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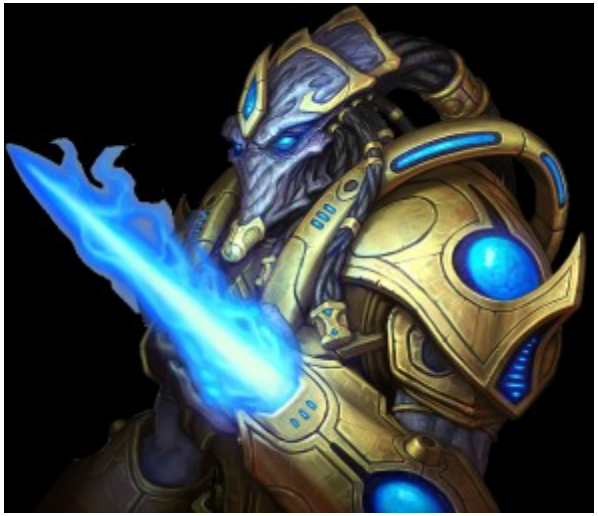
Game AI for Starcraft

What is Starcraft?

- Real-time strategy war game
- Three different races with different unique units
- We have created an AI for one of the races
- The goal of the game is to eliminate all opposing forces
- Collect resources > Build buildings > Train units > Battle



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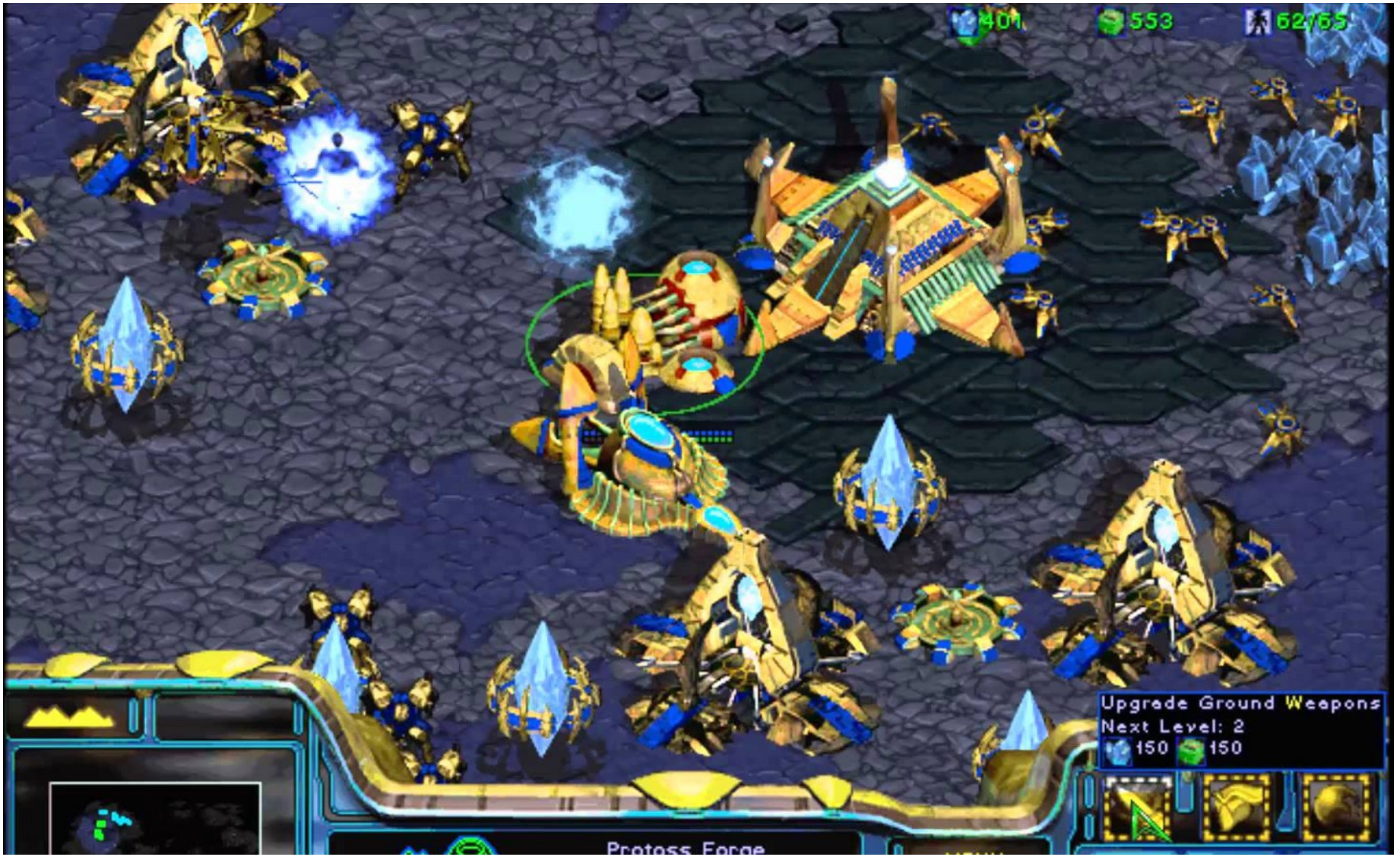

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BWAPI

- An API used to communicate with the Starcraft Broodwar game
- C++
- Can access everything that a human player can access when playing the game
- The main part of the code is executed in a function called onFrame, that runs once every frame

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Agent

- Learning agent
- Reinforcement learning
- Plays the game and learns how to beat an opponent

Things to learn

- Strategies
- Aggressive, defensive and neutral
- Decides when to attack
- Units to create
- Which units are effective for different strategies

Problem representation

- Huge state space
- States need to be relaxed
- Percepts
- Abstract percepts
- State representation with thresholds for all values in the state representation

Results

- We have so far run the agent in about 80 games
- So far it has learned how to beat the game AI under certain circumstances
- Still pretty dumd due to the low amount of games and the game complexity

Data examples

State representation

-808660	-285086	41	51	0	-268
-674826	-288646	38	48	1	0
-663598	-281324	38	48	2	-23
-798878	-271182	41	51	2	-56
-787954	-269196	41	51	1	-21

The Strategy used and the result in the corresponding state.

Unit results for different strategies

Protoss_Dark_Templar	490	763	0
Protoss_Zealot	-19	-40	0

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