



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



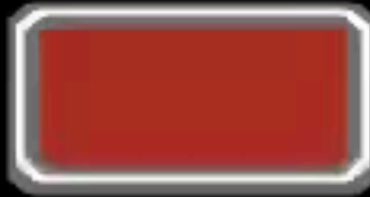
Computers beat humans at <game>



**Thousands of
Computers beat humans
at <game>
using tons of electricity**

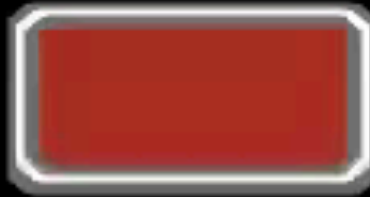


And it doesn't scale



A	B	C	D	E	F	G	H	I	J
K	L	M	N	O	P	Q	R	S	T
U	V	W	X	Y	Z	'	,	.	
0	1	2	3	4	5	6	7	8	9
a	b	c	d	e	f	g	h	i	j
k	l	m	n	o	p	q	r	s	t
u	v	w	x	y	z	-	..	!	?

SELECT NAME



A	B	C	D	E	F	G	H	I	J
K	L	M	N	O	P	Q	R	S	T
U	V	W	X	Y	Z	'	,	.	
0	1	2	3	4	5	6	7	8	9
a	b	c	d	e	f	g	h	i	j
k	l	m	n	o	p	q	r	s	t
u	v	w	x	y	z	-	..	!	?

SELECT NAME

FINAL FANTAS



Explorer's Handbook

Your Adventure Begins . . .

Your Four Warriors begin their quest at the entrance to Coneria, 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.

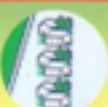
Castle

The pleas 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 ports your SHIP can



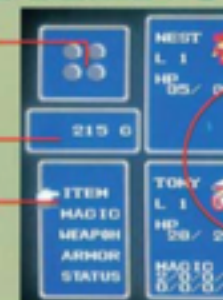
Ocean

To navigate the



THE MENU

These are the Four Orbs that you must restore.

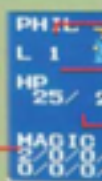


GOLD

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.

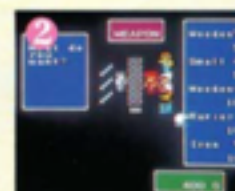


THE WEAPON SHOP

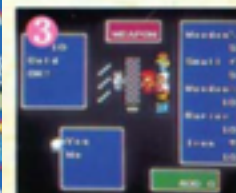
Each storekeeper will guide your visit to his store. Point the 'finger' to your choice, then push A to execute. Make as many purchases as you wish before exiting. Push B to cancel.



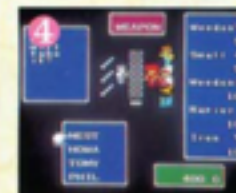
Welcome to my shop. You wish to make a purchase?



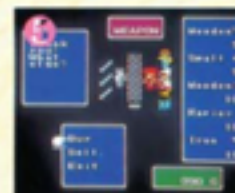
You'd like to buy a rapier?



It costs 10 Gold, do you still want it?



Who will carry this fine weapon?



Your transaction is completed. Is there anything else?

Find Your Trek to Coneria

The castle walls lie in the Dream City. Called the Dream City, it becomes the base of your quest to save the



What Do I Go To?

It you
ix dif-
before
mat-
enter
the



CONERIA

Inside Coneria you will find more people who will assist you on your quest. For guidance, talk to the shopkeepers. The INN and CLINIC will heal your battle wounds.

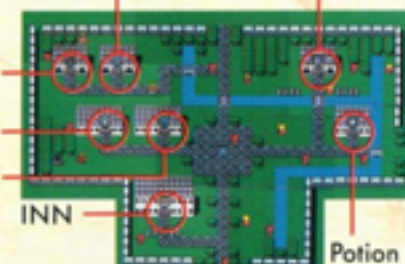
Magic Shop

CLINIC

Shop

Shop

Shop



Potion



General game playing
=
**Software model
checking?**



General game playing

≠

Software model checking?



Symbolic execution



Symbolic execution

Bounded model checking



Counter-example-guided abstraction refinement execution

Bounded model checking



example-guided
refinement
execution

CC
ab₂
ounded
Concolic execution
king



**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



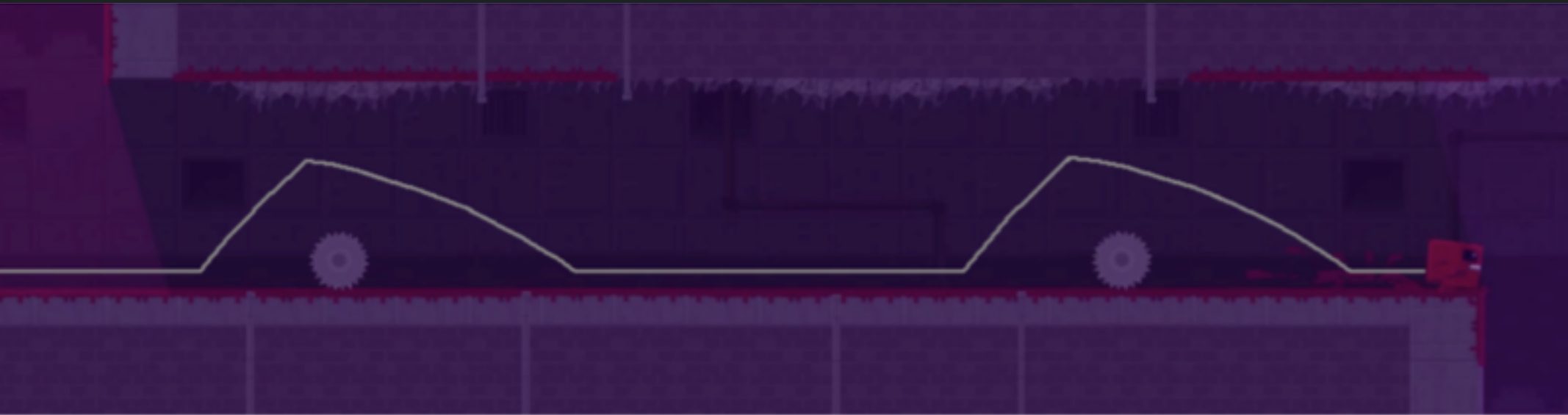
Speculate, don't simulate



Abstract more



Summerville, Snodgrass, Mateas, Ontañón: The Videogame Level Corpus, 7th PCG Workshop (2016)



Fasterholdt, Pichlmair, Holmgård: You Say Jump, I Say How High?
Operationalizing the Game Feel of Jumping, DiGRA 2016



PROPOSAL: GVG Rule-Reading Track



PROPOSAL: “No Takebacks” Track



Forward search is the last resort