
Continuous-time Markov chains (CTMC)
first def
continuous stochastic process with Markov property (homogeneous transition function)
second def
exponential waiting/holding time at each state
embedded discrete-time MC to jump to a new state
birth and death process
birth rates and death rates
formulate it as a CTMC
examples
transition probability function
C-K equations (matrix notation)
transition rate matrix / generator
derivative at t=0
how to compute it?
limiting distributions
existence
irreducible and positive recurrent
computation
balanced equations
example
birth and death process
compute fraction of customers lost
PASTA principle
first step analysis
duration time for birth and death process