How to uniquely determine your location in a graph?
A metric dimension problem

Rinovia Simanjuntak

Combinatorial Mathematics Research Group

Faculty of Mathematics and Natural Sciences

Institut Teknologi Bandung, Bandung 40132, Indonesia

e-mail: rino@math.itb.ac.id

Abstract

The metric dimension problem was first introduced in 1975 by Slater [4], and independently by Harary and Melter [3] in 1976; however the problem for hypercube was studied (and solved asymptotically) much earlier in 1963 by Erdős and Rényi [2]. A set of vertices S *resolves* a graph G if every vertex is uniquely determined by its vector of distances to the vertices in S. The *metric dimension* of G is the minimum cardinality of a resolving set of G. An analog problem for directed graphs was then considered by Chartrand, Raines and Zhang [1] in 2000.

I this talk I will present a short historical account, known techniques, recent results, and open problems in the area of metric dimension for undirected and directed graphs.

References

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[3] F. Harary, and R.A. Melter, On the metric dimension of a graph, *Ars Combin.* **2** (1976), 191-195.

[4] P.J. Slater, Leaves of trees, *Congr. Numer.* **14** (1975) 549-559.