Definition

Let G be a directed graph on $\{1, \ldots, n\}$. A *parametric distribution graph family* (or *parametric distribution network familiy, 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 Θ the *parameter set*. G does not depend on the parameters.

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

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