

# Final year projects

or: How I Completed My Credits Requirement and Turned It Into a Ph.D.

Matthew Bedder



# Background: Me

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Studied Computer Science with Artificial Intelligence MEng

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Currently studying towards a Ph.D. in games AI

- Based entirely off my MEng project

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Final year projects are a substantial amount of work

- Roughly a third to half of your final year
- For me it was 50 credits, or ~500 hours

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Can be in a area in which you don't have much experience

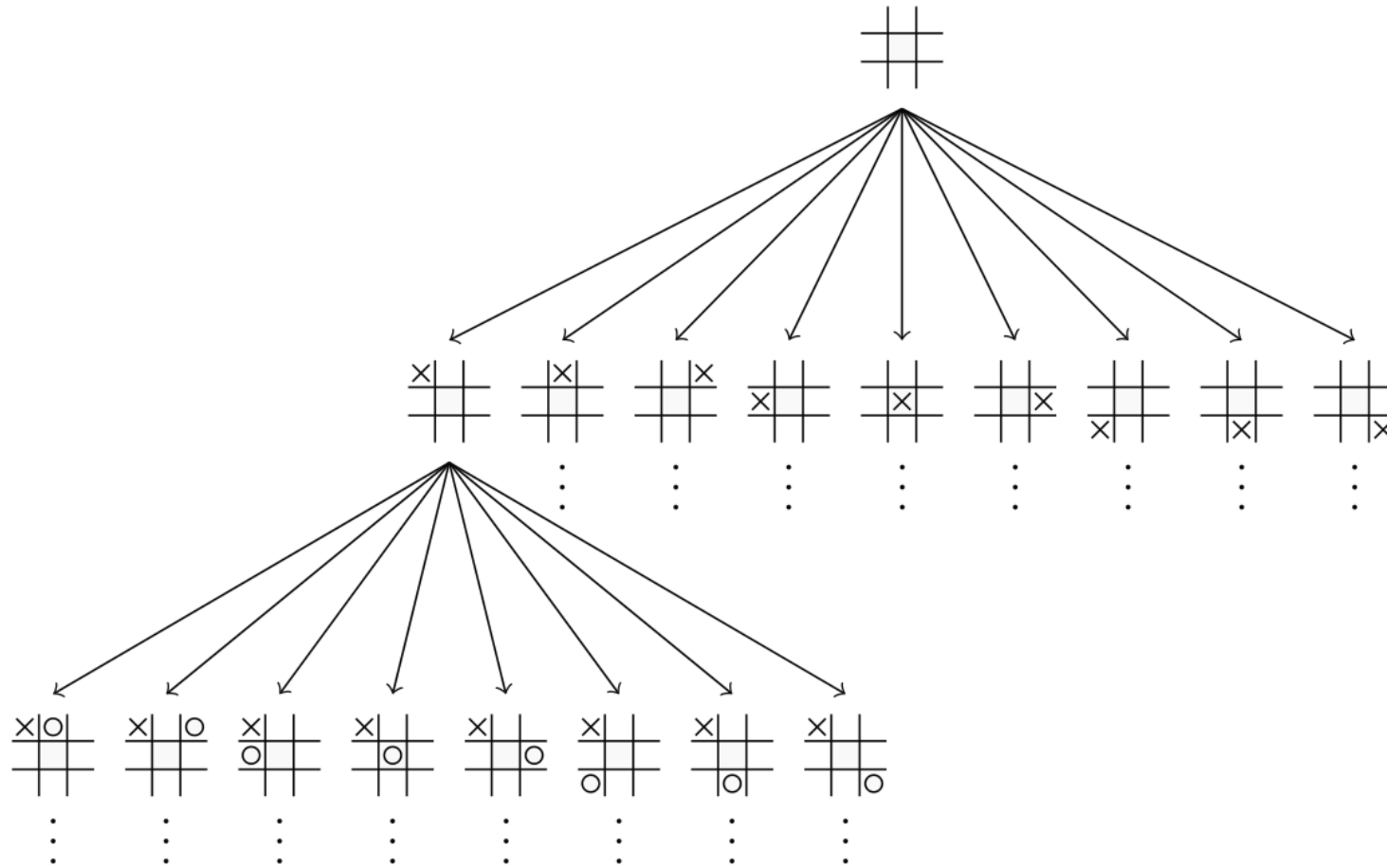
- Bidding process for projects

# Monte Carlo Tree Search

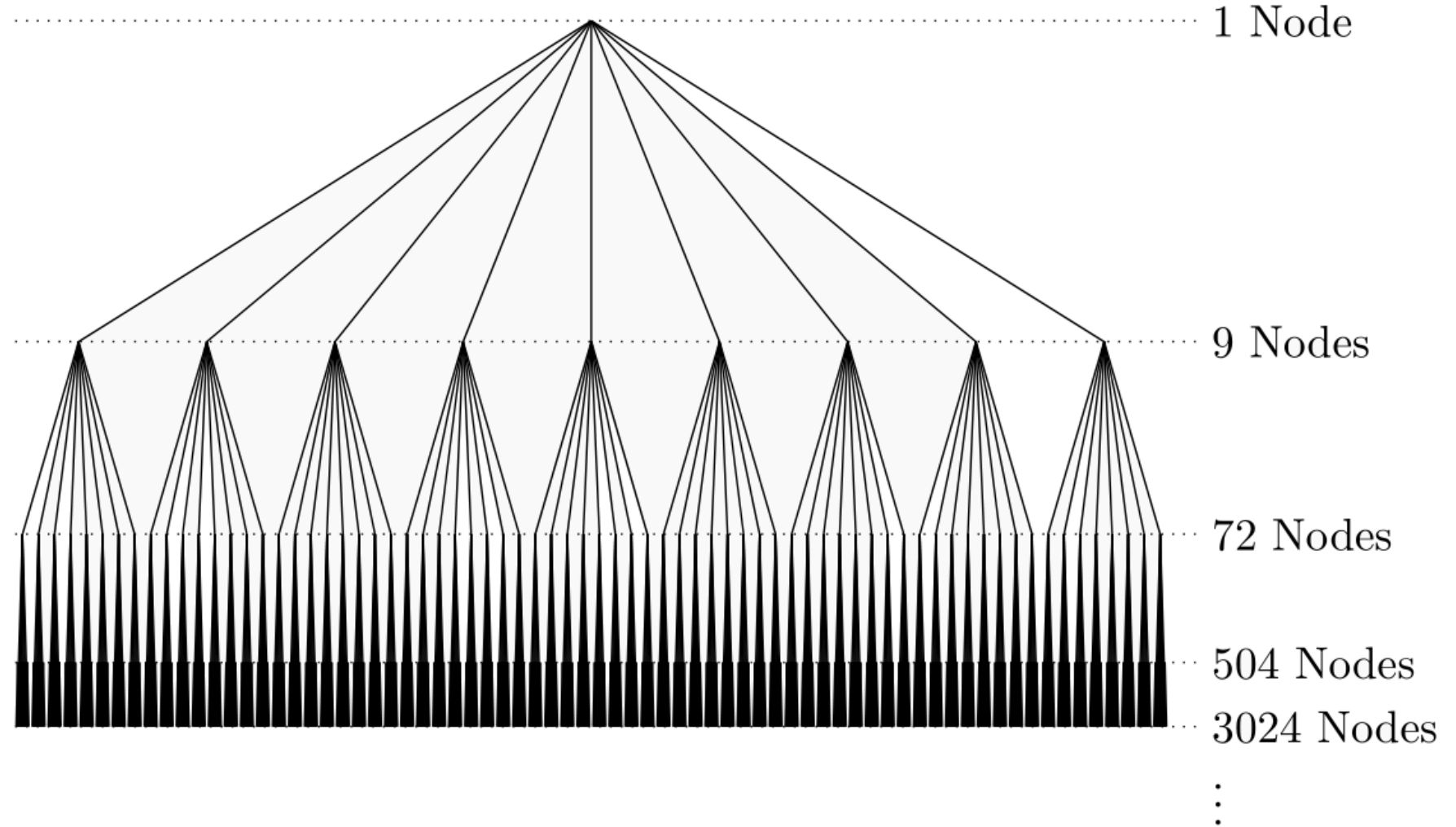
# Monte Carlo Tree Search

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Exploration versus Exploitation

- Explore bits of the tree we know little about
- Exploit bits of the tree we know are good



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Not used much in commercial video games

- Video games have significantly larger challenges

There are as many states of Civilization II as  
there are atoms in the universe

There are as many states of Civilization II as  
there are atoms in the universe 10,000,000,000,  
000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,  
000,000,000,000,000,000,000,000,000,000,000,000,000,000,000 times over

# Hierarchical Monte Carlo Tree Search

I proposed a method for guiding searching

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Search over simplification for strategy, and the full game for tactics



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Search over simplification for strategy, and the full game for tactics

I could bore you with lots of detail...

# Results!

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- ...and it being different from the original proposal

Currently two games companies want to use me/my research :D

# Thanks for listening!

That was a super-quick intro, but I hope it was useful?

**EPSRC**

Engineering and Physical Sciences  
Research Council

UNIVERSITY *of York*



University of Essex

**Goldsmiths**  
UNIVERSITY OF LONDON