“Deep Blue” Research Review

A brief summary of the paper's goals or techniques introduced (if any).

Deep Blue is an Artificially Intelligent chess machine developed by IBM which beat the World Chess Champion of that time period. The paper’s goals were to describe the Deep Blue system. This was the first system to beat a Grand Champion chess player, and was a multi-year effort which was preceded by another machine, Deep Blue I, which lost to the Grand Champion Deep Blue II successfully beat. Both systems used a single-chip chess move generator. Deep Blue II had double the number of chess chips as Deep Blue I, efficiency improvements to increase the number of positions evaluated per second, and the development of software tools for debugging and match preparation.

A brief summary of the paper's results (if any).

Deep Blue gave rise to many new and unusual challenges previously unknown to the AI and research community. Large search capacity, hardware evaluation, hybrid software and hardware searches, and massively parallel search to name a few. The chess chip used to help tackle these items consisted of three distinct parts: move generator, evaluation function, and search control. The opening book for Deep Blue was made by hand and the moves were chosen to emphasize plays which Deep Blue played well. Deep Blue also had a Extended Book, a mechanism which allowed a large Grandmaster game database to influence play, and an Endgame Database which contained all chess positions with 5 or less pieces. Deep Blue was able to take the information from all of these sources as input in conjunction with its other evaluation functions to make the best choice for any given move within the chess game. Deep Blue was not perfect, however, and its parallel search efficiency and hardware search and evaluation in particular have been cited as areas with improvement opportunities.