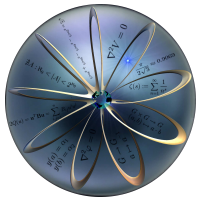

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system model

Canonical name	SystemModel
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Let $t = 1, 2, \ldots$ denote discrete time instants. By a *system model* we mean a mathematical model defined by a conditional probability density function $f(y_t|u_t, d(t-1))$ where

y_t is the system output in time t,

u_t is the system input and

$d(t-1)$ denotes the sequence of data $d_0, \ldots, d_{t-1}$ where $d_t = (u_t, y_t)$.

Such a system has time-invariant (constant) parameters. If the model parameters are unknown (uncertain, variable), we introduce the definition in the form $f(y_t|u_t, d(t-1), \theta)$. Here, θ is a (possibly multi-dimensional) parameter.

References

[1] Peterka, V., *Bayesian Approach to System Identification*, in *Trends and Progress in System Identification*, P. Ekhoff, Ed., pp. 239-304. Pergamon Press, Oxford, 1981