Against Forward Models

expressiveintelligencestudio

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Generalizations Ahead
Forward search is great
MCTS is great
RTS AI is great
Deep Q-Learning is great
Very pragmatic
Very pragmatic boring
Computers beat humans at <game>
Thousands of Computers beat humans at <game> using tons of electricity
And it doesn’t scale
Your Adventure Begins...

Your Four Warriors begin their quest at the entrance to Cioneria, the Dream City. Within sight are many geographical features of this world. It is important to understand the terrain in order to guide your adventure party on its quest.

Castle
The plains of the people within the castle will guide your quest. Use their information wisely.

Town
The townspeople will also assist you on your quest. The use of their SHOPS, INNS, and CLINICS is vital.

Hero
Your adventure party’s lead character.

Grassy Plains
Travel here is unlimited.

Forest
Travel here is limited to foot traffic only.

Port
At port your SHIP can

Ocean
To navigate the

THE MENU
These are the Four Orbs that you must restore:

GOLD
Options that you may select.

Press the START Button to get to this screen!

This area shows how many spells of each level this warrior can use.

THE WEAPON SHOP
Each storekeeper will guide your visit to his store. Point the 'finger' to your choice, then push A to execute. Make as many purchases as you wish before exiting. Push B to cancel.

Welcome to my shop. You wish to make a purchase?

You'd like to buy a rapier?

Who will carry this fine weapon?

Your transaction is completed. Is there anything else?
General game playing

= 

Software model checking?
General game playing ≠ Software model checking?
Symbolic execution
Symbolic execution

Bounded model checking
Counter-example-guided abstraction refinement

Symbolic execution

Bounded model checking

dounded model checking
example-guided refinement
Concolic execution
bounded execution
abstraction refinement
Concolic execution
Recent heuristic learning agents are great
More of that please, but like way more, and also other stuff
Modeling languages don’t help (yet)
Learn more from fewer trials
Speculate, don’t simulate
Abstract more
Summerville, Snodgrass, Mateas, Ontañón: The Videogame Level Corpus, 7th PCG Workshop (2016)
PROPOSAL: GVG Rule-Reading Track
PROPOSAL: “No Takebacks” Track
Forward search is the last resort