

An Overview of Reinforcement Learning

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Reinforcement Learning (RL) refers to sequential decision-making with incomplete and/or uncertain information. Some applications of RL include: Path-planning in an unknown environment, a standard problem in autonomous navigation; and control of imperfectly modelled systems such as chemical reactors. The RL formalism can also be used for problems where the information is "complete" but is too massive to be handled. Examples include playing games such as Chess or Blackjack, whose size makes it impractical to solve them by "enumeration of all possibilities."

In this talk I will introduce the standard RL paradigm, which is stated in terms of states, actions and rewards. Eventually this requires the user to solve a "fixed-point problem." Even within this limited setting, the rich structure of RL can be brought out.