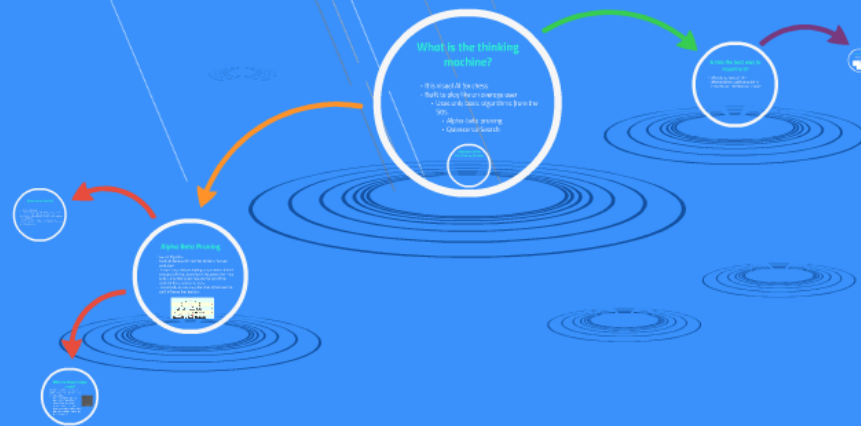
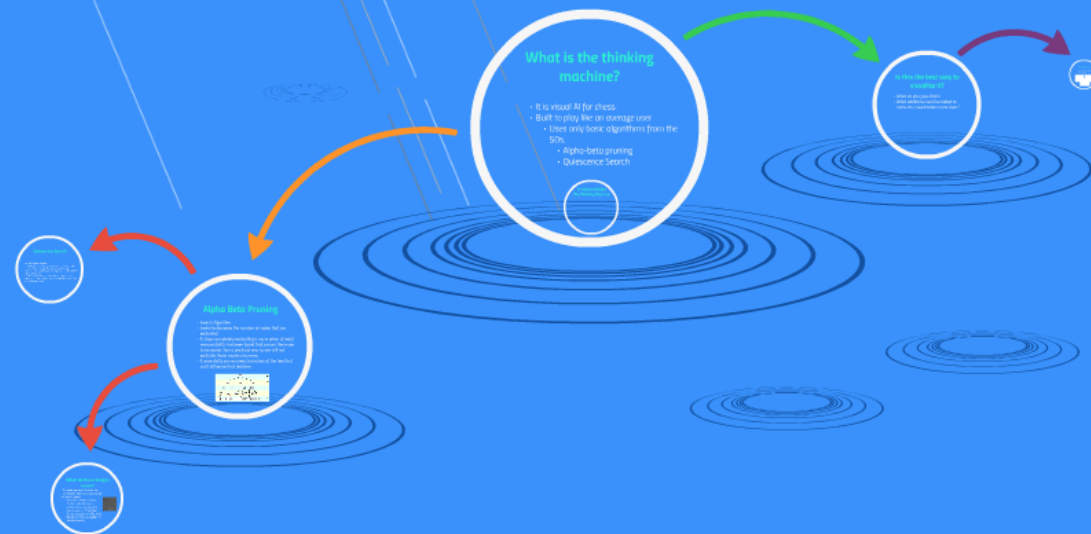


# Thinking Machine



# Thinking Machine



The image features a solid blue background. A large white circle is centered on the page. Inside the circle, the text "Brief Idea Behind The Thinking Machine" is written in a bold, cyan-colored font. The text is arranged in two lines. The background also contains several horizontal lines of varying shades of blue, some of which are slightly wavy. There are also several thin, diagonal lines in shades of brown and white scattered across the scene.

# **Brief Idea Behind The Thinking Machine**

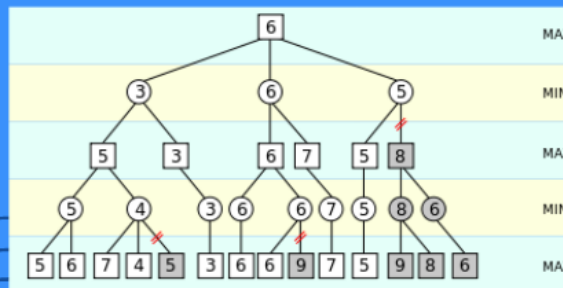
# What is the thinking machine?

- It is visual AI for chess.
- Built to play like an average user
  - Uses only basic algorithms from the 50s.
    - Alpha-beta pruning
    - Quiescence Search

Brief Idea Behind  
The Thinking Machine

# Alpha Beta Pruning

- Search Algorithm
- Seeks to decrease the number of nodes that are evaluated
- It stops completely evaluating a move when at least one possibility has been found that proves the move to be worse than a previous one. So we will not evaluate those moves any more.
- It essentially prunes away branches of the tree that can't influence final decision.



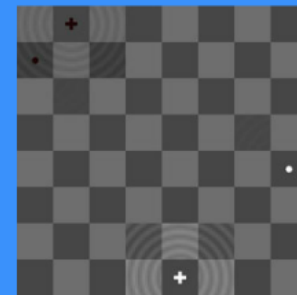
# Quiescence Search

- remedy for horizon problem
  - Computer only searches certain number of moves ahead, so something detrimentally could happen afterwards
- Humans have intuition to abandon a bad move and this algorithm tries to imitate that
- It searches for "interesting" moves (based on the evaluate function) and searches them at greater depths than "quiet" (lower evaluation score) moves.

## What do these images mean?

The pulse you see is to show the influence (number of unique moves) of various pieces.

- When the machine plays it displays potential moves, orange moves are black and green are white. The lighter moves are good for white, while the darker moves are better for black (computer).

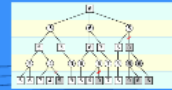


### Quiescence Search

- Works for the same problem
- Consider any position that is a number of moves ahead of searching for the best possible move
- It works best when you are in a position that is not a terminal position
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### Alpha Beta Pruning

- Search Algorithm
- Seeks to decrease the number of nodes that are evaluated
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- It essentially prunes away branches of the tree that can't influence final decision.



### What do these images mean?

The picture you see is to show the relative number of moves ahead of various pieces.

- When the machine plays it
- Shows potential moves
- Orange moves are black and green are white. The lighter moves are good for white, while the darker moves are better for black (computer).





# Is this the best way to visualize it?

- What do you guys think?
- What additions could be added to make this visualization more clear?

# Thinking Machine 5

- They are currently working on the thinking table (a physical table where two people can play chess)



## What is the thinking machine?

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Brief Idea Behind  
The Thinking Machine

## Is this the best way to visualize it?

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# Thinking Machine

