A Method of Extracting "Bottleneck" Stations on the Inter-Regional Public Transportation Network

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This study attempts to develop a method for extracting "bottleneck" stations on the inter-regional public transportation network. Investing in these bottleneck stations enables the network to be more convenient. First, a method of extracting the bottleneck stations on the network is formulated based on multi-objective optimization with the genetic algorithm. Second, a system is developed to extract the bottleneck stations automatically and visually. A network outlining the actual inter-regional network in Japan is constructed. The results of numerical experiments on this network suggest that bottleneck stations may be located not only in the metropolitan areas but also in the principal cities in the countryside.