

Preface

This special issue is dedicated to Professor Hoang Tuy on the occasion of his 70th birthday. Professor Hoang Tuy is the founder of the deterministic approaches for solving nonconvex minimization problems, the current mainstream of global optimization.

He was born in Vietnam in 1927 and obtained Ph. D. in mathematics from Moscow State University in 1959. He served as a professor of mathematics of Hanoi University from 1960 to 1968 and has been a professor (1969 – present) and the director (1980 – 1990) of the Institute of Mathematics at Hanoi.

In 1964, he published a path-breaking paper on concave minimization, in which he introduced the idea of concavity cut (or Tuy’s cutting plane) and conical partitioning. This paper motivated many researchers to study these ideas in detail. For example, Tuy’s cut was applied to 0–1 integer programming problems under the name of intersection cut.

Unfortunately, however these efforts were not very successful in solving real world problems until mid 1980’s, when we experienced a dramatic progress in computer technologies. Since then, he became the leader of our emerging field “global optimization”. One year after we started the *Journal of Global Optimization*, the book “*Global Optimization: Deterministic Approaches*”, coauthored by R. Horst was published, which turned out to be the fundamental textbook in our field.

Professor Tuy’s achievements encompass concave programming, d.c. programming, monotonic programming and all aspects of deterministic global optimization methods and their applications. He published almost one hundred papers. In addition, he published a number of textbooks and lecture notes.

His activities never diminished and even accelerated in recent years. He always inspired us with new ideas. We very much hope that he will continue to be the leader of our field in many more years to come.

This special issue consists of seven papers. The first paper by A. Bui is concerned with distributed computing systems. The resulting problem is a minimization of the sum of linear fractional functions with a special structure, for which the author derives a closed form of the optimal solution. The paper by H. Benson proposes a new branch and bound algorithm for convex multiplicative programming problems, a very well studied class of nonconvex minimization problems. The paper by P. Apkarian and H. D. Tuan reviews a number of important problems in control theory which can be formulated as concave minimization problems. Next, M. Porembski proposes a decomposition cut, another improvement of convexity cut of Tuy.

The last three papers are concerned with special purpose algorithms for structured nonconvex problems. The paper by T. Kuno discusses a minimal rank-two cost path problem and the paper by H. Konno and N. Abe proposes an algorithm for minimizing the sum of three linear fractional functions. Finally, the paper by X. Liu et al. discusses a new heuristic algorithm for linear multiplicative programming problems.

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