

## PARAMETERIZED DISTRIBUTION GRAPHS

## **Definition**

Let G be a directed graph on  $\{1, \ldots, n\}$ . A parametric distribution graph family (or parametric distribution network family, parameteric conditional distribution network family) is a family of conditional distribution networks  $\{G, \{g_i^{(\theta)}\}_{i=1}^n\}_{\theta \in \Theta}$ . We call the index set  $\Theta$  the parameter set. G does not depend on the parameters.

In the case that  $pa_i = \emptyset$  in G,  $\{g_i^{(\theta)}\}_{\theta}$  is a parametric distribution family on  $A_i$  and in the case that  $pa_i \neq \emptyset$ ,  $\{g_i^{(\theta)}\}_{\theta}$  is a parametric conditional distribution family on  $A_i$  from  $\prod_{j \in pa_i} A_j$  (for both these terms, see Parameterized Distributions).

A parametric distribution network family is *functionally parameteriz-able* if each of the conditionals is functionally parameterizable (again, see Parameterized Distributions).

