Research Review

Introduction

This paper describes a brief history of AI planning and search. An attempt is made to describe how these fields developed and how they are related.

History of AI

The idea of artificial intelligence has been around since antiquity, with myth and stories of artificial beings endowed with intelligence or consciousness by master craftsmen. The modern AI field started with a workshop held on campus of Dartmouth College during the summer of 1956. But the work was limited due to lack of decent hardware needed for the computation. In 20th century as the cost of computing went down and use of machine learning increased in industry and academia, AI research received new momentum. In 1991 DART scheduling application deployed in the first Gulf War paid back DARPA's investment of 30 years in AI research. Since then new research publications started happening in intelligent tutoring, multi agent planning, uncertain reasoning, data mining, natural language understanding etc. 21st century too the work of AI to mainstream with creation of AI based products like robotic vacuum cleaner by iRobot's Roomba, NASA's space exploring robot, Google's self-driving car, Microsoft's Xbox 360 Kinect that can track human body movement, IBM's Watson that can beat human's in jeopardy game and Google DeepMind's AlphaGo that defected human Go champions.

History of AI Planning

Planning or automated planning and scheduling is one of the major fields of AI. The first major planning system was called STRIPS that used an action language by the same name, which originated from robotic research by Stanford Research Institute. Later STRIPS language was improved with Action Description Language (ADL) and Planning Domain Definition Language (PDDL). Today PDDL is accepted as the international standard of planning language.

History of AI Search

Many AI programs involve finding a solution by making step by step move by searching through all possibilities and then backtracking upon reaching a dead end. Newell and Simon published one of the earliest paper in this field that described an algorithm called "General Problem Solver" in 1959. Judea Pearl published a book in 1988 that brought probability and decision theory into AI, which added new tools to AI like Bayesian networks, hidden Markov models, information theory, stochastic modeling and classical optimization.