



FALMOUTH  
UNIVERSITY

COMP250 Artificial Intelligence

## 8: MicroRTS

# MicroRTS



# MicroRTS competition

# MicroRTS competition

- ▶ This should be your main focus (for COMP250) from now on

# MicroRTS competition

- ▶ This should be your main focus (for COMP250) from now on
- ▶ Fork the repository at <https://github.com/falmouth-games-academy/comp250-bot> and follow the instructions

# MicroRTS competition

- ▶ This should be your main focus (for COMP250) from now on
- ▶ Fork the repository at <https://github.com/falmouth-games-academy/comp250-bot> and follow the instructions
- ▶ Look at the example bots in the `microrts` project

# MicroRTS competition

- ▶ This should be your main focus (for COMP250) from now on
- ▶ Fork the repository at <https://github.com/falmouth-games-academy/comp250-bot> and follow the instructions
- ▶ Look at the example bots in the `microrts` project
  - ▶ Start with the “rush” bots in `ai.abstraction`

# MicroRTS competition

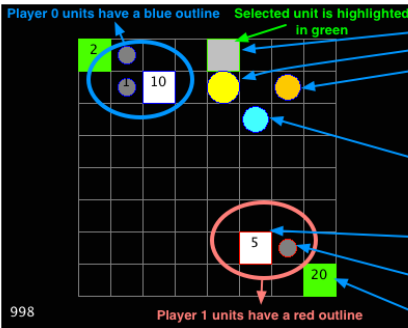
- ▶ This should be your main focus (for COMP250) from now on
- ▶ Fork the repository at <https://github.com/falmouth-games-academy/comp250-bot> and follow the instructions
- ▶ Look at the example bots in the `microrts` project
  - ▶ Start with the “rush” bots in `ai.abstraction`
  - ▶ Move on to search-based AI:  
`ai.minimax.RTMiniMax.RTMiniMax,`  
`ai.mcts.naivemcts.NaiveMCTS, ...`



# MicroRTS competition

- ▶ This should be your main focus (for COMP250) from now on
- ▶ Fork the repository at <https://github.com/falmouth-games-academy/comp250-bot> and follow the instructions
- ▶ Look at the example bots in the `microrts` project
  - ▶ Start with the “rush” bots in `ai.abstraction`
  - ▶ Move on to search-based AI:  
`ai.minimax.RTMiniMax.RTMiniMax,`  
`ai.mcts.naivemcts.NaiveMCTS, ...`
  - ▶ Use these samples as a basis to create your own AI

# Playing the game



**Player 0 units have a blue outline**

**Selected unit is highlighted in green**

**Barracks:** train attack units

**Heavy:** high power but slow melee unit

**Light:** low power but fast melee unit. Heavy and Light units are very effective when micromanaged properly. Stay away from these units if you are not familiar with microRTS though.

**Ranged:** long range attack unit. Try to use this unit, as it is the most effective for human use.

**Bases:** accumulate resources and train workers

**Workers:** can harvest minerals and construct buildings

**Minerals:** harvest them with workers

998

**Player 1 units have a red outline**

**Light** **Heavy** **Ranged**

Select the unit to train/construct with mouse, or using the highlighted quick key.

- **Select** units by left-clicking on them
- **Move** units by right-clicking on a destination
- **Attack** enemies by right-clicking on them
- **Harvest** minerals by right-clicking on them
- **Train** units by selecting them at the bottom of the screen
- **Construct** buildings by selecting the type of building at the bottom, and then right-clicking on the destination

# MicroRTS

# MicroRTS

- ▶ **Workers** can harvest **minerals** and build **bases** and **barracks**

# MicroRTS

- ▶ **Workers** can harvest **minerals** and build **bases** and **barracks**
- ▶ **Bases** can train **workers**

# MicroRTS

- ▶ **Workers** can harvest **minerals** and build **bases** and **barracks**
- ▶ **Bases** can train **workers**
- ▶ **Barracks** can train **attack units**

# MicroRTS

- ▶ **Workers** can harvest **minerals** and build **bases** and **barracks**
- ▶ **Bases** can train **workers**
- ▶ **Barracks** can train **attack units**
- ▶ **Attack units**: light, heavy, ranged (workers can also attack)

# MicroRTS bot



# MicroRTS bot

- ▶ `getAction` is called every game tick

# MicroRTS bot

- ▶ `getAction` is called every game tick
- ▶ Assign **actions** to each of the player's units (including buildings)

# MicroRTS bot

- ▶ `getAction` is called every game tick
- ▶ Assign **actions** to each of the player's units (including buildings)
- ▶ Two levels to work at:

# MicroRTS bot

- ▶ `getAction` is called every game tick
- ▶ Assign **actions** to each of the player's units (including buildings)
- ▶ Two levels to work at:
  - ▶ Basic actions up, down, left, right, attack, etc.

# MicroRTS bot

- ▶ `getAction` is called every game tick
- ▶ Assign **actions** to each of the player's units (including buildings)
- ▶ Two levels to work at:
  - ▶ Basic actions up, down, left, right, attack, etc.
  - ▶ `AbstractionLayerAI`: higher-level actions with built-in pathfinding, e.g. move, build, attack etc.

# Example bots