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July 16, 2017

Developments in the Field of AI Planning and Search

The foundations for Artificial Intelligence were lay back in the time of Aristotle, however it took nearly 2300 years before those concepts were implemented in a GPS, with something called Regression Planning.

It was really until the late 1950's and 1960's that things started to develop.

Shakey (1966– 1972), the first robot to combine perception, world-modeling, planning, and learning. Applications of logic included Cordell Green's question-answering and planning systems (Green, 1969b) and the Shakey robotics project at the Stanford Research Institute

In 1974 Earl Sacerdoti developed one of the first planning programs, ABSTRIPS and developed techniques of hierarchical planning.

Logistics planning: During the Persian Gulf crisis of 1991, U.S. forces deployed a Dynamic Analysis and Replanning Tool, DART (Cross and Walker, 1994), to do automated logistics planning and scheduling for transportation. This involved up to 50,000 vehicles, cargo, and people at a time, and had to account for starting points, destinations, routes, and conflict resolution among all parameters. The AI planning techniques generated in hours a plan that would have taken weeks with older methods. The Defense Advanced Research Project Agency (DARPA) stated that this single application more than paid back DARPA's 30-year investment in AI.

Research on AI planning had concentrated on the so-called non-linear or partial-order planning algorithms until the introduction of the Graphplan algorithm in 1995 by Blum and Furst [1997]. This brought planning performance to levels never seen in earlier planners.

The introduction of Graphplan led the research community to look at techniques outside the traditional AI toolbox.

Various subfields of AI have held contests by defining a standard task and inviting researchers to do their best. Examples include the DARPA Grand Challenge for robotic cars, The International Planning Competition, the Robocup robotic soccer league, the TREC information retrieval event, and contests in machine translation, speech recognition.

Certainly the reduction of cost of memory, the increase in computer power have made possible the use of some of these techniques that until a few years ago were simply impossible.

More recently, large corporations like Google, Facebook and other have taken a huge interest in the field of Artificial Intelligence and for that reason the amount of money dedicated to the field has grown in exponential proportions, and has also peeked the curiosity of some of the brightest minds.

I would expect that in the next ten years the field of planning and searching will be almost unrecognizable… algorithms will be developed and polished to reach incredible heights.

Buchanan, Bruce G. *A (Very) Brief History of Artificial Intelligence*. AI Magazine 26(4): Winter 2005, 53–60.

Russell, S, and P Norvig. Artificial Intelligence: A Modern Approach,Chapter 10: Classical Planning

Shakey in Computer History Museum: http://www.computerhistory.org/revolution/artificial-intelligence-robotics/13/289

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