

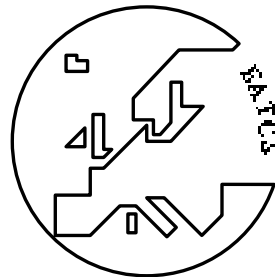
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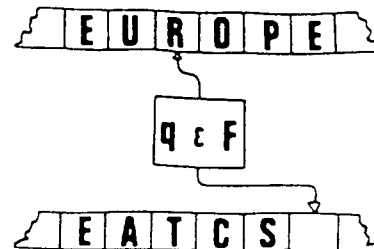
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and must be prepared in $\LaTeX 2_{\epsilon}$ using the class `beatcs.cls` (a version of the standard $\LaTeX 2_{\epsilon}$ article class). All sources, including figures, and a reference PDF version must be bundled in a ZIP file.

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Deadlines for submissions of reports are January, May and September 15th, respectively for the February, June and October issues. Editorial decisions about submitted technical contributions will normally be made in 6/8 weeks. Accepted papers will appear in print as soon as possible thereafter.

The Editor welcomes proposals for surveys, tutorials, and thematic issues of the Bulletin dedicated to currently hot topics, as well as suggestions for new regular sections.

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ZDZISŁAW PAWLAK LIFE AND WORK



1926–2006

Professor Zdzisław Pawlak, Member of the Polish Academy of Sciences, will be remembered as a great human being with exceptional humility, wit and kindness as well as an extraordinarily innovative researcher with exceptional stature. His research contributions have had far-reaching implications with many of them playing a fundamental role in establishing new perspectives for scientific research in a wide spectrum of fields.

Zdzisław Pawlak was born on 10 November 1926 in Łódź, 130 km southwest from Warsaw, Poland¹. In 1947, Pawlak began his studies in the Faculty of Electrical Engineering at Łódź University of Technology, and then from 1949 continued his studies in the Telecommunication Faculty at Warsaw University of Technology. In 1950, he presented the first project of a computer in Poland, called GAM 1. He completed his M.Sc. in Telecommunication Engineering in 1951. His publication in 1956 on a new method for random number generation was the first publication abroad in informatics by a researcher from Poland. In 1958, Pawlak completed his doctoral degree from the Institute of Fundamental Technological Research at the Polish Academy of Science with a Thesis on Applications of Graph Theory to Decoder Synthesis. In 1961, Pawlak was also a member of a

¹Wikipedia summary of the life and work of Z. Pawlak:
http://pl.wikipedia.org/wiki/Zdzislaw_Pawlak

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research team that constructed one of the first computers in Poland called UMC 1. Pawlak received his habilitation from the Institute of Mathematics at the Polish Academy of Sciences in 1963. In his habilitation "Organization of Address-Less Machines", he proposed and investigated parenthesis-free languages, a generalization of polish notation introduced by Jan Łukasiewicz.

During succeeding years, Pawlak worked at the Institute of Mathematics at Warsaw University and, in 1965, introduced the foundations for modeling DNA and what has come to be known as molecular computing. In 1968, he proposed a new formal model of a computing machine known as the *Pawlak machine* which was based on the addressing structure of contemporary computers. During the 1970s, Pawlak introduced knowledge representation systems as a result of his broader research on the mathematical foundations of information retrieval. This led to his most widely recognized contribution, namely, his brilliant approach to classifying objects with their attributes (features) and his introduction of approximation spaces, which establish the foundations of granular computing and provide frameworks for perception and knowledge discovery in many areas.

During the early 1980s, he worked at the Institute of Computer Science of the Polish Academy of Sciences, where he introduced rough sets and the idea of classifying objects by means of their attributes². Rough set theory has its roots in Pawlak's research on knowledge representation systems. Rather than attempt exact classification of objects with attributes (features), Pawlak considered an approach to solving the object classification problem in a number of novel ways. First, in 1973, he introduced knowledge representation systems. Then, in 1981, he introduced approximate descriptions of sets of objects and considered knowledge representation systems in the context of upper and lower classification of objects relative to their attribute values. During the succeeding years, Pawlak refined and amplified the foundations of rough sets and their applications and nurtured worldwide research in rough sets that has led to over 4000 publications². The consequences of this approach to the classification of objects relative to their feature values have been quite remarkable and far-reaching. The work on knowledge representation systems and the notion of elementary sets have profound implications when one considers the problem of approximate reasoning and concept approximation. Also, during the 1980s, Pawlak invented a new approach to conflict analysis.

²Z. Pawlak, *Rough Sets*. Research Report PAS 431, Institute of Computer Science, Polish Academy of Sciences (1981); Z. Pawlak, *Classification of Objects by Means of Attributes*. Research Report PAS 429, Institute of Computer Science, Polish Academy of Sciences, ISSN 138-0648, January (1981); Z. Pawlak, *Rough sets*. *International J. Comp. Inform. Science* 11 (1982) 341-356; Z. Pawlak, *Rough Sets - Theoretical Aspects of Reasoning about Data*, Kluwer Academic Publishers, Dordrecht, 1991.

³See, e.g., *Rough Set Database System*, <http://rsds.wsis.rzeszow.pl/>.

Professor Zdzisław Pawlak was with us only for a short time and, yet, when we look back at his accomplishments, we realize how greatly he has influenced us with his generous spirit and creative work in many areas such as approximate reasoning, intelligent systems research, computing models, mathematics (especially, rough set theory), molecular computing, pattern recognition, philosophy, art, and poetry. As many can readily testify, Pawlak gave generously his time and energy to help others. His spirit and insights have influenced many researchers worldwide. During his life, he manifested an extraordinary talent for inspiring his students and colleagues as well as many others outside his immediate circle.

Andrzej Ehrenfeucht, James F. Peters, Grzegorz Rozenberg, Andrzej Skowron