Parallel computing for Markov chains with islands and ports

Amod Basnet

Preprint no. 2017-02

Abstract

We present recursive algorithms to calculate invariant distributions and fundamental matrices of Markov Chains specified by the "Islands & Ports" (IP) model. The state space of the IP model can be partitioned into "islands" and "ports". An island is a group of states with potentially many connections inside of the island but a relatively small number of connections between islands. The states connecting different islands are called "ports". Our algorithm is developed in the framework of "state reduction approach", but the special structure of the state space allows computations to be performed in parallel.

Department of Mathematics, UNC Charlotte, Charlotte, NC 28223