A HIGH LEVEL ARCHITECTURE FOR AN REAL TIME STRATEGY GAME

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**Consciousness**

A layered consciousness based off of Freudian literatuer, a subsumption architecture, and A\* Search over a behavioral decision tree.

**Subsumption Architecture**

The lowest layer is generally described by the label “Reflex.” The next layer up is Thought (Unconcscious), the third layer Thought (Conscious) and finally Behavior. The AI needs the lowest, its reflexes, the the subsumption architecture creates a system in which the higher layers utilize the lower layers. The layers, which all receive sensor information, work **in parallel** and generarte outputs. These outputs can be commands to actuators or signals to suppress or inhibit other layers,.

**The Decision Tree**

For each layer there is a decision tree. These decision trees consist of a tree, a root which the decision starts at, and various conditions (and boolean probabilities) that lead to different outcomes. The current status of given conditions helps to guide through the tree to an outcome.

**The Decision Tree and Subsumption Architecture**

For each layer a decision is made, its decision acts as its state and is passed upwards in the architecture to the next layer, using the output of the layer below as input for the current level. This continues on until we reach the behavior layer where it acts out. Layers (and Decision Trees) can be subsumed if necessary.

**Decision Tree Decisions**

Each decision from node to node in the tree originates from its parent subsumption input and output to the next in the subsumption architecture. The “inbetweens” of the tree, consist of decisions made using fuzzy logic: decisions are made by percentages. Certain decisions have a certain percentage of occuring. These percentages are trainable by backtracking on the tree, training it by adjusting in favor of the path that was taken, increasing their percentages.