In spite of the difficulty of knowing exactly where the environment ends and the agent begins in some cases, it is useful to be able to classify AI environments because it can predict how difficult the task of the AI will be. Russell and Norvig (2009) introduce seven ways to classify AI environments, which can be remembered with the mnemonic "D-SOAKED." They are: Deterministicness (deterministic or stochastic or Non-deterministic): An environment is deterministic if the next state is perfectly predictable given knowledge of the previous state and the agent's action. Staticness (static or dynamic): Static environments do not change while the agent deliberates. Observability (full or partial): A fully observable environment is one in which the agent has access to all information in the environment relevant to its task. Agency (single or multiple): If there is at least one other agent in the environment, it is a multi-agent environment. Other agents might be apathetic, cooperative, or competitive. Knowledge (known or unknown): An environment is considered to be "known" if the agent understands the laws that govern the environment's behavior. For example, in chess, the agent would know that when a piece is "taken" it is removed from the game. On a street, the agent might know that when it rains, the streets get slippery. Episodicness (episodic or sequential): Sequential environments require memory of past actions to determine the next best action. Episodic environments are a series of one-shot actions, and only the current (or recent) percept is relevant. An AI that looks at radiology images to determine if there is a sickness is an example of an episodic environment. One image has nothing to do with the next. Discreteness (discrete or continuous or ): A discrete environment has fixed locations or time intervals. A continuous environment could be measured quantitatively to any level of precision. Simulated : a separate program is used to simulate an environment, feed percepts to agents, evaluate performance, etc. In each case, the job of the AI (and for the programmer making the AI) is easier if the first of the two options is the best descriptor for each category. That is, an AI that has a much more difficult job if it works in an environment that is stochastic, dynamic, partially observable, multi-agent, unknown, sequential, and continuous.