

The Double Helix: AI for Simulation & Gaming

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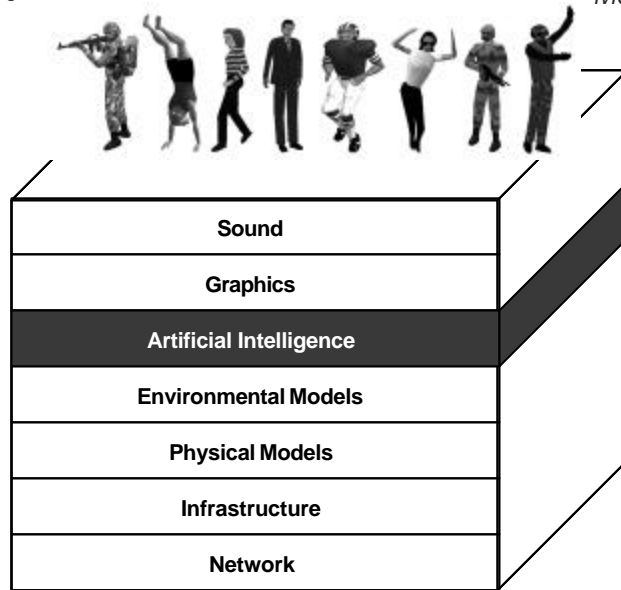
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Simulation = Games = Simulation



Logical Layers of Simulations and Games

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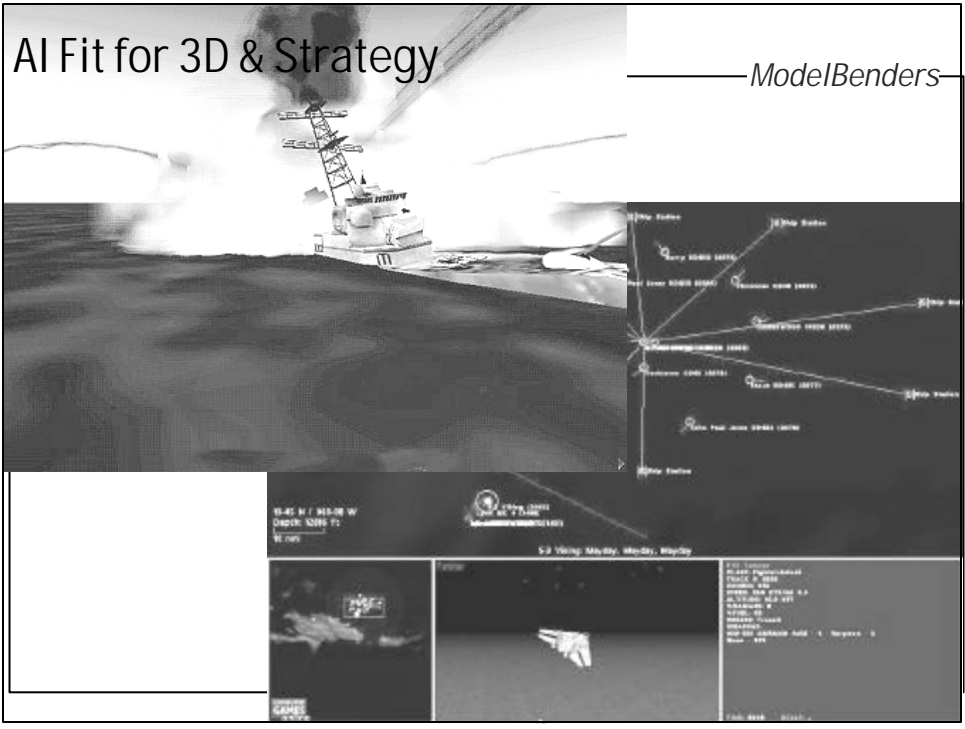
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Artificial Intelligence in Military Simulation

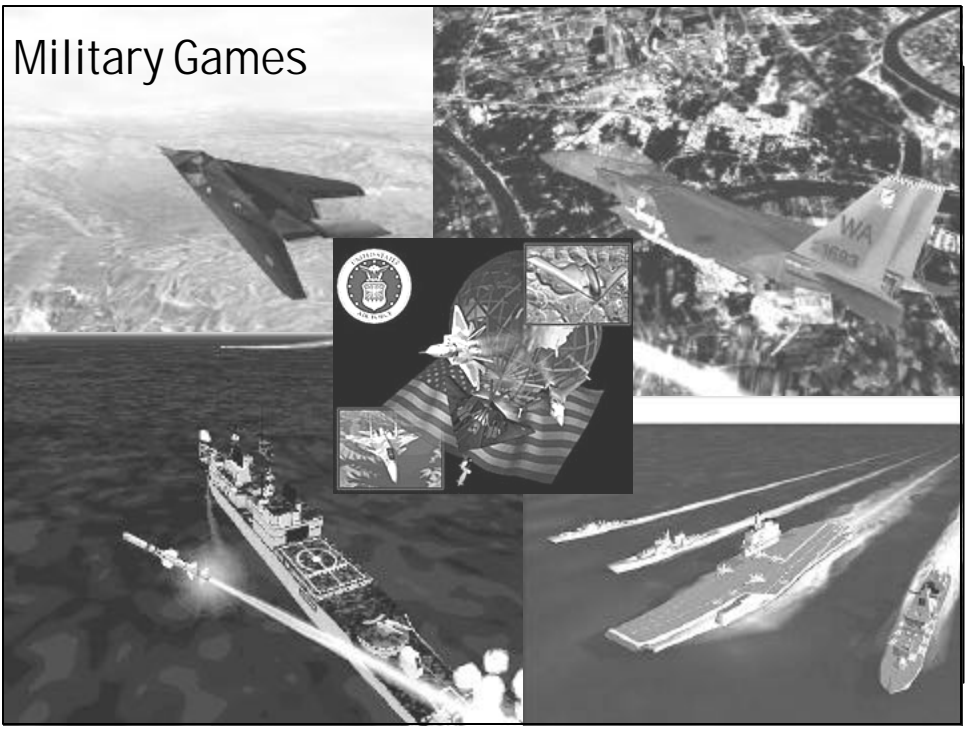


AI Fit for 3D & Strategy

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Military Games



Multiplayer Network Games



Massively Multi-player Games

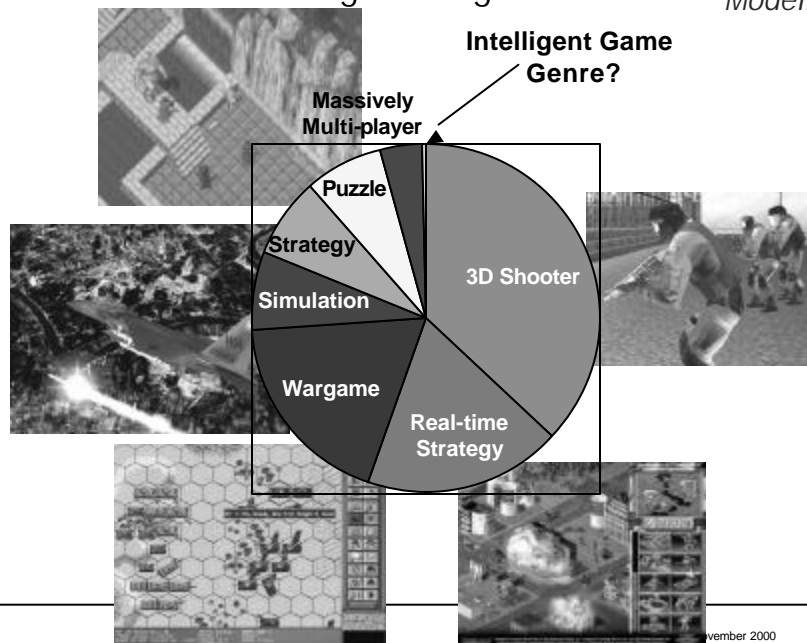


Simulation Gaming

**“How could I make my game better with AI?”
vs.
“What game could I make with better AI?”**

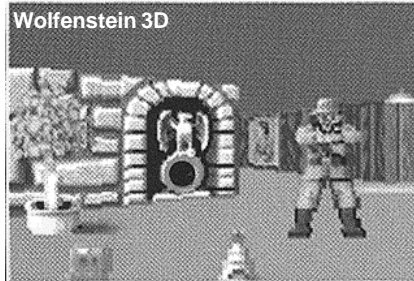


Phil Goetz
“The AI is in the Mail”
Game Developer Magazine
November 2000



Wolfenstein of Artificial Intelligence

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Wolfenstein 3D
You Don't Know Jack
Command & Conquer
Ultima Online
"AI Wonderland"



What will AI Contribute?

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Adaptive Learning

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- **Galapagos**
 - Learn the Hard Way
- **Dogz, Catz**
 - Collect Rules of Behavior
- **Creatures**
 - Run a Circus

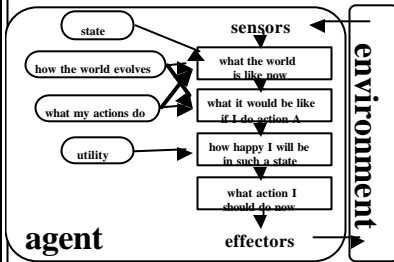


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Intelligent Agents

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■ The Sims

- Work Environment - Create your coworkers and abuse them

■ Traffic Sim

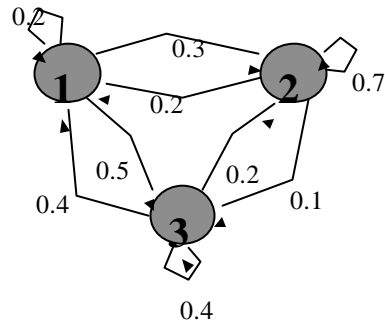
- Model route to work and experiment with it at different commute times/congestion
- Specific cities modeled

■ Negotiation

- Roof Jumper
- Bank Robber
- Nuclear War
- Terrorist

Markov State Transition

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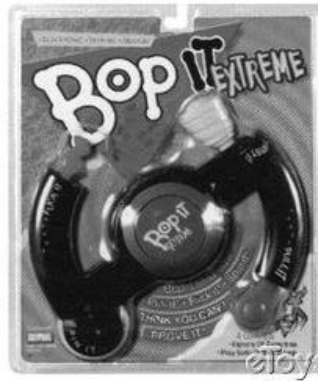
■ Wizard & Bop-It

- Random pattern matching

■ Drunken Driver

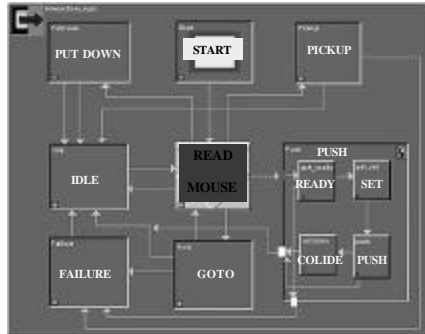
■ Herding Cats

■ Fishing Sim



Finite State Machines

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What new applications?

- Beyond Lego Mindstorm
- Contract for Smart Kn'ex

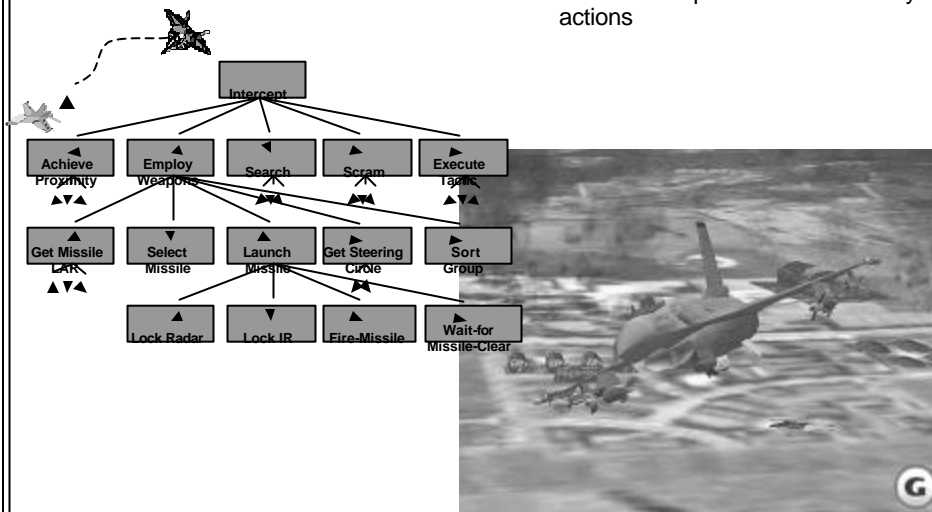


Means Ends Analysis (SOAR)

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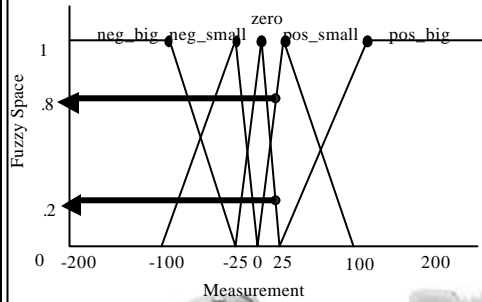
Smarter Falcon 4.0

- Accurate sequences of necessary actions



Fuzzy Space

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What new applications?

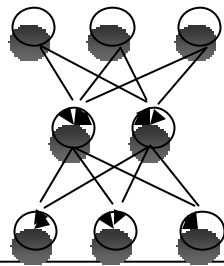
- Furby, Poochi, Techno
- Cybiko Group Puzzles



Neural Networks

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Input



Output

What new applications?

- Networked Palm Pilot Handwriting Detective Game

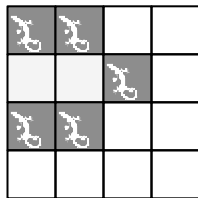
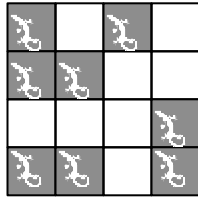


Genetic Binary Organisms

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■ What new applications?

- Modeling the office cubicle environment
- Rumor spreading game



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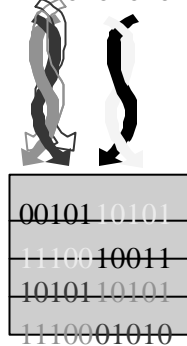
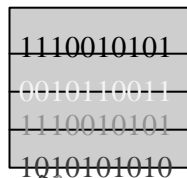
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Genetic Vector Organisms

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■ What new applications?

- Monster Generation (Birth)

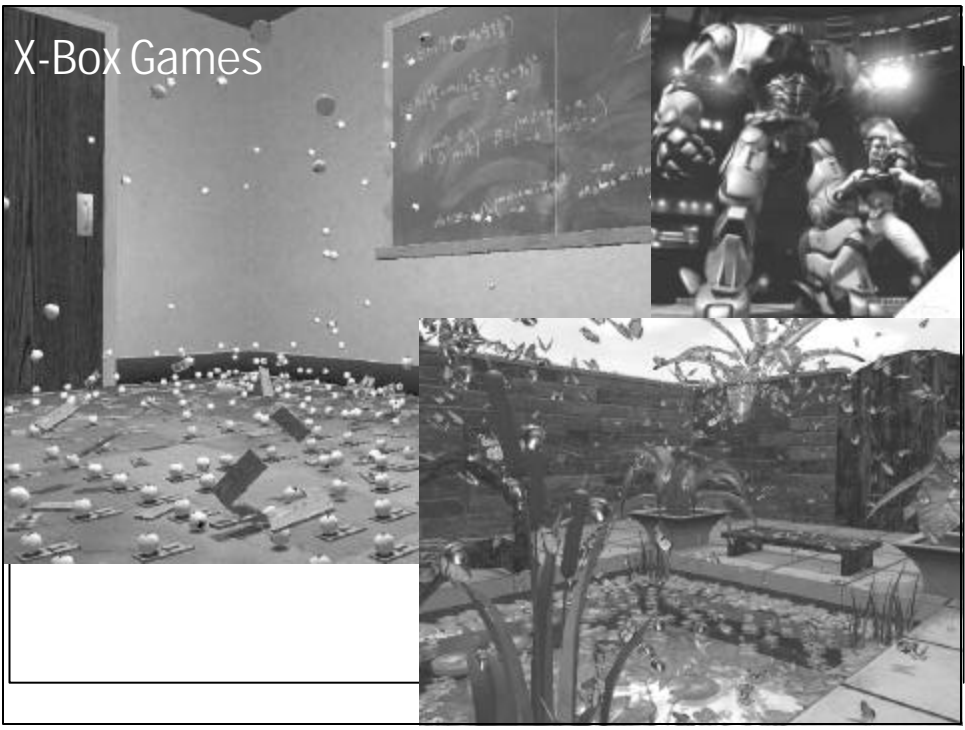
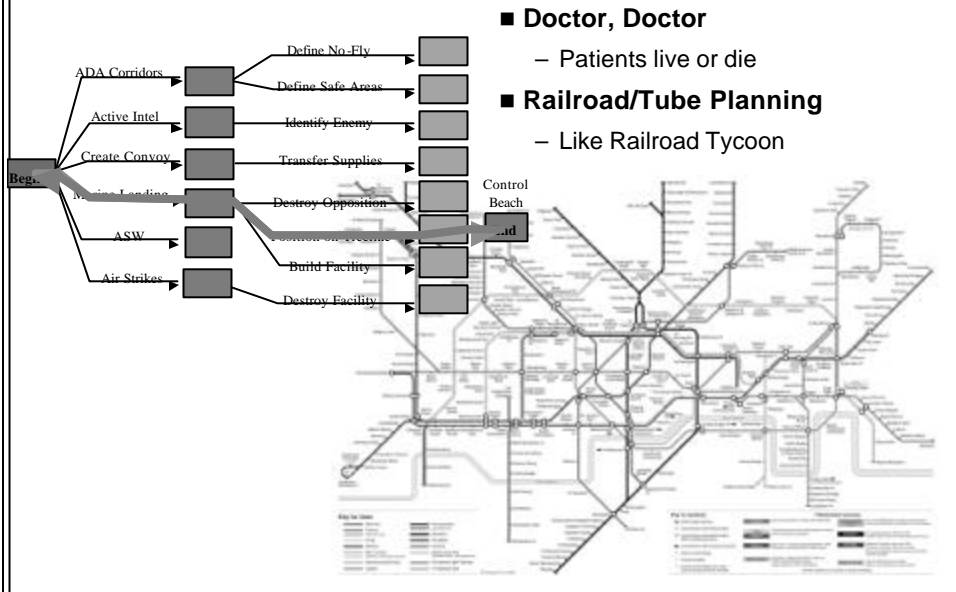


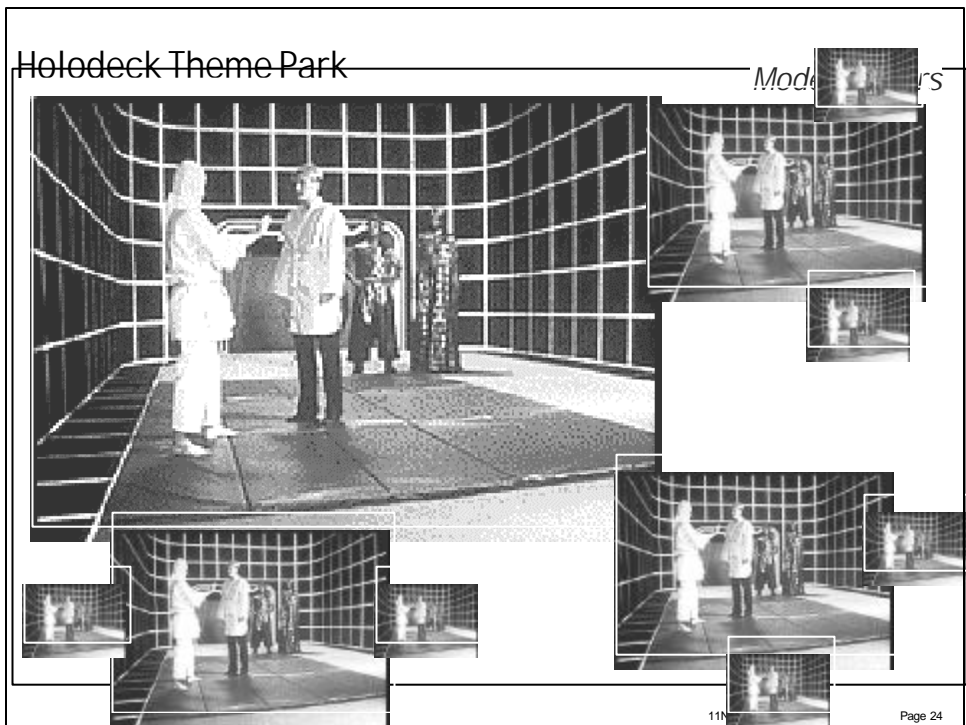
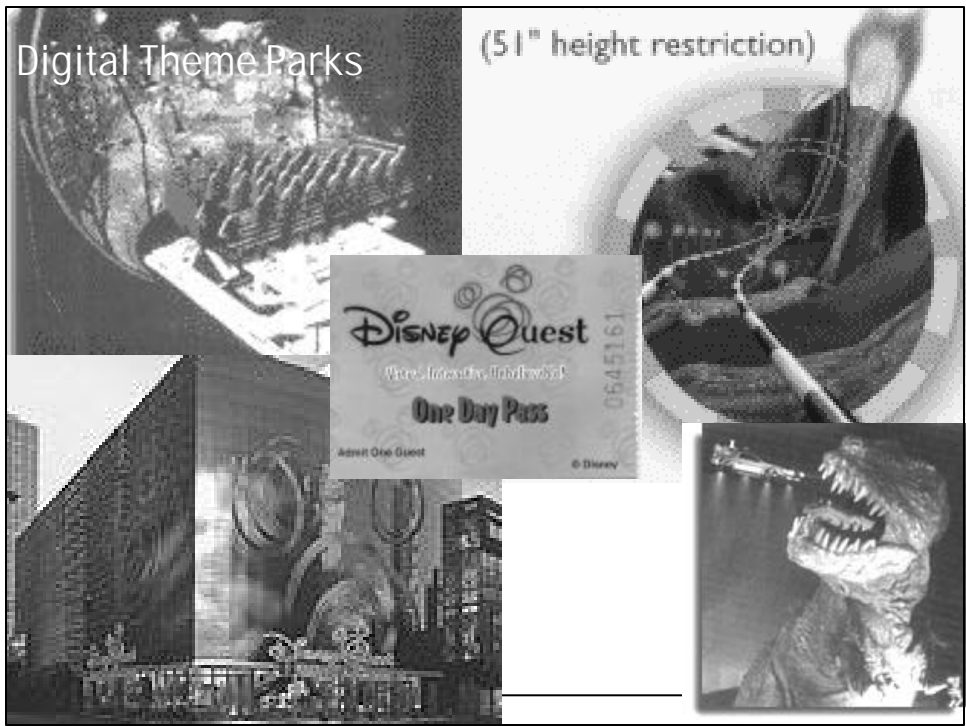
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AI Planning

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The Beginning...