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# BIOSTATISTICS AND BIOINFORMATICS

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### **Multi-stage optimization of decision trees: Two applications**

Multi-stage optimization of decision trees is one of the extensions of dynamic programming. It allows us to optimize decision trees sequentially relative to a number of cost functions. We will discuss two applications of this technique: finding of minimum average depth of a decision tree for sorting eight elements and creation of an algorithm for reduct minimization. The question about minimum average depth of a decision tree for sorting of eight elements was open since 1968 and was considered by D Knuth in his famous book *The Art of Computer Programming*, Volume 3, Sorting and Searching. Reduct is a minimal set of conditional attributes in a decision table which gives the same information about decision attribute as the whole set of conditional attributes. The problem of reduct minimization is closely connected with the feature selection. The end of the presentation is devoted to the introduction to KAUST.

### **Biography**

Mikhail Moshkov is Professor in the CEMSE Division at King Abdullah University of Science and Technology, Saudi Arabia since October 1, 2008. He has earned his Master's degree from Nizhni Novgorod State University, received his Doctorate from Saratov State University, and habilitation from Moscow State University. From 1977 to 2004, He was with Nizhni Novgorod State University. Since 2003, he has worked in Poland in the Institute of Computer Science, University of Silesia, and since 2006, also in the Katowice Institute of Information Technologies. His main areas of research are complexity of algorithms, combinatorial optimization, and data mining. He is the author or coauthor of five research monographs published by Springer.

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