

**TRIBUTE TO ARTO SALOMAA**  
*A Towering Figure in Theoretical Computer Science*



Mathematician and theoretical computer scientist Arto Salomaa passed away on January 26, 2025. He played a key role in the establishment and early development of the *European Association for Theoretical Computer Science (EATCS)*, and served as its President from 1979 to 1985. The following is an excerpt from the preface to a Special Issue of *Theoretical Computer Science (track C)* published in Arto Salomaa's honor.

Arto Salomaa was a world-class Finnish mathematician and theoretical computer scientist, renowned for his foundational contributions to automata theory, formal languages, and numerous other areas within theoretical computer science. His work profoundly shaped the mathematical foundations of the field and inspired generations of researchers.

His scientific career was truly international. As a graduate student, he received a scholarship to Berkeley, where he attended J. Myhill's automata theory seminar, which deeply influenced him. Upon returning to his home institution, the University of Turku, he established a research group in automata theory that became internationally renowned and continues to be active today, more than half a century later.

In the late 1960s, Arto spent three years at what became his second academic home, the University of Western Ontario in Canada. During this time, his first book, *Theory of Automata*, was published, marking the beginning of his extraordinary career as an author of scientific books. Shortly thereafter, he published his iconic monograph *Formal Languages*, a highly influential work that cemented his status as a pioneering figure in the field. Over the years, Arto authored more than ten highly influential scientific monographs. Some were masterful explorations of their respective topics, while others introduced or promoted novel areas of study, including formal power series, L-systems, public-key cryptography, and DNA computing. In collaboration with Grzegorz Rozenberg, Arto co-authored a comprehensive treatment of formal languages. This monumental work, the *Handbook of Formal Languages*, spans three volumes and over 2,000 pages, serving as a definitive reference in the field.

Beyond being an exceptionally original and creative researcher who continually explored new directions, Arto was also a leading educator in theoretical computer science. The remarkable clarity of his mathematical writing introduced many scientists to formal languages and automata theory, and his texts became fundamental to the education of multiple generations of researchers. Also, many of the Ph.D. students he guided went on to become prominent scientists worldwide, further demonstrating his profound impact as an educator and mentor.

Arto served three five-year terms as an Academy Professor of the Academy of Finland, the highest academic position in the country. In 2001, the Academy of Finland awarded him the title of Academician, a prestigious honor granted to only 12 individuals in the sciences nationwide.

He was a highly decorated scientist, a testimony to his prestige within the international scientific community. Arto was the recipient of nine honorary degrees and a distinguished member of several esteemed institutions, including the Finnish Academy of Science and Letters, the Finnish Society of Science and Letters, Academia Europaea, and the Hungarian Academy of Science as foreign member.

His achievements were recognized with numerous prestigious awards, such as

the Prize of the Foundation for Finnish Culture, the Magnus Ehrnrooth Prize of the Finnish Society of Science and Letters, the European Association for Theoretical Computer Science Award, the Finnish Professor of the Year award, the Nokia Foundation Prize, and the title of Honorary Professor of the Al.I.Cuza University in Romania. In his honor, the *Developments in Language Theory Symposium* series has introduced the prestigious annual Arto Salomaa Prize.

Arto made significant contributions to the scientific community. For instance, he played a key role in the establishment and early development of the European Association for Theoretical Computer Science, where he served as president from 1979 to 1985. Also, he was an active member of numerous editorial boards for prestigious academic journals and book series, further shaping the field through his expertise and leadership.

We, the editors of the *Theoretical Computer Science (TCS)* journal Special Issue in his honor, express our deep sorrow at Arto's passing. Each of us had the privilege of a warm and special friendship with him. We will miss him immensely and remain grateful for his presence in our lives and the profound influence he had on us.

Here's to celebrating a remarkable life and the extraordinary scientific legacy that Arto leaves behind!

Juhani Karhumäki, Turku, Finland

Jarkko Kari, Turku, Finland

Lila Kari, Waterloo, Canada

Hermann Maurer, Graz, Austria

Ion Petre, Turku, Finland

Grzegorz Rozenberg, Leiden, The Netherlands and Boulder, Colorado, USA

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