

Deep Blue Summary

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Deep Blue is a chess machine that defeat the world chess master champion in 1997; this machine was an effort of many years and multiple features that contribute to its success.

Most of the techniques used on Deep Blue development include a hardware and software mixing to accomplish its commitment. On the hardware side, there were two main features that support a better make decision on the game movements; which are the chess chip that generates attacking and evasion moves simultaneously in a reasonable order and a minimum latency with support on execution of the evaluation function and on the search control to improve the alpha-beta search. The second hardware feature was the infrastructure to generate a parallel search system, which improves the search position time; using multiple chess chips that can communicate its results on each node to generate a quick result.

On the other hand; on the software side, Deep Blue used most of the commons techniques on adversarial games; such as quiescence search, iterative deepening, transposition tables, which is a really good option to improve the position result but it has a time limitation on the game; minmax with NegaScout which is an algorithm that can be faster than alpha-beta pruning when there is a good move ordering and this feature is gotten by the search control which is supported on the hardware side. At the same time the combination of “fast and slow” evaluation function determined a better move position on the game. Finally the open book was a key feature; because it has the best positions from many chess masters that supports to identify patterns on the game that generates an optimal strategy on the machine moves.

The success of Deep Blue gave us a big open area of improvements on the AI field; even if the machine could defeat the world chess champion; there are too much to develop and tune.

References

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