DEEP BLUE

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- Goals

The paper provides the detail outline of how Deep Blue chess system is developed at IBM® Research during the mid-1990s. The Goal is to build chessboard with speed and power than ever before. Solving the "computer chess problem involved winning a match against the human World Chess Champion under regulation time control. The games had to play out no faster than three minutes per move. Both conditions—using regulation time control and winning a match.

- Techniques introduced

In 1989–90, part of the Deep Thought moved to the IBM T.J. Watson Research Center to continue the effort to build a world-class chess machine. Deep Thought 2, aka Deep Blue prototype, was the first result of this effort. Although the primary purpose of the system was as an intermediate stepping stone to Deep Blue. As part of the following techniques are introduced

1. **Medium-scale multiprocessing**

   Compare to Deep thought which had 2 processers, but Deep Thought 2 increased up to 24 chess engines.

2. **Enhanced evaluation hardware**

   The Deep Thought 2 evaluation hardware used larger RAMs and was able to include a few additional features in the evaluation function. For example:

   The Deep Thought 2 hardware was not able to recognize "bishops of opposite color", a feature that chess players know greatly increases the chance for a drawn endgame. In order to address this (and other similar problems), the Deep Thought 2 system implemented a software "band-aid" mechanism.

3. **Improved search software.**

   The search software was rewritten entirely for Deep Thought 2, and was designed to deal better with the parallel search, as well as implement a number of new search extension ideas.

4. **Extended book**

The extended book allowed Deep Thought 2 to make reasonable opening moves even in the absence of an opening book.

There are other hardware and software components are improved and introduced in Deep Thought 2.

- Result

The paper shows that, the deep blue not only playing chess also improved the other hardware and software areas

1. The addition of pruning mechanisms to Deep Blue might have significantly improved the search.
2. The 1997 version of Deep Blue played six games, all against Kasparov. Deep Blue won the match by the score of 3.5 to 2.5.
3. Improved the computing power on the computer world