

Rational AIs

Algorithm Approach

Plato and Descartes

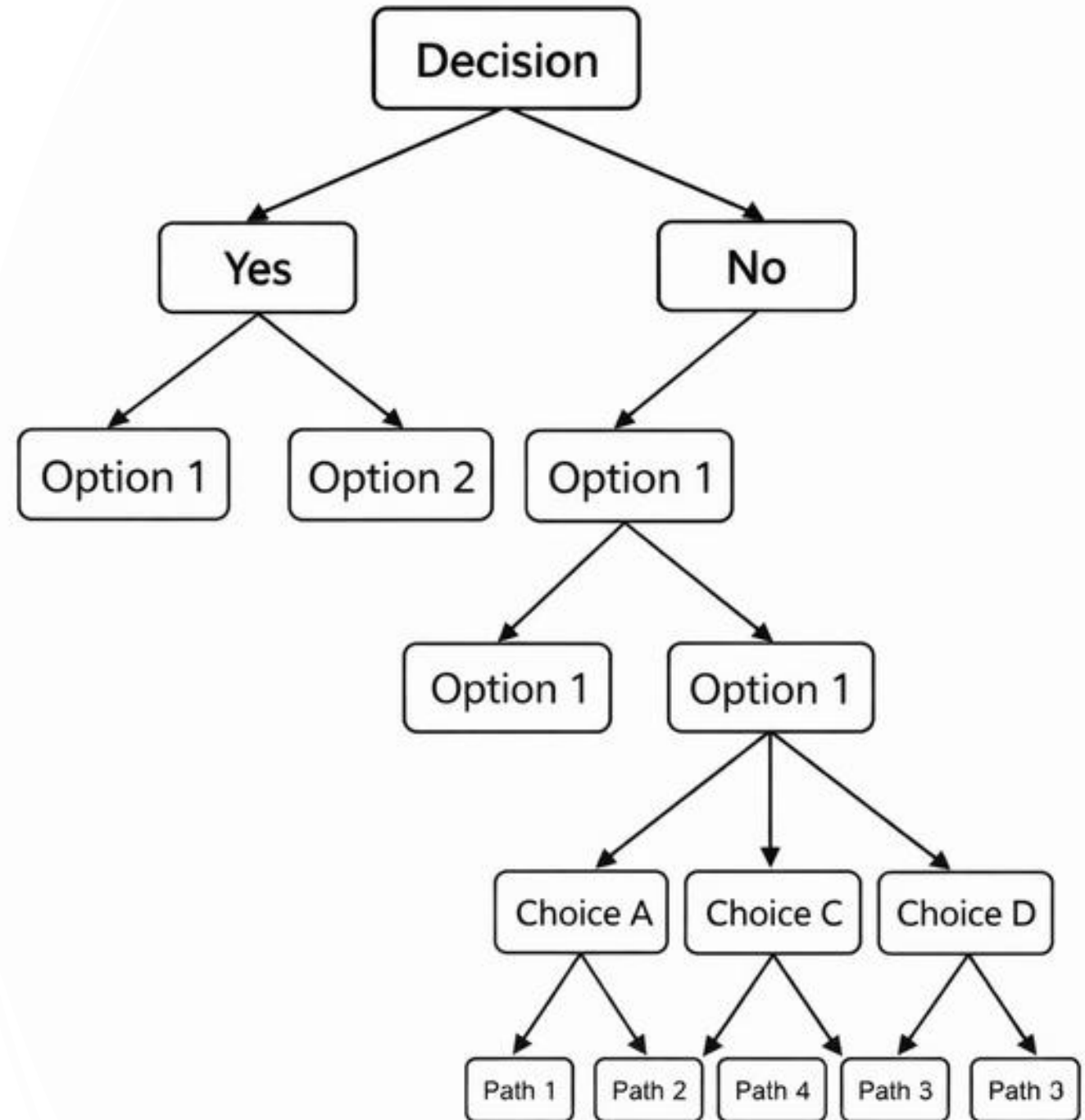
The Theory

Intelligence may
be modeled with
Algorithms

Logic Driven

Expert Systems

- Decision Trees
 - Binary
 - Multiple
- Assumptions
 - Known Factors
 - May be defined and weighted
 - Leverage computer speed



Recognize
these AI's

Credit Scoring

Wordle Bot

Customer Support

May 1977

Deep Blue defeats Chess Grand Master

- Relied on search and logic
- Used brute force search – millions of possible positions per second
- Evaluation functions crafted by chess experts
- Goal to maximize chance of winning

Consider:

- Defined Rules
- Finite space

February 2011

IBM Watson defeats Ken Jennings and Brad Rutter

Jeopardy requires nuanced language skills

Deliberately Ambiguous questions

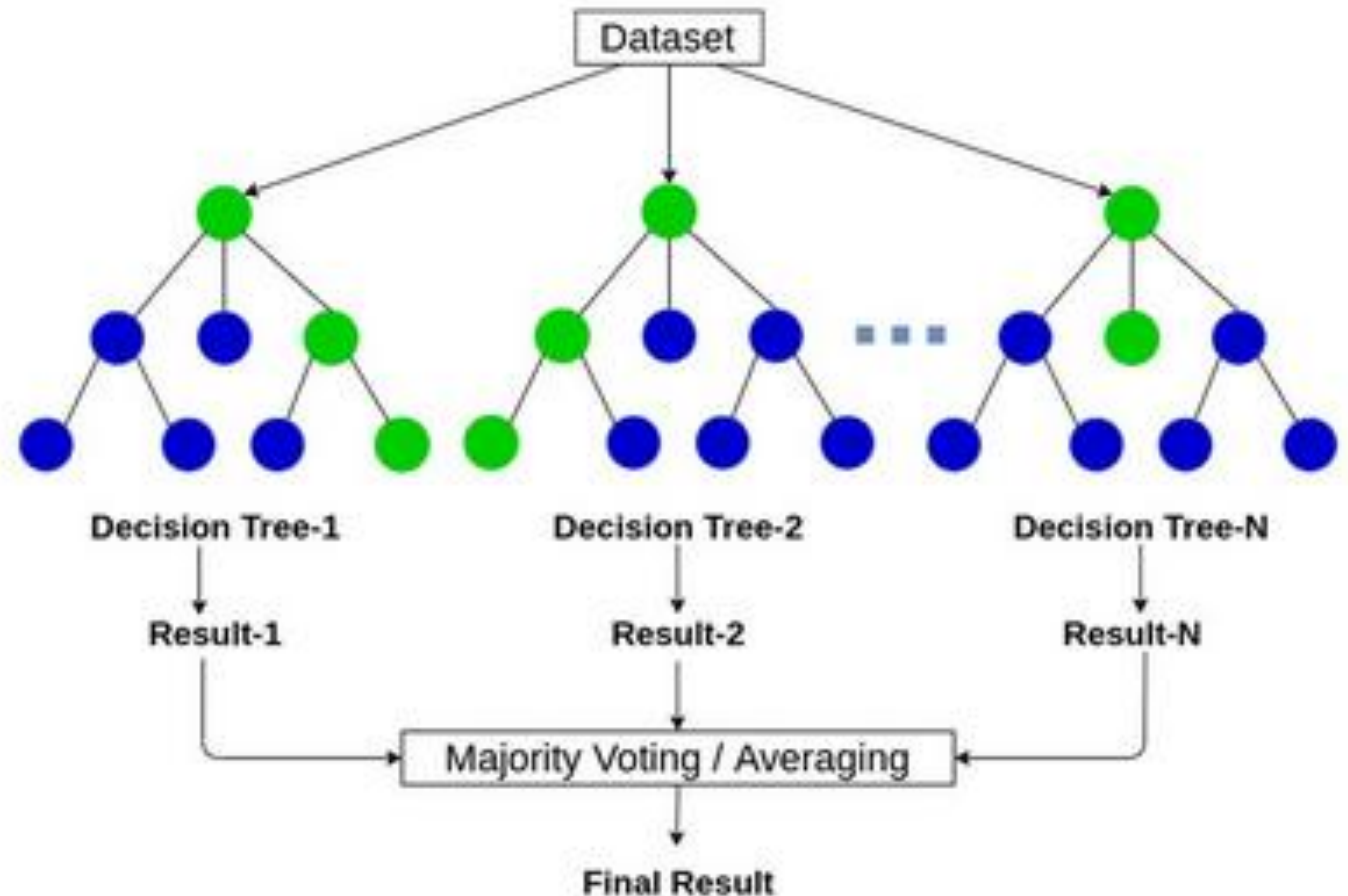
Very quick time frames

Risk Management

A bit more on Rational Models

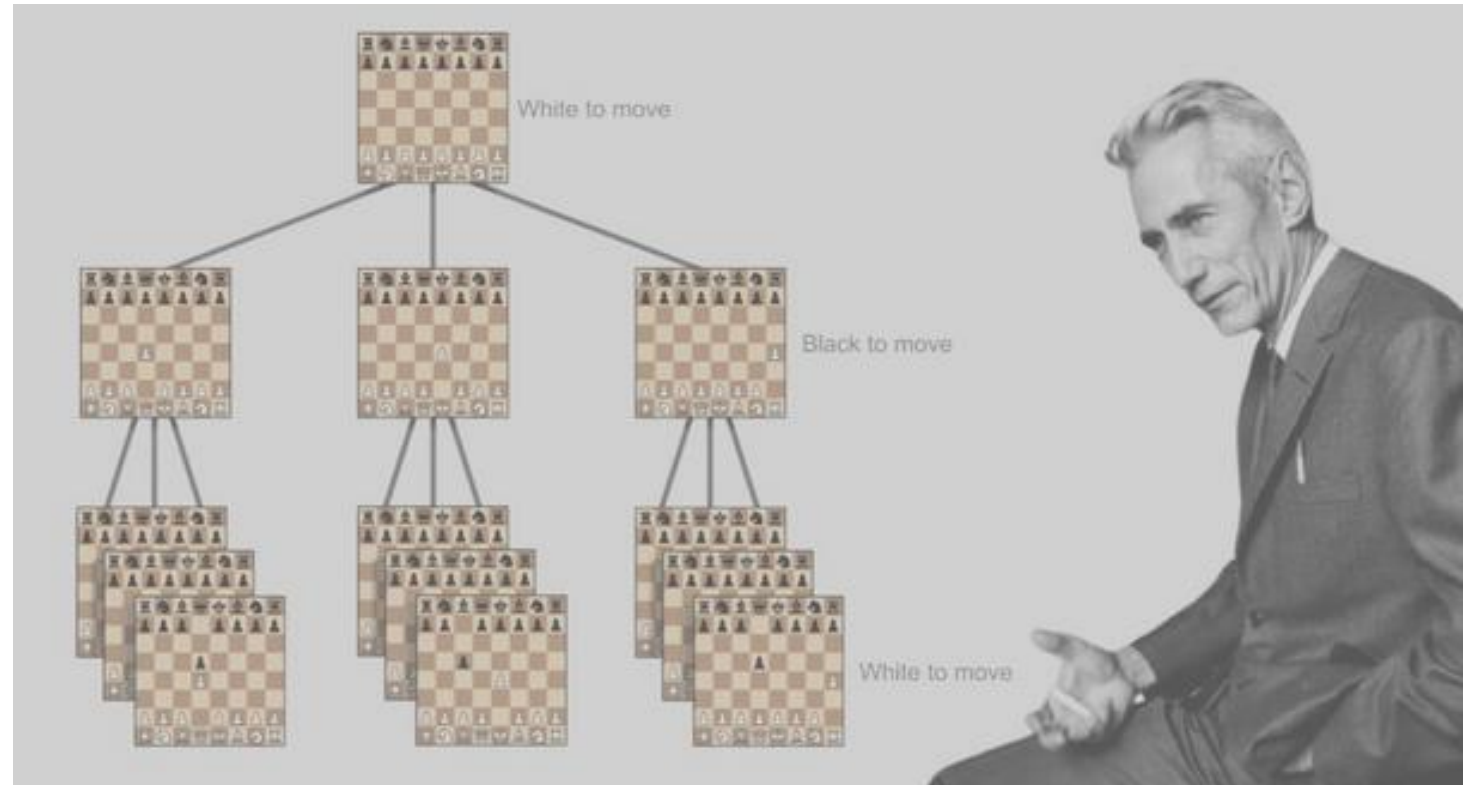
- Decision Trees / Forests
- Advantages
 - Transparent
 - Explainable
- Disadvantages
 - Increasing Complexity
 - Bias (factor weighting)

Random Forest



Nerd Alert

- Claude Shannon
 - Information Theory
October 1948
 - “Hello, Bit”
- Shannon Number
 - The game tree complexity of chess
 - 10^{120} possible games
 - 10^{80} estimated atoms in universe



Hello Bit

- One bit represents the amount of information gained when one of two equally likely possibilities is realized.

AI Winters



Enthusiasm Fades / Investments Fail / Capital Leaves

IBM Watson introduced in 2021
Discontinued in 2022

Different Approaches

Build an
Adult Brain.

Build a
Baby Brain.

Transition

How did you
teach your
children?

How did you
train your
dog?

Let's
Unweave
Further

