Learning to Win: Case-Based Plan Selection in a Real-Time Strategy Game

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Background

• Goal
  – Win a real time strategy game (e.g. Age of Empires).
  – WARGUS.
You have 2 Grunts.
Similar Work

- Ponsen and Spronk (2004)
  - Used genetic algorithms to create plans that can be used to play an opponent
- Assumption: **Fixed opponent**
CAT

- Case Based Tactician
- Designed to be tolerant to opponents with differing strategies
• Retrieval
  – First: Learns by “Exploring” possible tactics
  – Then: Highest performance Cases

• Revision
  – Executes retrieved tactic in game engine
  – Evaluates results
  – Updates used cases performance after game

• Retention
  – Creates new cases
  – Doesn’t delete cases
Th = Townhall
Ba = Barracks
Lm = Lumbermill
Bs = Blacksmith
Kp = Keep
St = Stables
Ca = Castle
Ap = Airport
Mt = Magetower
Tm = Temple

a = evolved_SC1
b = evolved_SC2
c = evolved_SC3
d = evolved_SC4
e = evolved_SC5
f = evolved_LBLA
g = evolved_SR
h = evolved_KR
Game to AI Middleware

• TIELT
  – Testbed for integrating and evaluating decision systems with simulators

• Middleware