineering of multi-agent systems. Output of this collaboration includes one paper published in the proceedings of an international conference. (2018)

Participation in Funded Research Projects

- Participation as scientific collaborator in **PRIN Italian Project COMMunity-OrieNted WEARrable Computing Systems (COMMON-WEARS, no. 2020HCWWLP)**, coordinated by Prof. Giancarlo Fortino and involving a consortium of four universities: University of Calabria, University of Bologna, University of Turin, and Rome Biomedical Campus University. I have participated to all the project meetings, including the COMMON-WEARS Workshop at the 7th IEEE Cyber Science and Technology Congress. I have (co-)authored 2+ articles acknowledging the COMMON-WEARS project. (2022→)

- Participation as scientific collaborator in **PRIN Italian Project Fluidware (2017KRC7KT)**, coordinated by Prof. Franco Zambonelli and involving a consortium of four universities: University of Modena and Reggio Emilia, University of Bologna, University of Camerino, and University of Calabria. The project revolves around models and techniques for adaptive distributed computing. I have participated to all the project meetings, and given various talks (such as #1, #2). In particular, this collaboration activity led to two articles published in international journals and one paper on the proceedings of international conferences. In total, I have (co-)authored 8 articles acknowledging the FluidWare project. See the FluidWare consortium and people on the project website. (2019→2022)

Research for Public and Private Institutions

- **Fixed-Term Junior Researcher (RTD-A)** on project "Techniques & strategies for Green Autonomic Internet of Things (GA-IoT)" (Department of Computer Science and Engineering, Alma Mater Studiorum - Università di Bologna, Italy), supervised by Prof. Mirko Viroli. (2022-02→2025-01)

- **Research fellowship** on project "Engineering evolving collective adaptive systems for smart infrastructures" (Department of Computer Science and Engineering, Alma Mater Studiorum - Università di Bologna, Italy), supervised by Prof. Mirko Viroli. (2021→2022)

- **Research fellowship** on project "Engineering evolving collective adaptive systems for modern infrastructures" (Department of Computer Science and Engineering, Alma Mater Studiorum - Università di Bologna, Italy), supervised by Prof. Mirko Viroli. (2020→2021)

- **Research fellowship** on project "Engineering collective adaptive processes through aggregate computing" (Department of Computer Science and Engineering, Alma Mater Studiorum - Università di Bologna, Italy), supervised by Prof. Mirko Viroli. (2019→2020)

- Participation as scientific collaborator in project on "cybersecurity and threat attribution" by YOROI S.R.L. and University of Bologna. (2021→2022)

- Participation as scientific collaborator in project "Realizzazione di un Compilatore da specifica di alto livello a comandi PLC per macchine monolama per la lavorazione del legno" by the University of Bologna and SCM Group S.p.A. (2020→2021)

- Participation as scientific collaborator in project "Realizzazione tramite Model Driven Engineering di un sistema di reporting moderno per l'ERP Star4" by the University of Bologna and Formula Impresoft S.R.L. (2020→2021)

- Participation as scientific collaborator in project PG/2016/667492 "Re-ingegnerizzazione da Cobol a .NET di una piattaforma gestionale intersettoriale" by University of Bologna and Harvard Group (now Impresoft S.R.L.). (2017→2018)

- Research activity "Software infrastructures for the management of IoT systems" on scholarship issued by the Department of Computer Science and Engineering (Alma Mater Studiorum - Università di Bologna), on funds by Centro Studi - Orizzonti Holding. The research focussed on technologies for IoT, process mining, and miscroservices, and their application to large-scale and small-scale retail. (2016→2017)

Experiences Abroad

Visiting PhD student @ Technische Universität Wien (Austria) — 2018, 2 months
Collaboration with the research group coordinated by *Prof. Schahram Dustdar (TU Wien, Austria; IEEE Fellow, ACM Distinguished Scientist)*, on themes related to the engineering of resilient, collaborative, Internet of Things systems. This collaboration started with my 2-month visit at TU Wien (Austria). Output of this collaboration includes one paper published in the proceedings of an international conference.

Visiting PhD student @ University of St Andrews (Scotland) — 2017, 3 months / Marco Polo scholarship
Collaboration with *Prof. Simon Dobson (University of St Andews)*, on themes related to collective adaptive systems. Output of this collaboration includes one article accepted on an international IEEE magazine.

Erasmus @ University of Limerick (Ireland) — 2012, 4 months / Erasmus scholarship
Taking exams on specific BEng courses (see Education section).

Scholarships and Grants

Computer Science and Engineering PhD Scholarship — 2016/11 → 2019/10 / Università di Bologna (IT)
This scholarship, granted by the Italian Ministry of Education, Universities, and Research (MIUR), covered all the 3 years of my PhD in Computer Science and Engineering at Alma Mater Studiorum–Università di Bologna (Italy). I got this scholarship by winning the corresponding public competition based on qualifications and interview.

Travel/Conference Grant – DisCoTec 2019 — 2019
Issuer   Denmarks Tekniske Universitet (DTU)
This selective grant covered my participation to the COORDINATION 2019 conference in Copenhagen, Denmark.

Mobility Grant – Marco Polo 2016 — 2017
Issuer   Department of Computer Science and Engineering (DISI), UNIBO
This selective grant covered my PhD abroad period in St Andrews, Scotland.

Travel/Conference Grant – Scala Symposium 2016 — 2016
Issuer   École polytechnique fédérale de Lausanne (EPFL)
Grant issued by École polytechnique fédérale de Lausanne (EPFL) for presentation at the Scala Symposium 2016, co-located with the SPLASH'16 conference.

Study Scholarship   2016/09 → 2016/11
Issuer   Department of Computer Science and Engineering (DISI), UNIBO   University of Bologna
Financ.   Centro Studi - Orizzonti Holding SPA
Theme   Software Infrastructures for the Management of IoT Systems
This scholarship supported a study of proof-of-concept IoT solutions for the retail
market. In this context, I got familiarity with microservices, Docker, and process
mining. I renounced to the scholarship once I got formally admitted to the PhD
Programme, for incompatibility of the scholarships.

Awards

Research Awards

ECOOP 2022 Distinguished Artifact Award   2022
Our artifact, submitted to the Artifacts track of the 36th European Conference   Berlin (Germany)
on Object-Oriented Programming (ECOOP 2022), has been awarded with the
"Distinguished Artifact" award by the ECOOP'22 Artifact Evaluation Commit-
tee. The artifact was distinguished among a total of 53 artifacts accepted at
ECOOP'22.

IEEE TCSC Outstanding PhD Dissertation Award 2020   2020
I was selected as winner for an international PhD thesis award promoted by the
IEEE Technical Committee on Scalable Computing. The selection committee
for the 2020 edition of the award was formed by Prof. Hai Jiang (chair), Prof.
Bernady O. Apduhan, Prof. Beniamino di Martino, and Dr. Eng. Didier El Baz.
*"The IEEE TCSC Outstanding PhD Dissertation Award is an annual award to
recognize candidates that have recently received a PhD degree for no more than
2 years and have written an outstanding PhD dissertation in the field of the
scalable computing with applications. This award is established to encourage
doctoral research that combines theory and practice or makes in-depth technical
contributions, having the potential to contribute to the IEEE TCSC."*

Academic Service Awards

ACSOS'22 Outstanding Service Award   2022
I was presented with the *Outstanding Service Award*, by the General Chairs Sven
Tomforde and Kirstie Bellman, for having served as **Proceedings Chair** for the
3rd IEEE International Conference on Autonomic Computing and Self-Organizing
Systems (ACSOS 2022).

ACSOS'21 Outstanding Service Award   2021
I was presented with the *Outstanding Service Award*, by the General Chairs Jean
Botev, Tarek El-Ghazawi, and Christopher Stewart, for having served as **Publicity
Chair** for the 2nd IEEE International Conference on Autonomic Computing and
Self-Organizing Systems (ACSOS 2021).

Student Awards

Best District-2072 MEng graduate student (G.Bassi 2017 prize)   2017
I was selected as winner of prize *Gianni Bassi*, with 5000€ scholarship, issued   Faenza (Italy)
by Rotary Club Faenza for *Best Master Graduate Student* across all Engineering
faculties of Romagna (district 2072) based on Grade Average and number of
laudes.

Prize for meritorious students (UNIBO) a.y. 2014-15

I was selected among the ex-aequo winners of the public competition for merito- Università di Bologna (IT)
rious students of the University of Bologna in academic year 2014/2015 (section
common to all Engineering and Architecture faculties), granting a scholarship.

High school graduation award 2009

I was given the "Roberto Ruffilli" acknowledgment for high-school graduation Cesena (Italy)
with score 100/100 (cum laude).

Selected Publications

A selection of 12 significant publications follows.

1. **Roberto Casadei**. "Macroprogramming: Concepts, State of the Art, and Opportunities of Macroscopic
   Behaviour Modelling". In: *ACM Computing Surveys* (Jan. 2023). DOI: 10.1145/3579353. URL:
   https://doi.org/10.1145/3579353

   ○ **Metrics:** Q1 (Scimago Quartile 2021); 2021 IF 14.324

   ○ **Short summary:** This work provides the first comprehensive view of macroprogramming research. It
   is a long survey that provides a mapping study, a discussion of the key concepts and principles of the
   paradigm, a taxonomy of macroprogramming approaches, an analysis of more than 50 primary works on
   macroprogramming, and a discussion of related research opportunities and challenges.

2. Danilo Pianini, Federico Pettinari, **Roberto Casadei**, and Lukas Esterle. "A Collective Adaptive Approach
   to Decentralised k-Coverage in Multi-robot Systems". In: *ACM Trans. Auton. Adapt. Syst.* 17 (2022),
   4:1–4:39. DOI: 10.1145/3547145. URL: https://doi.org/10.1145/3547145

   ○ **Metrics:** Q1 (Scimago Quartile 2021); 2021 IF 1.913

   ○ **Short summary:** This work addresses the online multi-object k-coverage problem (OMOkC) problem
   through a collective adaptive systems approach, and accordingly provides novel algorithms improving
   over state-of-the-art solutions as well as a toolchain and simulation for experimenting with mobile robots
   with field of view.

3. Giorgio Audrito, **Roberto Casadei**, Ferruccio Damiani, Guido Salvaneschi, and Mirko Viroli. "Functional
   Programming for Distributed Systems with XC". in: *36th European Conference on Object-Oriented
   Programming, ECOOP 2022, June 6-10, 2022, Berlin, Germany*. Ed. by Karim Ali and Jan Vitek. Vol. 222.
   LIPIcs. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2022, 20:1–20:28. DOI: 10.4230/LIPIcs.
   ECOOP.2022.20. URL: https://doi.org/10.4230/LIPIcs.ECOOP.2022.20

   ○ **Metrics:** Class 1/A+ conference (GGS Conf Rating 2021)

   ○ **Short summary:** In this work, we present a a more general variant of the field calculus supporting
   differentiated messages and describe its support for distributed programming of resilient systems, with a
   narrative tailored to the programming language community.

4. **Roberto Casadei**, Giancarlo Fortino, Danilo Pianini, Andrea Placuzzi, Claudio Savaglio, and Mirko
   Viroli. "A Methodology and Simulation-Based Toolchain for Estimating Deployment Performance of Smart
   Collective Services at the Edge". In: *IEEE Internet of Things Journal* 9.20 (2022), pp. 20136–20148. DOI:
   10.1109/JIOT.2022.3172470

   ○ **Metrics:** Q1 (Scimago Quartile 2021); 2021 IF 10.238

   ○ **Short summary:** In this work, we present a methodology and toolchain for evaluating deployments of
   self-organizing systems developed through aggregate computing, across the IoT-fog-cloud continuum.

5. Giorgio Audrito, **Roberto Casadei**, Ferruccio Damiani, Volker Stolz, and Mirko Viroli. "Adaptive distributed
   monitors of spatial properties for cyber-physical systems". In: *Journal of Systems and Software* 175 (2021),
   p. 110908. DOI: 10.1016/j.jss.2021.110908

- ○ **Metrics:** Q1 (Scimago Quartile 2021); 2021 IF 3.514; 13 cits. (Scopus)
- ○ **Short summary:** In this work, we propose a compositional mapping of Spatial Logic for Closure Spaces (SLCS) constructs to field calculus constructs, enabling the direct encoding of SLCS formulas as decentralised monitors for runtime verification of spatial properties. We formally prove the generated monitors are correct and optimally self-stabilising, and validate the response to variable dynamics by means of simulations of crowd monitoring/control scenarios.

6. **Roberto Casadei**, Mirko Viroli, Giorgio Audrito, Danilo Pianini, and Ferruccio Damiani. "Engineering collective intelligence at the edge with aggregate processes". In: *Engineering Applications of Artificial Intelligence* 97 (2021), p. 104081. ISSN: 0952-1976. DOI: https://doi.org/10.1016/j.engappai.2020.104081

- ○ **Metrics:** Q1 (Scimago Quartile 2021); 2021 IF 7.802; 24 cits. (Scopus)
- ○ **Short summary:** Aggregate processes are a programming abstraction, introduced as an extension to the field calculus and implemented in the ScaFi aggregate programming DSL, that captures *concurrent dynamic collective computations*. Its versatility in supporting collective intelligence and self-organisation is shown through simulations of IoT/edge computing scenarios.

7. Giorgio Audrito, **Roberto Casadei**, Ferruccio Damiani, Danilo Pianini, and Mirko Viroli. "Optimal resilient distributed data collection in mobile edge environments". In: *Computers & Electrical Engineering* (2021), p. 107580. ISSN: 0045-7906. DOI: https://doi.org/10.1016/j.compeleceng.2021.107580. URL: https://www.sciencedirect.com/science/article/pii/S0045790621005140

- ○ **Metrics:** Q1 (Scimago Quartile 2021); 2021 IF 4.152; 9 cits. (Scopus)
- ○ **Short summary:** New algorithms for dynamic spatial data collection/summarisation are introduced, supporting better reactivity and resilience in highly-variable scenarios than state-of-the-art algorithms. Results are validated through controlled experiments and a simulated case study in edge data mining.

8. Danilo Pianini, **Roberto Casadei**, Mirko Viroli, Stefano Mariani, and Franco Zambonelli. "Time-Fluid Field-Based Coordination through Programmable Distributed Schedulers". In: *Logical Methods in Computer Science* Volume 17, Issue 4 (Nov. 2021). DOI: 10.46298/lmcs-17(4:13)2021. URL: https://lmcs.episciences.org/8755

- ○ **Metrics:** Q2 (Scimago Quartile 2021); 2021 IF 0.591; 8 cits. (Scopus)
- ○ **Short summary:** This work proposes an extension to field-based programming models whereby the scheduling of applications can be programmed by the applications themselves, leveraging the ideas of *triggers*, *causality fields* and *computation trees*. This enables a kind of "time-fluid" distributed computation where the computation rate can adapt to balance performance (system reactivity) and cost (resource usage). The model is formalised in terms of the structural operational semantics of a whole network of devices, implemented in the Protelis DSL, and validated through Alchemist simulations.

9. Danilo Pianini, **Roberto Casadei**, Mirko Viroli, and Antonio Natali. "Partitioned integration and coordination via the self-organising coordination regions pattern". In: *Future Generation Computer Systems* 114 (Jan. 2021), pp. 44–68. DOI: 10.1016/j.future.2020.07.032. URL: https://doi.org/10.1016/j.future.2020.07.032

- ○ **Metrics:** Q1 (Scimago Quartile 2021); 2021 IF 7.307; 26 cits. (Scopus)
- ○ **Short summary:** This work presents a very general design pattern for decentralised feedback-regulated self-integration in dynamic environments. The *Self-organising Coordination Regions (SCR)* pattern consists of a dynamic distributed process involving leader election, coalition formation, and feedback loops between leaders and subordinates. The paper shows SCR has many known uses in literature and enjoys great versatility, shown via case studies in edge computing and hierarchical networks.

10. Mirko Viroli, Jacob Beal, Ferruccio Damiani, Giorgio Audrito, **Roberto Casadei**, and Danilo Pianini. "From distributed coordination to field calculus and aggregate computing". In: *Journal of Logical and Algebraic Methods in Programming* (2019), p. 100486. ISSN: 2352-2208. DOI: 10.1016/j.jlamp.2019.100486

- ○ **Metrics:** Q2 (Scimago Quartile 2019); 2019 IF 0.685; 39 cits. (Scopus)
- ○ **Short summary:** This manuscript provides a comprehensive research account on field-based coordination and aggregate computing. Specifically, it provides a detailed account of their historical development, discusses related works, presents the state of the art, and organically shows directions for future research.

11. **Roberto Casadei**, Giancarlo Fortino, Danilo Pianini, Wilma Russo, Claudio Savaglio, and Mirko Viroli. "A development approach for collective opportunistic Edge-of-Things services". In: *Information Sciences* 498 (2019), pp. 154–169. DOI: 10.1016/j.ins.2019.05.058

- ○ **Metrics:** Q1 (Scimago Quartile 2019); 2019 IF 5.910; 52 cits. (Scopus)
- ○ **Short summary:** This work describes an approach to opportunistic edge computing that leverages collective-based services. In particular, it proposes a *Collective IoT Service* design abstraction. Experimental evaluation is performed through a crowd management case study, comparing Edge vs. Cloud deployments w.r.t. reactivity and precision.

12. **Roberto Casadei**, Giancarlo Fortino, Danilo Pianini, Wilma Russo, Claudio Savaglio, and Mirko Viroli. "Modelling and simulation of Opportunistic IoT Services with Aggregate Computing". In: *Future Generation Computer Systems* 91 (2018), pp. 252–262. DOI: 10.1016/j.future.2018.09.005

- ○ **Metrics:** Q1 (Scimago Quartile 2018); 2018 IF 5.768; 107 cits. (Scopus)
- ○ **Short summary:** This work describes an aggregate approach of opportunistic computing for the IoT. The approach is based on the integration of the IoT Service Metamodel and the Aggregate Computing metamodel. Validation is performed with a simulated crowd safety case study.

▬▬▬ Peer-Reviewed Publications and Bibliometrics

Bibliometrics

- ○ **H-index**: 18 (Gscholar), 15 (Scopus).
- ○ **i10-index**: 23 (Gscholar).
- ○ **Number of citations**: 846 (Gscholar), 620 (Scopus).
- ○ **Number of publications:** 54 (50 in Scopus).
- ○ **Number of journal publications:** 20.

  - – **Number of Q1 journal publications:** 11.
  - – **Number of Q2 journal publications:** 7.
  - – **Number of Q3 journal publications:** 2.

All my publications (ordered by year, descending).

▬▬▬ 2023

1. **Roberto Casadei**. "Macroprogramming: Concepts, State of the Art, and Opportunities of Macroscopic Behaviour Modelling". In: *ACM Computing Surveys* (Jan. 2023). DOI: 10.1145/3579353. URL: https://doi.org/10.1145/3579353

2. Giorgio Audrito, **Roberto Casadei**, Ferruccio Damiani, and Mirko Viroli. "Computation Against a Neighbour: Addressing Large-Scale Distribution and Adaptivity with Functional Programming and Scala". In: *Logical Methods in Computer Science* Volume 19, Issue 1 (Jan. 2023). DOI: 10.46298/lmcs-19(1: 6)2023. URL: https://lmcs.episciences.org/10826

▬▬▬ 2022

3. **Roberto Casadei**, Giancarlo Fortino, Danilo Pianini, Andrea Placuzzi, Claudio Savaglio, and Mirko Viroli. "A Methodology and Simulation-Based Toolchain for Estimating Deployment Performance of Smart

Collective Services at the Edge". In: *IEEE Internet of Things Journal* 9.20 (2022), pp. 20136–20148. DOI: 10.1109/JIOT.2022.3172470

4. Gianluca Aguzzi, **Roberto Casadei**, Danilo Pianini, and Mirko Viroli. "Dynamic Decentralization Domains for the Internet of Things". In: *IEEE Internet Computing* 26.6 (2022), pp. 1–10. DOI: [10.1109/mic.2022.3216753](10.1109/mic.2022.3216753). URL: https://doi.org/10.1109/mic.2022.3216753

5. Gianluca Aguzzi, Giorgio Audrito, **Roberto Casadei**, Ferruccio Damiani, Gianluca Torta, and Mirko Viroli. "A field-based computing approach to sensing-driven clustering in robot swarms". In: *Swarm Intelligence* (2022). ISSN: 1935-3820. DOI: [10.1007/s11721-022-00215-y](10.1007/s11721-022-00215-y). URL: https://doi.org/10.1007/s11721-022-00215-y

6. Danilo Pianini, Federico Pettinari, **Roberto Casadei**, and Lukas Esterle. "A Collective Adaptive Approach to Decentralised k-Coverage in Multi-robot Systems". In: *ACM Trans. Auton. Adapt. Syst.* 17 (2022), 4:1–4:39. DOI: [10.1145/3547145](10.1145/3547145). URL: https://doi.org/10.1145/3547145

7. **Roberto Casadei**, Mirko Viroli, Gianluca Aguzzi, and Danilo Pianini. "ScaFi: A Scala DSL and Toolkit for Aggregate Programming". In: *SoftwareX* 20 (2022), p. 101248. ISSN: 2352-7110. DOI: https://doi.org/10.1016/j.softx.2022.101248. URL: https://www.sciencedirect.com/science/article/pii/S2352711022001662

8. Giorgio Audrito, **Roberto Casadei**, Ferruccio Damiani, Guido Salvaneschi, and Mirko Viroli. "Functional Programming for Distributed Systems with XC". in: *36th European Conference on Object-Oriented Programming, ECOOP 2022, June 6-10, 2022, Berlin, Germany*. Ed. by Karim Ali and Jan Vitek. Vol. 222. LIPIcs. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2022, 20:1–20:28. DOI: 10.4230/LIPIcs.ECOOP.2022.20. URL: https://doi.org/10.4230/LIPIcs.ECOOP.2022.20

9. Giorgio Audrito, **Roberto Casadei**, Ferruccio Damiani, Guido Salvaneschi, and Mirko Viroli. "Functional Programming for Distributed Systems with XC (Artifact)". In: *Dagstuhl Artifacts Ser.* 8.2 (2022), 08:1–08:4. DOI: 10.4230/DARTS.8.2.8. URL: https://doi.org/10.4230/DARTS.8.2.8

10. **Roberto Casadei**, Danilo Pianini, Mirko Viroli, and Danny Weyns. "Digital Twins, Virtual Devices, and Augmentations for Self-Organising Cyber-Physical Collectives". In: *Applied Sciences* 12.1 (2022). ISSN: 2076-3417. DOI: [10.3390/app12010349](10.3390/app12010349). URL: https://www.mdpi.com/2076-3417/12/1/349

11. Giorgio Audrito, **Roberto Casadei**, and Gianluca Torta. "On the Dynamic Evolution of Distributed Computational Aggregates". In: *2022 IEEE International Conference on Autonomic Computing and Self-Organizing Systems Companion (ACSOS-C)*. IEEE, Sept. 2022. DOI: 10.1109/acsosc56246.2022.00024. URL: https://doi.org/10.1109/acsosc56246.2022.00024

12. Gianluca Aguzzi, **Roberto Casadei**, and Mirko Viroli. "Addressing Collective Computations Efficiency: Towards a Platform-level Reinforcement Learning Approach". In: *2022 IEEE International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS)*. IEEE, Sept. 2022. DOI: 10.1109/acsos55765.2022.00019. URL: https://doi.org/10.1109/acsos55765.2022.00019

13. Danilo Pianini, **Roberto Casadei**, and Mirko Viroli. "Self-stabilising Priority-Based Multi-Leader Election and Network Partitioning". In: *2022 IEEE International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS)*. IEEE, Sept. 2022. DOI: 10.1109/acsos55765.2022.00026. URL: https://doi.org/10.1109/acsos55765.2022.00026

14. **Roberto Casadei**, Stefano Mariani, Danilo Pianini, Mirko Viroli, and Franco Zambonelli. "Space-Fluid Adaptive Sampling: A Field-Based, Self-organising Approach". In: *Coordination Models and Languages - 24th IFIP WG 6.1 International Conference, COORDINATION 2022, Held as Part of the 17th International Federated Conference on Distributed Computing Techniques, DisCoTec 2022, Lucca, Italy, June 13-17, 2022, Proceedings*. Ed. by Maurice H. ter Beek and Marjan Sirjani. Vol. 13271. Lecture Notes in Computer Science. Springer, 2022, pp. 99–117. DOI: [10.1007/978-3-031-08143-9_7](10.1007/978-3-031-08143-9_7). URL: https://doi.org/10.1007/978-3-031-08143-9_7

15. Gianluca Aguzzi, **Roberto Casadei**, and Mirko Viroli. "Towards Reinforcement Learning-based Aggregate Computing". In: *Coordination Models and Languages - 24th IFIP WG 6.1 International Conference, COORDINATION 2022, Held as Part of the 17th International Federated Conference on Distributed Computing Techniques, DisCoTec 2022, Lucca, Italy, June 13-17, 2022, Proceedings*. Ed. by Maurice H. ter Beek and Marjan Sirjani. Vol. 13271. Lecture Notes in Computer Science. Springer, 2022, pp. 72–91. DOI: 10.1007/978-3-031-08143-9_5. URL: https://doi.org/10.1007/978-3-031-08143-9_5

16. **Roberto Casadei**, Danilo Pianini, Gianluca Aguzzi, Giorgio Audrito, Gianluca Torta, Marco Ottina, Ferruccio Damiani, and Mirko Viroli. "Towards Automated Engineering for Collective Adaptive Systems: Vision and Research Directions". In: *2022 IEEE Intl Conf on Dependable, Autonomic and Secure Computing, Intl Conf on Pervasive Intelligence and Computing, Intl Conf on Cloud and Big Data Computing, Intl Conf on Cyber Science and Technology Congress (DASC/PiCom/CBDCom/CyberSciTech)*. IEEE, Sept. 2022. DOI: 10.1109/dasc/picom/cbdcom/cy55231.2022.9927839. URL: https://doi.org/10.1109/dasc/picom/cbdcom/cy55231.2022.9927839

17. Gianluca Aguzzi, **Roberto Casadei**, and Mirko Viroli. "Machine Learning for Aggregate Computing: a Research Roadmap". In: *42nd IEEE International Conference on Distributed Computing Systems, ICDCS Workshops, Bologna, Italy, July 10, 2022*. IEEE, 2022, pp. 119–124. DOI: 10.1109/ICDCSW56584.2022.00032. URL: https://doi.org/10.1109/ICDCSW56584.2022.00032

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18. Giorgio Audrito, **Roberto Casadei**, Ferruccio Damiani, Volker Stolz, and Mirko Viroli. "Adaptive distributed monitors of spatial properties for cyber-physical systems". In: *Journal of Systems and Software* 175 (2021), p. 110908. DOI: 10.1016/j.jss.2021.110908

19. **Roberto Casadei**, Mirko Viroli, Giorgio Audrito, Danilo Pianini, and Ferruccio Damiani. "Engineering collective intelligence at the edge with aggregate processes". In: *Engineering Applications of Artificial Intelligence* 97 (2021), p. 104081. ISSN: 0952-1976. DOI: https://doi.org/10.1016/j.engappai.2020.104081

20. Danilo Pianini, **Roberto Casadei**, Mirko Viroli, and Antonio Natali. "Partitioned integration and coordination via the self-organising coordination regions pattern". In: *Future Generation Computer Systems* 114 (Jan. 2021), pp. 44–68. DOI: 10.1016/j.future.2020.07.032. URL: https://doi.org/10.1016/j.future.2020.07.032

21. Giorgio Audrito, **Roberto Casadei**, Ferruccio Damiani, Danilo Pianini, and Mirko Viroli. "Optimal resilient distributed data collection in mobile edge environments". In: *Computers & Electrical Engineering* (2021), p. 107580. ISSN: 0045-7906. DOI: https://doi.org/10.1016/j.compeleceng.2021.107580. URL: https://www.sciencedirect.com/science/article/pii/S0045790621005140

22. Danilo Pianini, **Roberto Casadei**, Mirko Viroli, Stefano Mariani, and Franco Zambonelli. "Time-Fluid Field-Based Coordination through Programmable Distributed Schedulers". In: *Logical Methods in Computer Science* Volume 17, Issue 4 (Nov. 2021). DOI: 10.46298/lmcs-17(4:13)2021. URL: https://lmcs.episciences.org/8755

23. **Roberto Casadei**, Gianluca Aguzzi, and Mirko Viroli. "A Programming Approach to Collective Autonomy". In: *Journal of Sensor and Actuator Networks* 10.2 (2021). ISSN: 2224-2708. DOI: 10.3390/jsan10020027

24. **Roberto Casadei**, Andrea Placuzzi, Mirko Viroli, and Danny Weyns. "Augmented Collective Digital Twins for Self-Organising Cyber-Physical Systems". In: *IEEE International Conference on Autonomic Computing and Self-Organizing Systems, ACSOS 2021, Companion Volume, Washington, DC, USA, September 27 - Oct. 1, 2021*. IEEE, 2021, pp. 160–165. DOI: 10.1109/ACSOS-C52956.2021.00051

25. Gianluca Aguzzi, **Roberto Casadei**, Danilo Pianini, Guido Salvaneschi, and Mirko Viroli. "Towards Pulverised Architectures for Collective Adaptive Systems through Multi-Tier Programming". In: *IEEE International Conference on Autonomic Computing and Self-Organizing Systems, ACSOS 2021, Companion*

Volume, Washington, DC, USA, September 27 - Oct. 1, 2021. IEEE, 2021, pp. 99–104. DOI: 10.1109/ACSOS-C52956.2021.00033

26. Giorgio Audrito, **Roberto Casadei**, and Gianluca Torta. "Towards Integration of Multi-Agent Planning with Self-Organising Collective Processes". In: *IEEE International Conference on Autonomic Computing and Self-Organizing Systems, ACSOS 2021, Companion Volume, Washington, DC, USA, September 27 - Oct. 1, 2021*. IEEE, 2021, pp. 297–298. DOI: 10.1109/ACSOS-C52956.2021.00042

27. Giorgio Audrito, **Roberto Casadei**, and Gianluca Torta. "Fostering resilient execution of multi-agent plans through self-organisation". In: *IEEE International Conference on Autonomic Computing and Self-Organizing Systems, ACSOS 2021, Companion Volume, Washington, DC, USA, September 27 - Oct. 1, 2021*. IEEE, 2021, pp. 81–86. DOI: 10.1109/ACSOS-C52956.2021.00076

28. **Roberto Casadei**, Mirko Viroli, Alessandro Ricci, and Giorgio Audrito. "Tuple-Based Coordination in Large-Scale Situated Systems". In: *Coordination Models and Languages - 23rd IFIP WG 6.1 International Conference, COORDINATION 2021, Proceedings*. Vol. 12717. Lecture Notes in Computer Science. Springer, 2021, pp. 149–167. DOI: 10.1007/978-3-030-78142-2_10

29. Gianluca Aguzzi, **Roberto Casadei**, Niccolò Maltoni, Danilo Pianini, and Mirko Viroli. "ScaFi-Web: A Web-Based Application for Field-Based Coordination Programming". In: *Coordination Models and Languages - 23rd IFIP WG 6.1 International Conference, COORDINATION 2021, Proceedings*. Vol. 12717. Lecture Notes in Computer Science. Springer, 2021, pp. 285–299. DOI: 10.1007/978-3-030-78142-2_18

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30. **Roberto Casadei**, Danilo Pianini, Andrea Placuzzi, Mirko Viroli, and Danny Weyns. "Pulverization in Cyber-Physical Systems: Engineering the Self-Organizing Logic Separated from Deployment". In: *Future Internet* 12.11 (2020), p. 203. DOI: 10.3390/fi12110203

31. **Roberto Casadei**, Mirko Viroli, Giorgio Audrito, and Ferruccio Damiani. "FScaFi : A Core Calculus for Collective Adaptive Systems Programming". In: *Leveraging Applications of Formal Methods, Verification and Validation: Engineering Principles - 9th International Symposium on Leveraging Applications of Formal Methods, ISoLA 2020, Rhodes, Greece, October 20-30, 2020, Proceedings, Part II*. vol. 12477. Lecture Notes in Computer Science. Springer, 2020, pp. 344–360. DOI: 10.1007/978-3-030-61470-6_21

32. Antonio Bucchiarone, Mirko D'Angelo, Danilo Pianini, Giacomo Cabri, Martina De Sanctis, Mirko Viroli, **Roberto Casadei**, and Simon Dobson. "On the Social Implications of Collective Adaptive Systems". In: *IEEE Technology and Society Magazine* 39.3 (2020), pp. 36–46. DOI: 10.1109/MTS.2020.3012324

33. **Roberto Casadei**, Mirko Viroli, and Alessandro Ricci. "Collective Adaptive Systems as Coordination Media: The Case of Tuples in Space-Time". In: *2020 IEEE International Conference on Autonomic Computing and Self-Organizing Systems, ACSOS 2020, Companion Volume, Washington, DC, USA, August 17-21, 2020*. IEEE, 2020, pp. 139–144. DOI: 10.1109/ACSOS-C51401.2020.00045

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34. Mirko Viroli, Jacob Beal, Ferruccio Damiani, Giorgio Audrito, **Roberto Casadei**, and Danilo Pianini. "From distributed coordination to field calculus and aggregate computing". In: *Journal of Logical and Algebraic Methods in Programming* (2019), p. 100486. ISSN: 2352-2208. DOI: 10.1016/j.jlamp.2019.100486

35. **Roberto Casadei**, Giancarlo Fortino, Danilo Pianini, Wilma Russo, Claudio Savaglio, and Mirko Viroli. "A development approach for collective opportunistic Edge-of-Things services". In: *Information Sciences* 498 (2019), pp. 154–169. DOI: 10.1016/j.ins.2019.05.058

36. **Roberto Casadei**, Christos Tsigkanos, Mirko Viroli, and Schahram Dustdar. "Engineering Resilient Collaborative Edge-Enabled IoT". in: *2019 IEEE International Conference on Services Computing (SCC)*. 2019, pp. 36–45. DOI: 10.1109/SCC.2019.00019

37. **Roberto Casadei** and Mirko Viroli. "Coordinating Computation at the Edge: a Decentralized, Self-Organizing, Spatial Approach". In: *2019 Fourth International Conference on Fog and Mobile Edge Computing (FMEC)*. 2019, pp. 60–67. DOI: 10.1109/FMEC.2019.8795355

38. **Roberto Casadei**, Danilo Pianini, Guido Salvaneschi, and Mirko Viroli. "On Context-Orientation in Aggregate Programming". In: *IEEE 4th International Workshops on Foundations and Applications of Self* Systems, FAS*W@SASO/ICCAC 2019, Umea, Sweden, June 16-20, 2019*. IEEE, 2019, pp. 92–97. DOI: 10.1109/FAS-W.2019.00035

39. Danilo Pianini, **Roberto Casadei**, and Mirko Viroli. "Security in Collective Adaptive Systems: A Roadmap". In: *IEEE 4th International Workshops on Foundations and Applications of Self* Systems, FAS*W@SASO/ICCAC 2019, Umea, Sweden, June 16-20, 2019*. IEEE, 2019, pp. 86–91. DOI: 10.1109/FAS-W.2019.00034. URL: https://doi.org/10.1109/FAS-W.2019.00034

40. Stefano Mariani, **Roberto Casadei**, Fabrizio Fornari, Giancarlo Fortino, Danilo Pianini, Barbara Re, Wilma Russo, Claudio Savaglio, Mirko Viroli, and Franco Zambonelli. "Case Studies for a New IoT Programming Paradigm: Fluidware". In: *Proceedings of the 1st Workshop on Artificial Intelligence and Internet of Things*. Vol. 2502. CEUR Workshop Proceedings. CEUR-WS.org, 2019, pp. 82–96. URL: http://ceur-ws.org/Vol-2502/paper6.pdf

41. **Roberto Casadei**, Danilo Pianini, Mirko Viroli, and Antonio Natali. "Self-organising Coordination Regions: A Pattern for Edge Computing". In: *Coordination Models and Languages - 21st IFIP WG 6.1 International Conference, COORDINATION 2019, Held as Part of the 14th International Federated Conference on Distributed Computing Techniques, DisCoTec 2019, Kongens Lyngby, Denmark, June 17-21, 2019, Proceedings*. Vol. 11533. Lecture Notes in Computer Science. Springer, 2019, pp. 182–199. DOI: 10.1007/978-3-030-22397-7_11

42. **Roberto Casadei**, Mirko Viroli, Giorgio Audrito, Danilo Pianini, and Ferruccio Damiani. "Aggregate Processes in Field Calculus". In: *Coordination Models and Languages - 21st IFIP WG 6.1 International Conference, COORDINATION 2019, Held as Part of the 14th International Federated Conference on Distributed Computing Techniques, DisCoTec 2019, Kongens Lyngby, Denmark, June 17-21, 2019, Proceedings*. Vol. 11533. Lecture Notes in Computer Science. Springer, 2019, pp. 200–217. DOI: 10.1007/978-3-030-22397-7_12

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43. **Roberto Casadei** and Mirko Viroli. "Collective Abstractions and Platforms for Large-Scale Self-Adaptive IoT". in: *2018 IEEE 3rd International Workshops on Foundations and Applications of Self* Systems (FAS*W), Trento, Italy, September 3-7, 2018*. IEEE, 2018, pp. 106–111. DOI: 10.1109/FAS-W.2018.00033. URL: https://doi.org/10.1109/FAS-W.2018.00033

44. Danilo Pianini, Giovanni Ciatto, **Roberto Casadei**, Stefano Mariani, Mirko Viroli, and Andrea Omicini. "Transparent Protection of Aggregate Computations from Byzantine Behaviours via Blockchain". In: *Proceedings of the 4th EAI International Conference on Smart Objects and Technologies for Social Good, GOODTECHS 2018, Bologna, Italy, November 28-30, 2018*. ACM, 2018, pp. 271–276. DOI: 10.1145/3284869.3284870

45. **Roberto Casadei**, Giancarlo Fortino, Danilo Pianini, Wilma Russo, Claudio Savaglio, and Mirko Viroli. "Modelling and simulation of Opportunistic IoT Services with Aggregate Computing". In: *Future Generation Computer Systems* 91 (2018), pp. 252–262. DOI: 10.1016/j.future.2018.09.005

46. **Roberto Casadei**, Alessandro Aldini, and Mirko Viroli. "Towards attack-resistant Aggregate Computing using trust mechanisms". In: *Science of Computer Programming* 167 (2018), pp. 114–137. DOI: 10.1016/j.scico.2018.07.006

47. Mirko Viroli, Jacob Beal, Ferruccio Damiani, Giorgio Audrito, **Roberto Casadei**, and Danilo Pianini. "From Field-Based Coordination to Aggregate Computing". In: *Coordination Models and Languages - 20th IFIP WG 6.1 International Conference, COORDINATION 2018, Held as Part of the 13th International*

Federated Conference on Distributed Computing Techniques, DisCoTec 2018, Madrid, Spain, June 18-21, 2018. Proceedings. Vol. 10852. Lecture Notes in Computer Science. Springer, 2018, pp. 252–279. DOI: [10.1007/978-3-319-92408-3_12](#)

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——— 2017

49. Giorgio Audrito, **Roberto Casadei**, Ferruccio Damiani, and Mirko Viroli. "Compositional Blocks for Optimal Self-Healing Gradients". In: *11th IEEE International Conference on Self-Adaptive and Self-Organizing Systems, SASO 2017, Tucson, AZ, USA, September 18-22, 2017*. IEEE Computer Society, 2017, pp. 91–100. DOI: [10.1109/SASO.2017.18](#)

50. **Roberto Casadei**, Alessandro Aldini, and Mirko Viroli. "Combining Trust and Aggregate Computing". In: *Software Engineering and Formal Methods - SEFM 2017 Collocated Workshops: FOCLASA, Trento, Italy, September 4-5, 2017, Revised Selected Papers*. Vol. 10729. Lecture Notes in Computer Science. Springer, 2017, pp. 507–522. DOI: [10.1007/978-3-319-74781-1_34](#)

——— 2016

51. Giorgio Audrito, Ferruccio Damiani, Mirko Viroli, and **Roberto Casadei**. "Run-Time Management of Computation Domains in Field Calculus". In: *2016 IEEE 1st International Workshops on Foundations and Applications of Self* Systems (FAS*W), Augsburg, Germany, September 12-16, 2016*. IEEE, 2016, pp. 192–197. DOI: [10.1109/FAS-W.2016.50](#)

52. Mirko Viroli, **Roberto Casadei**, and Danilo Pianini. "Simulating Large-scale Aggregate MASs with Alchemist and Scala". In: *Proceedings of the 2016 Federated Conference on Computer Science and Information Systems, FedCSIS 2016, Gdańsk, Poland, September 11-14, 2016*. Vol. 8. Annals of Computer Science and Information Systems. IEEE, 2016, pp. 1495–1504. DOI: [10.15439/2016F407](#)

53. Mirko Viroli, **Roberto Casadei**, and Danilo Pianini. "On Execution Platforms for Large-scale Aggregate Computing". In: *Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing: Adjunct*. UbiComp '16. Heidelberg, Germany: ACM, 2016, pp. 1321–1326. ISBN: 978-1-4503-4462-3. DOI: [10.1145/2968219.2979129](#)

54. **Roberto Casadei** and Mirko Viroli. "Towards Aggregate Programming in Scala". In: *First Workshop on Programming Models and Languages for Distributed Computing, PMLDC@ECOOP 2016, Rome, Italy, July 17, 2016*. ACM, 2016, p. 5. DOI: [10.1145/2957319.2957372](#)

——— Edited volumes

1. **Roberto Casadei**, Elisabetta Di Nitto, Ilias Gerostathopoulos, Danilo Pianini, et al., eds. *IEEE International Conference on Autonomic Computing and Self-Organizing Systems, ACSOS 2022, Virtual, CA, USA, September 19-23, 2022*. IEEE, 2022. ISBN: 978-1-6654-7137-4. DOI: [10.1109/ACSOS55765.2022](#). URL: [https://doi.org/10.1109/ACSOS55765.2022](#)

2. **Roberto Casadei**, Elisabetta Di Nitto, Ilias Gerostathopoulos, Danilo Pianini, et al., eds. *IEEE International Conference on Autonomic Computing and Self-Organizing Systems Companion, ACSOS-C 2022, Virtual, CA, USA, September 19-23, 2022*. IEEE, 2022. ISBN: 978-1-6654-5142-0. DOI: [10.1109/ACSOS-C56246.2022](#). URL: [https://doi.org/10.1109/ACSOS-C56246.2022](#)

Teaching in academic courses

Teaching in PhD courses

Engineering Intelligent Collective Systems (phd course) — 2021, Cesena, UNIBO

Course	PhD Programme on Computer Science and Engineering
Activity	I run a module of 10 hours on research themes pertaining to collective adaptive systems engineering.

Teaching in BEng/BSc courses

09730 - Principles of Informatics - 6 cfu
15305 - Foundations of Informatics A - 6 cfu (TO-DO) — a.y. 2022-23, Cesena, UNIBO

Role	I got the **responsibility** for the entire course.
Course	First cycle degree programme (L) in Electronics Engineering and in Biomedical Engineering
Activity	I run 3 CFUs (30 hours) of teaching and laboratory material preparation and assessment on the fundamentals of computers science (representation of information, algorithms) and the basics of imperative, structured programming in C.

95648 - Software Design and Development - 9 cfu — a.y. 2022-23, Cesena, UNIBO

Role	I got the **responsibility** for the entire course.
Course	First cycle degree programme (L) in Computer Systems Technologies
Activity	I run 3 CFUs (30 hours) of teaching the basics of software design and development, object-oriented programming, and Java.

70219 - Object-Oriented Programming - Module 3 — a.y. 2022-23, Cesena, UNIBO

Course	First cycle degree programme (L) in Computer Science and Engineering
Activity	I run 3 CFUs (30 hours) of teaching and laboratory material preparation and assessment on OOP in Java and related programming tools (version control, Eclipse, JavaFX, Gradle, etc.).

98214 - Intelligent Cyber-Physical Systems - Module 2 — a.y. 2021-22, Cesena, UNIBO

Course	Minor "Smart Infrastructures"
Activity	I run 20 hours of teaching on topics related to intelligent cyber-physical systems, including tutoring for projects.

09730 - Principles of Informatics – 9 cfu — a.y. 2021-22, Cesena, UNIBO

Role	I got the **responsibility** for the entire course.
Course	First cycle degree programme (L) in Electronics Engineering (cod. 5834) and Biomedical Engineering (cod. 9082)
Activity	I run 3 CFUs (30 hours) of teaching and laboratory material preparation and assessment on the fundamentals of computers science (representation of information, algorithms) and the basics of imperative, structured programming in C.

70219 - Object-Oriented Programming - Module 3 — a.y. 2021-22, Cesena, UNIBO

Course	First cycle degree programme (L) in Computer Science and Engineering
Activity	I run 3 CFUs (30 hours) of teaching and laboratory material preparation and assessment on OOP in Java and related programming tools (version control, Eclipse, JavaFX, Gradle, etc.).

15305 - Foundations of Informatics A - Module 2

a.y. 2020-21
Cesena, UNIBO

Course First cycle degree programme (L) in Electronics Engineering for Energy and Information (cod. 8767)

Activity I run 3 CFUs (30 hours) of teaching and laboratory material preparation and assessment on the fundamentals of computers science (representation of information, algorithms) and the basics of imperative, structured programming in C.

70219 - Object-Oriented Programming - Module 3

a.y. 2020-21
Cesena, UNIBO

Course First cycle degree programme (L) in Computer Science and Engineering

Activity I run 3 CFUs (30 hours) of teaching and laboratory material preparation and assessment on OOP in Java and related programming tools (version control, Eclipse, JavaFX, Gradle, etc.).

Other teaching-related activities

Tutor for course modules *Programming and Development Paradigms* and *Concurrent and Distributed Programming* (five editions)

a.y. 2016-17, 2017-18, 2018-19, 2019-20, 2020-21
Cesena, UNIBO

Course Second cycle degree programme (LM) in Computer Science and Engineering (cod. 8614)

Activity As a tutor, I prepare exercises, help students in doing them and following the course, and do seminars on specialised topics. These courses cover advanced programming and paradigms (functional, logic, concurrent, distributed). The contract was of 40 hours (2016-17), 60 hours (2017-18), 60 hours (2018-19), 24 hours (2019-20), 60 hours (2020-21).

Tutor for course module *Object-Oriented Programming*

a.y. 2019-20
Cesena, UNIBO

Course First cycle degree programme (L) in Computer Science and Engineering

Activity As a tutor, I prepare exercises (on OOP in Java) and help students in doing them and following the course. The contract is for 56 hours.

Seminars in the BBS open-program *Internet of Things*, modules *Software Production* and *Distributed Systems*

2018
Bologna Business School

Activity I did two seminars to engineers and professionals on specialised topics: (1) software testing and (2) cloud-native application development.

30h in IFTS course "Technician for design and development of computer applications specialised in new digital technologies"

2018
Cesena

What Higher Technical Education and Training (IFTS) is an education programme funded by the Italian Ministry of Education (MIUR).

Activity 30 hours teaching the basics of programming in Python to high-school graduates.

60h in IFTS course "Technician for design and development of computer applications specialised in business problem solving"

2018
Cesena

Activity 60 hours teaching the basics of programming in JavaScript to high-school graduates.

(Co-)Supervised Theses and Students

Full list available in amslaurea.unibo.it.

M.Sc. / M.Eng. in Computer Science and Engineering degree theses

1. A platform for aggregate computing over LoRaWAN network, Andrea Placuzzi, 2020

2. A Reinforcement Learning approach to discriminate unsafe devices in aggregate computing systems, Chiara Volonnino, 2020

3. Una piattaforma client-server universale per Aggregate Computing, Loris Cangini, 2020

4. Towards Aggregate Processes in a Field Calculus-Based Platform, Davide Foschi, 2018

5. Distributing Aggregate Computations on top of Akka Actors, Manuel Peruzzi, 2018

6. Prototyping a scalable Aggregate Computing cluster with open-source solutions, Cristian Paolucci, 2018

7. Tecniche e algoritmi di aggregate computing a supporto di contesti di smart mobility, Filippo Berlini, 2017

8. Design and Deployment of an Execution Platform based on Microservices for Aggregate Computing in the Cloud, Thomas Farneti, 2017

B.Sc. / B.Eng. in Computer Science and Engineering degree theses

1. Progettazione di un ambiente di programmazione visuale block-based per ScaFi, Cerioni Matteo, 2022

2. Piattaforma a Supporto del Monitoraggio di Sistemi di Computazione Aggregata: Caso di Studio ScaFi-Web, Denys Grushchak, 2021

3. Progettazione di un sistema di categorizzazione delle regressioni per il compilatore Rust, Giacomo Pasini, 2020

4. Design e prototipazione di un middleware per applicazioni aggregate location-based, Linda Vitali, 2020

5. Sviluppo di una libreria in Scala di supporto alla creazione e configurazione di uno stack SMACK, Stefano Salvatori, 2018

6. Sviluppo di un front-end di simulazione per applicazioni aggregate nel framework Scafi, Gianluca Aguzzi, 2018

7. Sviluppo di applicazioni distribuite con lo stack SMACK, Emiliano Ciavatta, 2018

8. Indagine sull'utilizzo di Scala per progetti Android, Giuseppe Ettore Radaelli, 2017

Contributions (e.g. open-source/academic software projects)

SCAFI (Project Lead and Developer)
ScaFi is a Scala toolkit for Aggregate Computing: it includes a field calculus DSL, simulator, distributed platform, and more. It is a collection of project modules for a total of more than 140K LoC. I lead the project and development of ScaFi, check pull requests, and coordinate work.

ALCHEMIST (Contributor)
Alchemist is a meta-simulator tailored to pervasive computing, on the JVM. I issued pull requests mainly on the ScaFi-Alchemist incarnation.

Miscellaneous Contributions
– org.protelis.protelisdoc: Kotlin gradle plugin to generate Protelis docs, via dokka

Slides @ Slideshare
Presentations corresponding to lecture notes (mainly about computer science) and conference talks.

Professional Experience

Full-Stack Software Engineer
Web service (WCF) and application development in ASP.NET MVC and JavaScript within a Scrum/Kanban process framework.

2014/09 → 2015/12
Apex-Net (WEDO)
Cesena (Italy)

- Server-side: ASP.NET MVC
- Client-side: ZURB Foundation, HTML, CSS3, JavaScript, JQuery, KnockoutJS
- Client-server interaction: Comet via SignalR
- Frameworks/libs: DevExpress ASP.NET MVC Extensions
- Web services: WCF (REST-style, SOAP XML & WS-*)

Mobile Software Engineer
Development of a Windows 8.1 application in C#/XAML and development of the related WCF back-end service for SharePoint integration.

2014/03 → 2014/09
Apex-Net (WEDO)
Cesena (Italy)

IT Book reviewer
During the years of high school, I used to write reviews of computer science books for an Italian e-zine (and the next years, more informally, for a personal blog) The website is dismissed: look it up on archive.org.

2007 → 2011
programmazione.it

Certifications

TS: Microsoft .NET Framework - Application Development Foundation
(License 8424975 - Prometric)

2011
Bologna (Italy)

Education

PhD Programme in Computer Science and Engineering

2016/11 → 2020/04
Università di Bologna (IT)

Thesis Engineering self-adaptive collective processes for cyber-physical ecosystems

Courses
- Spatial Multiagent Systems and Aggregate Computing: New Directions for Spatial Computing (2017, A. Omicini & M. Viroli)
- Approximation Algorithms (BISS'17, F. Grandoni)
- Kleene Algebra with Tests and Applications to Network Programming (BISS'17, A. Silva)
- Models and Algorithms for Matching and Assignment Problems (S. Martello)
- Developing, maintaining, and sharing software tools for research (D. Pianini)

24 CFU Training Programme – Anthropological, psycho-pedagogy disciplines and teaching methodologies and technologies

2018
Università di Bologna (IT)

Exams
- Anthropology, 30L/30
- Psychology, 30/30
- Pedagogy, special pedagogy, and didactics for inclusion, 30/30
- General methodologies and technologies for didactics, 30L/30

Master's Degree in Computer Science and Engineering 2013/09 → 2016/03
Università di Bologna (IT)

Grade   Summa Cum Laude (Grade Average: 30/30, 6 laudes)

Thesis   Aggregate Programming in Scala: a Core Library and Actor-based Platform for Distributed Computational Fields (supervisor: Mirko Viroli)

Exams
- Artificial Intelligence (Vittorio Maniezzo), 30/30
- Programming and Paradigms (Alessandro Ricci), 30L/30
- Autonomous Systems (Andrea Omicini), 30L/30
- Business Intelligence (Stefano Rizzi), 30/30
- Computer Security (Gabriele D'Angelo), 30L/30
- Data Base Systems (Matteo Golfarelli), 30/30
- Distributed Systems (Andrea Omicini), 30/30
- Engineering Complex Adaptive Software Systems (Mirko Viroli), 30/30
- Programming Languages and Models of Computation (Gianluigi Zavattaro), 30/30
- Project Management (Marco Antonio Boschetti), 30L/30
- Semantic Web (Antonella Carbonaro), 30L/30
- Software Systems Engineering (Antonio Natali), 30/30
- Web Services and Applications (Mario Bravetti), 30L/30

Bachelor's Degree in Electronics, Informatics, and Telecommunications Engineering 2009/09 → 2013/03
Università di Bologna (IT)

Grade   Summa Cum Laude (Grade Average: 29.29/30, 5 laudes)

Thesis   Reuse Mechanisms and Concurrency: from Actors to Agent-oriented Programming (supervisor: Alessandro Ricci)

Exams
- Automatic Controls (Paolo Castaldi), 30L/30
- Computer Networks (Claudio Salati), 30L/30
- Data Base Systems (Alessandra Lumini), 30L/30
- Digital Design Principles and Computer Architecture (Luca Roffia), 30/30
- Economics and Business Organisation (Cinzia Daraio), 28/30
- Electrotechnics (Franco Mastri), 28/30
- Foundations of Informatics A (Mirko Viroli), 30/30
- Foundations of Informatics B (Andrea Roli), 30/30
- General Physics A (Maurizio Piccinini), 28/30
- General Physics B (Maurizio Piccinini), 26/30
- Geometry and Algebra (Michele Mulazzani), 30/30
- Mathematical Analysis A (Massimo Cicognani), 28/30
- Mathematical Analysis for the Engineering Information Technology (Massimo Cicognani), 28/30
- Operating Systems (Alessandro Ricci), 29/30
- Operations Research (Daniele Vigo), 30L/30
- Signal Processing (Davide Dardari), 28/30
- Software Engineering (Antonio Natali), 30L/30
- Telecommunications Networks (Franco Callegati), 30L/30
- Web-related Technologies (Mario Bravetti), 30/30
- English Proficiency B1

Erasmus Programme 2012/01 → 2012/05
University of Limerick (IRL)

Courses
- Distributed Systems (Reiner Dojen), A/A
- Human-Computer Interaction (Luigina Ciolfi), A/A
- Real-time Systems (Brian Adley), A/A
- Software Testing and Inspection (Norah Power), A/A

Skills and Technical Expertise

Note: this section is only indicative; current level of mastery can vary; by no means exhaustive.

Paradigms   Imperative; OOP; Functional; Reactive; Async; Logic; Agent-Oriented

Languages   Scala, Java/Kotlin, C#, C++, Ruby, Haskell, Python, JavaScript

Data   E/R modeling; relational modelling; semantic web

Design/Arch.   Design patterns; SOA/Microservices; cloud-native applications

Devops	Docker; Kubernetes; CI/CD (Gradle, Travis, GitHub Actions)
Technologies	**Cloud** – Google Cloud Platform, Amazon Web Services, Heroku
	Web dev. – HTML5; CSS3; jQuery; PHP
	Frameworks – Akka; Spring; NodeJs; ASP.NET MVC; Rails; Vert.x; RabbitMQ
	Data – MySQL; NoSQL (e.g. MongoDB)
Process	**Agile sw dev. and practices:** Scrum; (A)TDD/BDD.
	Model-driven sw dev.: UML; DSL; code-generation (XText).
	Collaborative sw dev.: version control (git); build automation (Gradle, sbt).

Languages

Italian	Mother tongue.
English	Proficient in both spoken and written English.

References

Prof. Mirko Viroli, Full Professor, Department of Computer Science and Engineering (DISI), Alma Mater Studiorum–Università di Bologna
Prof. Viroli was my PhD and Master Thesis advisor, and is currently my research fellowship supervisor.

Prof. Alessandro Ricci, Associate Professor, Department of Computer Science and Engineering (DISI), Alma Mater Studiorum–Università di Bologna
Prof. Ricci was my Bachelor Thesis supervisor and, more recently, has been a co-author in research publications.

Referees from academia
Other referees for my academic profile include: Prof. Simon Dobson, Prof. Ferruccio Damiani, Prof. Andrea Omicini, Prof. Lukas Esterle, Prof. Jacob Beal, Prof. Giancarlo Fortino, Prof. Schahram Dustdar, Prof. Franco Zambonelli.

I hereby authorize the use of my personal data in accordance to the GDPR (General Data Protection Regulation) 679/16 – "European regulation on the protection of personal data".