Chain Graphs and Directed Acyclic Graphs Improved by Equivalence Classes and their Essential Graphs

Angel Garrido

Departamento de Matemáticas Fundamentales

Facultad de Ciencias

UNED, Madrid, Spain

E-mail: agarrido@mat.uned.es

To Prof. Dr. Eng. Neculai Andrei, great mathematician and friend, on his 60th birthday.

Abstract: There exists the possibility to improve the efficiency of Bayesian Network learning procedures, by selecting as search space the equivalence classes of Directed Acyclic Graphs (DAGs), or the more general of Chain Graphs (CGs), and from them we can select an essential graph as representative of each class. Furthermore, we describe and advance some new results, with efficient algebraic tools, as Imsets, Semigraphoids, Matroids and so on.

Keywords: A. I., Graph Theory, Bayesian Networks.