Artificial Intelligence Programming

Decision Making under Uncertainty

Chris Brooks

Department of Computer Science

University of San Francisco

Making decisions

- At this point, we know how to describe the probability of events occuring.
  - Or states being reached, in agent terms.
- Knowing the probabilities of events is only part of the battle.
- Agents are really interested in maximizing performance.
- Often, performance can be captured by *utility*.
- Utility indicates the relative value of a state.

Types of decision-making problems

- Single-agent, deterministic, full information, episodic
  - We've done this with the reflex agent
- Single-agent, deterministic, full information, sequential
  - We can use search here.
- Single-agent, stochastic, partial information, episodic
- Single-agent, stochastic, partial information, sequential
- multiple-agent, deterministic, full information, episodic