**Algorithm 1** Sweep-based action selection

**Input**: initial state , decision threshold , transition model , value model

// A. Initialize sweeps, one per each action

1. **for** **do**
2. // Predicted state upon executing action
3. // Initial evidence for reward upon executing action
4. **end**
5. // decision certainty before starting the sweeps.

// B. Deepen the sweep until insufficient decision certainty

1. **while** , **do**
2. **for** **do** // For each sweep simulate one transition step
3. // Most-valuable transition
4. //Add evidence for the value of action
5. **end**
6. // decision certainty after making a transition
7. **end**

// C. Select the most valuable action.