TYPES OF MODEL

Static Modeling

Dynamic Modeling

dependent on time

Variable-based

Template Based

Def: A single, compact model that provides a 'template' for an entire class of distributions from the same type

1] Repetition in time series

2] Duplication in object relationships

Temporal Model

Def: The language of dynamic Bayesian networks allows us to construct a single compact model that captures the properties of the system dynamics, and to produce distributions over different trajectories

System State

Dfn: We are interested in reasoning about the state of the world as it evolves over time. We can model such settings in terms of a state, whose value at time t is a snapshot of the relevant attributes (hidden or observed) of the system at time t.

Markovian System

Dfn: A Markov model is a finite state machine with N distinct states begin at (t = 1 i.e. initial state) also called finite or discrete model

HMM

Subtopic 1

Subtopic 2

Subtopic 3

State Observation Model

Dfn: We view the system as evolving naturally on its own, with our observations of it occurring in a separate process. This view separates out the system dynamics from our observation model, allowing us to consider each of them separately.

Assumptions (2): 1] The state variables evolve in a Markovian way (future state is independent of past given present state)

Directed Probabilistic Models for Object-Relational Domains

Plate model

Probabilistic Relational

Template variable

Def: They are instantiated at different points in time t and each $X(i)^t$ is a variable that takes a value in Val(X).