

# Recent Developments in the Design and Implementation of Programming Languages

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Edited by

Frank S. de Boer

Jacopo Mauro



*Editors*

**Frank S. de Boer**

Centrum Wiskunde & Informatica (CWI), Amsterdam, The Netherlands  
F.S.de.Boer@cwi.nl

**Jacopo Mauro** 

University of Southern Denmark, Odense, Syddanmark, Denmark  
mauro.jacopo@gmail.com

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To Maurizio, esteemed colleague, beloved friend, and inspiring mentor.



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## ■ Preface

This festschrift celebrates the 60th anniversary of Professor Maurizio Gabbrielli.

Maurizio received his PhD in Computer Science in 1992 and after working at CWI in the Netherlands and at the University of Udine, he joined the Department of Computer Science and Engineering of the University of Bologna where he became a full professor of Computer Science in 2001, commuting almost every day from his home at the top of a hill in Prato, Tuscany. Maurizio is internationally acknowledged for his outstanding and fundamental contributions to the semantics of declarative programming languages, notably logic and constraint programming languages. His first major achievements concerned the development of new semantic foundations of logic and constraint programs for modelling various aspects like compositionality, synchronization in concurrent constraint calculi, and real-time. From mid-90s Maurizio contributed to the major problems of verification and transformation of concurrent and timed constraint programs. Currently, his general semantic interests on modularity and compositionality focus on choreographies and languages for controlling and specifying agent cooperation, with IoT applications and web apps.

A general motivation underlying his scientific career is the persistent interest in the fundamental semantic concepts which form the basis for the modular and compositional verification of computational systems. With his research, Maurizio contributed to our understanding and increased control of the complexity of such systems.

Maurizio has been (and still is) a very active member of the scientific community, both nationally and internationally. He has been Director of the European EIT Digital Doctoral School from 2015 to 2017 and the Director of Studies for the Master's in AI & Digital Technology Management at University of Bologna. Furthermore, he has been President of the Italian Association for Logic Programming (GULP), member of the advisory board of the journal Theory and Practice of Logic Programming (TPLP), member of the Executive Committee of the Association for Logic Programming, chair of the Steering Committee of the ACM conference Principles and Practice of Declarative Programming (PPDP,) member of the board of the European Association for Programming Languages and Systems (EAPLS). Moreover, his keen interest in innovation and applications led to a close collaboration with companies and start-ups. For example, Maurizio is a partner of italianaSoftware, a spin-off of the University of Bologna producing technology for microservices and Cloud computing.

Finally, his keen interest in innovation and applications led to a close collaboration with companies and start-ups. For example, Maurizio is a partner of italianaSoftware, a spin-off of the University of Bologna producing technology for microservices and Cloud computing.

On a more personal note, we believe that whoever has had the pleasure of having met Maurizio must have been impressed by his high moral standards and his integrity. Abstracting from the details, this is best illustrated by the episode, happened a long time ago, in which Maurizio was considering to apply for some academic position (somewhere). While doing so, his major concern on whether to apply or not was not on whether he would qualify, but that some other candidate would be better qualified and a better fit for the job, or simply more entitled to it because of seniority.

Maurizio survived all these years with his remarkable cool attitude, reminiscent of the American actor Humphrey Bogard, which explains why in the early days he was called the “Bogard of Computer Science”. Despite this cool attitude we were still able to detect some vulnerabilities, mostly age related. One of the possibly most severe mental havocs he



experienced in his career may very well have occurred when, in a meeting with one of his PhD students, the PhD student mentioned that he was supposed to visit his mother for her birthday. Maurizio responded by asking naively the age of the mother, apparently not prepared for the answer. It required all his mental resources to recover from the realization that actually he could have been the grandfather of the student. In the end, Maurizio found inspiration and consolation from Terenzio's "senectus ipsa est morbus" which helped him to come to grips with the above incident. Celebrating his 60th birthday, we would like to conclude reminding him of "unus dies hominum eruditorum plus patet, quam imperiti longissima aetas" and wishing him many days of "hominum eruditorum" more.

### **Personal note by Moreno Falaschi: From music to logic in computer science, Artimino, and market shares**

I first met Maurizio Gabrielli when he started his doctoral program at the Dipartimento di Informatica of the University of Pisa. I was a researcher from a short time. Maurizio seemed to me an unusual student of computer science. I had the impression that he was more keen towards literature and humanistic studies. Some time later, when we became good friends, he told me that 'computer science' was a kind of makeshift for him, as it would have been anything except music. Indeed, his real passion was playing piano, and classical music, and he would have liked to devote his life to music. The story is that he was studying piano in the conservatorio when an unfortunate accident caused a damage to his acoustical nerve and he had to stop playing. Now, after seeing the brilliant career and wonderful scientific results that he obtained in computer science, I wonder what kind of fantastic piano player he could have been. Maurizio and I when we met were working in the field of logic programming and we enjoyed working in that area. We used to take jokes about ourselves saying that we were  $T_P$ -ologists, meaning that we were clever to define transformations on logic programs and find their least fixpoint semantics. We were critical about ourselves as we thought that our work was really abstract and we could not see immediate real applications. Later on he started working with constraint solving and developed lots of real applications. Maurizio is really eclectic and nice and is capable of doing many activities at the same time. He writes great scientific works, we know that. But my impression is that every time that you call him he is in a different country, presenting papers, participating in scientific meetings, or simply travelling. Nevertheless he can invite you at his place for a fantastic 'gourmet' dinner that he cooks, in the Tuscany countryside near Artimino Medici's Villa. Ah, I was forgetting... it will be with his own Carmignano wine and the dinner will be with the products of his land at km-0. Recently he got interested in playing with market shares, mainly for fun. So we might say that he found another real application after his initial fully theoretical approach. He uses a methodology that seems due to a scientific study (probably he applies the choreographies of constraint solvers) with some moves which appear more of the kind of a poker player. Most of the times he wins. I'm sure that Maurizio has a lot of other surprising applications to show us in the next few years, that I cannot imagine right now. For the moment I just wish Maurizio a happy birthday.

### **Personal note by Catuscia Palamidessi (in Italian)**

Caro Maurizio,

Non sono mai stata brava ad esprimere i miei sentimenti per iscritto, quindi ti prego di accettare queste poche righe che, anche se semplici, sono sincere e sentite.

Sebbene viviamo lontani da tanto tempo, ti ho sempre considerato il mio migliore amico, e il mio punto di riferimento morale. Ripenso spesso a quando eravamo insieme a Pisa, condividendo i momenti belli e brutti delle prime esperienze di vita accademica. Ripenso alla nostra solidarietà di fronte alle cose che consideravamo ingiuste, alle nostre riflessioni e discussioni, e, perché no, ai nostri litigi. Ti ricordi? Litigavamo soprattutto sulle questioni etiche, perché tu sei sempre stato molto idealista, e io volevo riportarti sulla terra, ma in fondo, anche se non volevo ammetterlo, il più delle volte ero sostanzialmente d'accordo con te. E poi, siamo toscani: la franchezza e i litigi fanno parte dell'amicizia vera. In ogni caso è anche per questo che, come dicevo, ti considero il mio punto di riferimento morale, ed ogni volta che devo prendere una decisione che ha dei risvolti etici penso a quello che diresti tu.

Quanto anni sono passati... le nostre strade si sono separate, ma quei tempi di Pisa, penso, ci hanno unito per sempre.

Catuscia



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