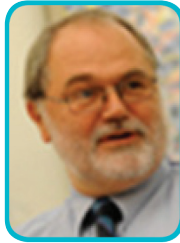


First Laureate Fundamental Research

26th Khwarizmi International Award (KIA)



- **Research Work Title:** Algorithm Engineering
- **Researcher:** Prof. Kurt Mehlhorn
- **Nationality:** German
- **Date of Birth:** 1949
- **Field:** Information Technology
- **Position:** Researcher and Director
- **Scientific Affiliation:** Max Planck Institute for Informatics Germany

● Abstract:

Kurt Mehlhorn has made fundamental contributions to a wealth of algorithmic topics: Data structures, computational geometry, geometric computing and computer algebra, parallel computing, VLSI-design, complexity theory, combinatorial optimization, and graph algorithms. One outstanding contribution is his shaping of the field of algorithm engineering, most prominently represented by LEDA, the Library of Efficient Data Types and Algorithms, which was initiated and originally written by Kurt Mehlhorn and Stefan Naher. The LEDA book is a shining example of theory meets practice with its interweaving of theoretical analysis and careful software engineering. Besides efficiency, the library impresses by the treatment of correctness, let it be in the direction of robust, consistent and at the same time efficient geometric computation or in the direction of the employment of certificates which allow checking of results independent of the correctness of algorithms and their implementation. Nowadays, LEDA is used extensively both in academia and industry and it has stimulated the development of numerous other more specialized libraries for combinatorial algorithms.

● Biography:

Kurt Mehlhorn received a PhD in Computer Science from Cornell in 1974. One year later, he was appointed full professor for Computer Science at the Universitat des Saarlandes. Since 1990, he is one of the directors of the Max-Planck-Institut for Computer Science in Saarbrücken, in Germany. He is co-founder of Algorithmic Solutions GMBH.

Kurt Mehlhorn combines theoretical work and systems building in a most successful way. He and his former student Stefan Naher designed and implemented the LEDA platform for combinatorial and geometric computing. LEDA is intimately connected to his theoretical work and would have been impossible without it. LEDA is a breakthrough in the construction of an efficient and correct platform for combinatorial and geometric computing. The main features of LEDA are scope, efficiency, correctness and ease of use. Correctness and hence security is achieved by building on exact geometry kernels and the extensive use of program checking. The LEDA system is by now used in more than 1500 academic and research sites world-wide for a wide variety of applications ranging from computer-aided design, and computational biology to transportation planning and VLSI-design; it is also licensed to more than 300 companies through Algorithmic Solutions Software GmbH, of which Kurt and Stefan are co-founders.

LEDA is not only a widely used. It is also a model for later efforts, e.g., for CGAL (Computational Geometry Algorithms Library).

Kurt Mehlhorn has published more than 100 journal articles and he has written five books. The three-volume book Data Structures and Algorithms (Vol I: Sorting and Searching, Vol II: Graph Algorithms and NP-Completeness, Vol III: Multi-dimensional Searching and Computational Geometry) was particularly influential.

