

Plenary Lecture 1

Data Structures for Fast Information Retrieval



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Abstract: Data structures play a significant role in information retrieval usually only the speed and memory consumption are considered. In storing and retrieval sequential, tree based, direct or indexed data structures are mostly used. However they are efficient for some kind of queries, while for other queries they are quite inefficient. Data structures are mostly oriented to textual data, while geometrical data are not often considered. Textual data can be formed by very long strings (the longest word has 189 819 characters - the largest protein – titin; the longest word used in printed text has been 1 909 characters), while geometrical data have “unlimited” interval values (mostly a floating point representation is used) by definition.

We will present selected fundamental data structures and their modifications. We will introduce a new data classification and newly developed data structures convenient for storing and retrieval of both basic data types textual and geometrical as well.

We will present a unifying approach, i.e. for textual and geometrical data, leading to development of new data structures for processing of geometrical and textual large data sets convenient for distributed processing as well. The proposed data structures have been extensively tested for textual and geometrical large data sets and experimental result will be presented.

Brief Biography of the Speaker: Prof. Vaclav Skala is a Full professor of Computer Science at the University of West Bohemia, Plzen and VSB-Technical University Ostrava, Czech Republic. He received his Ing. (equivalent of MSc.) degree in 1975 from the Institute of Technology in Plzen and CSc. (equivalent of Ph.D.) degree from the Czech Technical University in Prague in 1981. In 1996 he became a full professor in Computer Science. In 1997 the Center of Computer Graphics and Visualization (CCGV) was formally established and since then he is the Head of the CCGV in Plzen (<http://Graphics.zcu.cz>).

Prof.Vaclav Skala is a member of editorial of The Visual Computer (Springer), Computers and Graphics (Elsevier), Machine Graphics and Vision (Polish Academy of Sciences) and the Editor in Chief of the Journal of WSCG. He is a member of several international program committees of prestigious conferences and workshops. He is a member of ACM SIGGRAPH, IEEE and Eurographics Association.

Prof.Vaclav Skala has published over 200 research papers in scientific journal and at international conferences. His current research interests are computer graphics, visualization and mathematics, especially geometrical algebra, algorithms and data structures.

Details can be found at <http://www.VaclavSkala.eu>