

The Expanding World of Compressed Data: A Festschrift for Giovanni Manzini's 60th Birthday

Manzini's Festschrift, July 25, 2025, Venice, Italy

Edited by

Paolo Ferragina

Travis Gagie

Gonzalo Navarro



Editors

Paolo Ferragina 

Scuola Superiore Sant'Anna, Pisa, Italy
University of Pisa, Italy
Paolo.Ferragina@santannapisa.it

Travis Gagie 

Dalhousie University, Halifax, Canada
travis.gagie@gmail.com

Gonzalo Navarro 

University of Chile, Santiago, Chile
gnavarro@dcc.uchile.cl

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Preface

Happy 60th Birthday, Giovanni!

Wow, it seems like such a short time (in some ways!) since we were celebrating 25 years of the BWT and 50 years of Gonzalo in 2019, and now here we are celebrating 25 years of the FM-index and the CSA, and 60 years of you!

Looking through this volume, at the growing breadth of research on the BWT and FM-indexing – most of which would not have happened without you – we hope you are duly proud of what you have accomplished, both as a researcher and a mentor and role model to other researchers. Rather than add more words ourselves, we gladly leave the floor to the many colleagues whose quotes follow in the next pages – each offering their own heartfelt birthday wishes.

We are all proud of you, of course, and we wish you many more productive years!

Grazie mille e tantissimi auguri!

Paolo, Travis and Gonzalo
on behalf of the authors

■ Messages for Giovanni

Dear Giovanni,

I will not write about your groundbreaking contributions to the field of bioinformatics, as others have already done so. Instead, I want to express my personal feelings about the times we spent together.

I believe we first met at a Dagstuhl meeting, where we spent some time discussing the Lyndon factorization of genomes. The last time we met was in Pisa at DSB24, where I also had the pleasure of meeting your wife during dinner and discussing family matters. What impressed me was your curiosity, the depth of your personal relationships, and, at the same time, your being – as we say in Italian – *con i piedi per terra* (down to earth).

I did not have the privilege of working with you, but who knows – maybe in the near future. Ti auguro tutto il meglio!

Paola Bonizzoni

Dear Giovanni,

Happy 60th birthday! It is a great pleasure to contribute to this collection celebrating your remarkable career and enduring impact on the field of algorithms and data structures. Your pioneering work – most notably on the Burrows-Wheeler Transform and compressed indexing – has fundamentally shaped modern string processing, influencing not only theoretical computer science but also practical applications across bioinformatics and data compression.

I especially appreciate the opportunity to have co-authored with you. I have learned so much from your clarity of thought, depth of insight, and generous approach to collaboration. Working with you has been both intellectually enriching and personally rewarding.

Beyond your scholarly contributions, I've always valued your generosity with ideas, your commitment to the community, and your support for the next generation of researchers. You've been an inspiration to so many of us.

Wishing you continued success, good health, and many more years of discovery and collaboration.

Warm regards,

Christina Boucher

Dear Giovanni,

thinking back, I can't believe that we met, worked together and became friends because you commuted for so many years between Pisa and Alessandria: every week 250 km in each direction, braving the delays and glitches of the Italian rail service. I am glad you did it, though.

It was a privilege and a pleasure working with you. I admire your clear vision and the rigor of your scientific approach, and I appreciated the patience you showed me when you introduced me to a field that was utterly new to me. I am still very thankful that you involved me in such interesting research activities. But I also enjoyed our chats, sharing experiences about our families and everyday life at UPO.

Happy 60th birthday and all the best,

Lavinia Egidì

It's been over 25 years that Giovanni and I have been working together on research, teaching, and projects. It has been a long journey: sometimes closely connected, sometimes less so over the past 15 years, mainly due to my institutional responsibilities. Still, I always knew that if I ever needed Giovanni's support, he would be there without hesitation.

If I've to mention an anecdote of this long journey, I tell that I cannot forget that day, about 25 years ago, when I suggested the acronym FM for our compressed index. Già, you never believed that my intention was to embed our initials in "our" index; but, now that you've reached the mature age of 60yo, it's time for the truth: I honestly hadn't realized FM were our initials, my intention was to valorize the peculiarities of the index: namely, "Full-text index in Minute space"!

Manzai, it has been an honor to collaborate with you, and to have you not only as a rigorous and scientifically outstanding colleague, but also as a friend. Wishing you continued success in your career, and above all, I strongly wish you all the best and happiness in your family life.

Paolo Ferragina

Dear Giovanni,

We have never collaborated, but your work has inspired my research for a long time. In particular your articles on suffix sorting, LCP-array computation, and the analysis of Lempel-Ziv, guided me during my PhD and Postdoc years (I openly admit that I hadn't understood the magic of the BWT at that time, and I'm still a bit puzzled today... sorry for writing this in an introduction to a book on the BWT). I hope you remain healthy and also active as a researcher in the many years to come, and that I can make up for the missed opportunities to collaborate.

Johannes Fischer

Twenty years ago I was a PhD student on holiday in Italy and thought to myself

“This is such a nice country, I should do an exchange here! The authors of that neat compressed-indexing paper had Italian-sounding names; I wonder, would one of them take me as an exchange student?”

Luckily for me, you agreed – which led to a year in Pisa, two years in Alessandria, thirty-something joint papers so far and an entire career designing compressed indexes. Grazie mille!

Happy 60th Birthday!

Travis Gagie

Field-shaping ideas in computer science are rare, and it is even rarer when they stem from elegant combinatorial constructions like the Burrows-Wheeler transform. It is yet more rare when such ideas turn out to be practical, and it is utterly rare when they become game changers in practical applications, like the FM-index did in bioinformatics.

Congratulations for your contributions and Happy birthday! Wishing you more rare pearls to discover.

Gregory Kucherov

Dear Giovanni,

Your paper describing the FM Index was the first complex academic paper that I really took the time to read and understand. It was not easy for me (I was a fresh graduate student at the time), but I was rewarded for the effort. Once I understood and adopted those ideas, the direction of my career and life changed forever!

I greatly admire the quality and impact of your work, as well as your kindness as a mentor and collaborator. Thank you.

Ben Langmead

Dear Giovanni,

Happy birthday!

Like many of the contributors of this volume, I teach some of your work on the BWT and the FM-index. Every time I introduce backward search, I tell the students “it’s magic!” Because it truly is.

Your work on the BWT and compressed indexes has had a profound influence on my own research in the past decade. But I also really value your kindness. I still remember, soon after I was hired in Verona, you came up to me at a conference, and said: Welcome to Italy!

I will never forget that. Thank you.

Zsuzsanna Lipták (Zsuzsa)

Dear Giovanni,

Happy 60th Birthday! It’s an honor to be part of this collection celebrating your remarkable career. It’s always a pleasure to work with you on some “BWT magic.” Thank you for your inspiring work, generosity, and constant support. I wish you and your family all the very best for the years ahead!

Warmly,

Felipe Louza

Dear Giovanni, happy 60th birthday!

It's been more than 20 years since I had been fascinated by the idea of self-indexes and presented my first decent contribution (or so I thought), in 2002 with a Lempel-Ziv index. It was difficult to get anyone's attention, however, because stronger indexes based on the CSA and the BWT had just appeared.

Then in 2004 you and Paolo kindly invited Veli and me to write a joint paper, which combined your FM-index with the wavelet tree. To me, that paper marks the starting point of the FM-index as a practical data structure; nobody seriously thinks today of another FM-index implementation. It was also crucial in my involvement in the field.

I always felt you could have written that 2004 paper yourselves, and see your invitation as a sign of generosity in bringing Veli and me into that recently-born area.

We have collaborated several times since then. It has always been a pleasure to work with you, both for your sharp scientific thinking and for your kind personality.

Happy birthday again!

Gonzalo Navarro

I am truly delighted to be part of the scientific community celebrating your remarkable achievements and distinguished career. You fully deserve this recognition. I am deeply grateful to have had the opportunity to work with you, learn from your expertise, and experience your unique, light, and very effective approach to research and collaboration.

Wishing you many more years filled with scientific discovery and meaningful connections.

Alberto Policriti

Dear Giovanni,

Happy 60th birthday! Your groundbreaking work on the Burrows-Wheeler Transform introduced me to the fascinating field of compressed indexing, which continues to inspire my research today. Not only the FM-index, but also the more recent Wheeler graphs have revolutionized the field of combinatorial pattern matching, unveiling new wonderful research avenues. It's truly remarkable that, 25 years later, you are still uncovering new properties of this powerful and magical combinatorial object! I'm honored to have collaborated with you on some of these recent developments and I wish you many more years of pioneering scientific discoveries.

Happy birthday again!

Ciao,

Nicola Prezza

Dear Giovanni,

I wish you all the best for your 60th birthday! I shared some time at the Max Planck Institute with Paolo Ferragina and closely followed since then the work of the “Italians”. I introduce to my students the FM index as one of the true gems of Computer Science and I honestly think it is. I hope you continue contributing to the community and wish you all the best for the coming years as well as good health and happiness.

With kind regards,

Knut Reinert

I was introduced to the FM-index at the start of my PhD by my advisor, who called it the “BWT-magic.” As a beginner, the backward search algorithm truly felt like magic. Like many others in this community, your work inspired me, guided my research, and shaped my career as a researcher and educator.

Thank you for your incredible contributions, and I wish you a very happy 60th birthday.

Sharma Thankachan

Congrats, Giovanni, on your 60th birthday!

We have enjoyed the opportunity to learn about the Burrows-Wheeler Transform and the FM-index over the years, and we are glad to contribute to your Festschrift by looking at new ways to improve the performance of the FM-Index in practice. The theories behind it and the compressed suffix array are quite beautiful and have been a great source of ideas for our research.

With special congratulations,

Jeffrey Vitter and Hongwei Huo

