"ON THE SHOULDERS OF GIANTS"
A BRIEF EXCURSION INTO THE HISTORY OF
MATHEMATICAL PROGRAMMING\(^1\)

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Abstract

Similar to many mathematical fields also the topic of mathematical programming has its origin in applied problems. But, in contrast to other branches of mathematics, we don’t have to dig too deeply into the past centuries to find their roots. The historical tree of mathematical programming, starting from its conceptual roots to its present shape, is remarkably short, and to quote ISAACK NEWTON, we can say:

"We are standing on the shoulders of giants".

The goal of this paper is to describe briefly the historical growth of mathematical programming from its beginnings to the seventies of the last century and to review its basic ideas for a broad audience. During this process we will demonstrate that optimization is a natural way of thinking which follows some extremal principles.

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References


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[33] L. Euler, Methodus inveniendi lineas curvas maximae minimae proprietate gaudentes, sive solutio problematis isoperimetrici latissimo sensu accepti, Opera Omnia, Series 1, Volume 24, 1744.


A.D. Ioffe and V.M. Tikhomirov, Theory of Extremum Problems (Nauka, Moscow, 1974). (in Russian)


L.V. Kantorovich, Mathematical Methods for Production Organization and Planning (Leningrad, 1939). (in Russian)

L.V. Kantorovich, On an efficient method for solving some classes of extremum problems, Doklady AN SSSR 28 (1940) 212–215. (in Russian)


L.V. Kantorovich, Functional Analysis (Nauka, Moscow, 1959). (in Russian)

L.V. Kantorovich, Economical Calculation of the Best Utilization of Resources (Moscow, Academy of Sciences, 1960). (in Russian)


W. Karush, Minima of functions of several variables with inequalities as side conditions, MSc Thesis (Univ. of Chicago, 1939).

L. Khachiyan, A polynomial algorithm in linear programming, Doklady AN SSSR 244 (1979) 1093–1096. (in Russian)


[64] T.C. Koopmans, Exchange Ratios between Cargoes on Various Routes (Non-Refrigerated Dry Cargoes), Memorandum for the Combined Shipping Adjustment Board (Washington, D.C., 1942).


"On the Shoulders of Giants" A brief excursion into the ...


G. Tintner, Stochastic linear programming with applications to agricultural economics, 2nd Symp. Linear programming 2 (1955) 197–228.

E.S. Ventzel, Elements of Game Theory (Fizmatgis, Moscow, 1959). (in Russian)


D.B. Yudin and E.G. Golstein, Problems and Methods of Linear Programming (Sov. Radio, Moscow, 1961). (in Russian)


A.P. Yushkevich, History of Mathematics in Russia before 1917 (Nauka Moscow, 1968). (in Russian)


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