

Integrating Artificial Intelligence in TA Spring

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TA Spring.



Figure 1. A Scene from the Game.

Total Annihilation Spring.

Total Annihilation Spring, also known under the names TA Spring (Figure 1), SpringRTS, or even just Spring, is an open-source project developing a real-time strategy game engine. The engine is based on the original Total Annihilation game and the main application is made in C++. It is multi-platform and has hardware accelerated 3D graphics.

The maximum number of units that a player can control at any given time is currently 5000, and is being increased to 10000. At the time of writing, the TA Spring project is in beta version 0.72b. There is a large community of developers and players involved online in the project. Some of the different games playable in the engine are inspired by the original Total Annihilation.

Real-Time Strategy Games.

Real-time strategy (RTS) is the genre of computer games that encompasses war games that happen in real-time. "Real-time" means that there is a continuous flow of time in the game world, so that "thinking on your feet" and responding quickly to arising situations is important.

Strategies in RTS.

The meaning of the word strategy in the context of an RTS game is the high-level decisions about how to play (and possibly win) the game. For instance, a high-level strategy for a player could be what is known as the "rush" strategy. Rush refers to rushing/hurrying into one or more early attacks. Some of other possible strategies are "resource control", "expand", "stay defensive", etc.

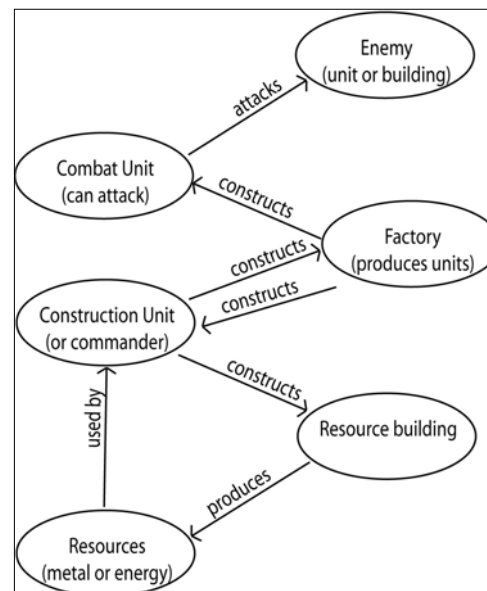


Figure 2. Entities and their relationships in TA Spring.

Entities in TA Spring.

TA Spring entities are objects that can construct, produce, be used or attack. The entities are connected to each other by "constructs", "used by", "produces" and "attacks" relationships. The entities are construction unit, commander, factory (construction building), resource building, resources and combat unit (Figure 2).

Construction means the capability of producing additional game entities. Resources are being used for the purpose of construction.

Construction units can produce construction/resource buildings and sometimes units. They use resources. Construction buildings (factories) can produce units (construction/combat). Resource buildings produce resources. Combat units attack the buildings and units belonging to enemies.

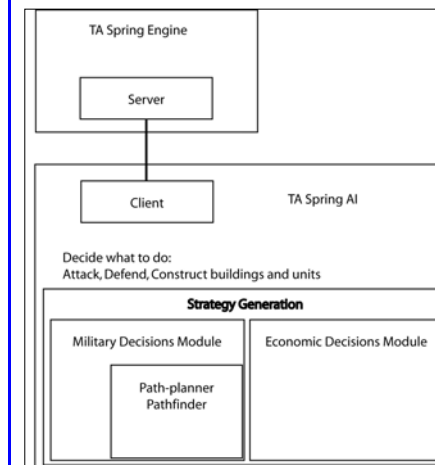


Figure 3. The architecture that integrates AI in TA Spring.

Actions that are related to combat such as grouping units and sending them off to attack, and how to behave while firing at the enemy, is handled by the [military decisions module](#).

Artificial Intelligence (AI) in TA Spring.

TA Spring is a net-based game and players influence the game through the client interface (Figure 3). The Spring engine forms the server side, and an AI can take the role of a human player. The AI is mostly busy with making decisions, emerging strategies, path planning and controlling units in combat.

[Economic decisions module](#) is occupied with constructing new units and buildings under the given economy.