

Cahik's AI Tutorial

We can divide BFME2 AI into some parts. This tutorial deal with changing some basic AI settings, adding new units and using new spells and abilities. In fact this is not really hard and it is based only on INI coding.

1. Unit attack priorities

Ini.big -> data\ini\default\skirmishaidata.ini

First thing we can change here are attack priorities. This tells computer what will unit attack most likely. Code looks like this (it is not complete list just part):

```
CombatChainDefinition CavalryCombatChain
    Unit = CAVALRY
    TargetTypes = STRUCTURE PIKEMAN CAVALRY ARCHER INFANTRY
    TargetPriorityModifiers = 50.0 0.0 50.0 150.0 50.0
End
```

So basicaly this tells computer that all units that are cavalry will attack most likely ARCHERS, then STRUCTURES, CAVALRY or INFRANTRY and if no other target is around the PIKEMAN.

```
TargetTypes = STRUCTURE PIKEMAN CAVALRY ARCHER INFANTRY
```

This part is hardcoded so make no changes to that.

```
TargetPriorityModifiers = 50.0 0.0 50.0 150.0 50.0
```

Here you can give numbers in the sameorder as type sof target in **TargetTypes**. The higher numer the higher is priority to attack this type of units. 0.0 means that AI will attack this target only when no other is around. And negative number means that it will not attack that type of targets at all.

But it is not all. We need to give computer information what type of unit is our new unit. So we put code like this in horde or unit code (in unit code only when it is single unit and has no horde).

```
ThreatBreakdown IsengardUrukCrossbowHorde_DetailedThreat
    AIKindOf = CAVALRY
End
```

So this two lines say to computer what attack priorities will new unit have **Unit = CAVALRY** and **AIKindOf = CAVALRY**.

2. Army Definitions

Ini.big -> data\ini\default\skirmishaidata.ini

Look for this code in skirmishaidata.ini:

```
ArmyDefinition MenOfTheWestArmy
```

this is definition of Men of the West army and its game AI (there is one for each fiction, they look all the same only with some changes on settings). Much of its code is very easy to understand. So i will explain only really important things here.

```
MustUseCommandPointPercentage_Phase1 = 90%
MustUseCommandPointPercentage_Phase2 = 75%
MustUseCommandPointPercentage_Phase3 = 60%
```

This tells comp how many command points must he use in each phase of game. (AI divide game into 3 phases. I will explain it later).

```
PercentToSave_Rush      = 0.5%
PercentToSave_MidGame  = 1.5%
PercentToSave_EndGame  = 2.0%
```

Setting that tells how much money will comp save in which phase.

```
PhaseDuration_Rush = 270.0
PhaseDuration_MidGame = 280.0
```

This says how long each phase lasts in seconds. Third lasts from end of MidGame to the end of game.

```
ChanceForUnitsToUpgrade = 65%
```

How often will units get upgrades.

```
AIEconomyAssignment MenFarm
    TemplateName = GondorFarm
End
```

This just which building will be used as economy building.

Now we are getting to the one main points of this tutorial. Adding new units to AI.

```
ArmyMemberDefinition GondorFighterHorde_Member
    Unit                = GondorFighterHorde
    PercentageOfArmyPhase1 = 30.0
    PercentageOfArmyPhase2 = 20.0
    PercentageOfArmyPhase3 = 10.0
End
```

This is everything what you need to add new unit.

Note: `GondorFighterHorde_Member` this part must be unique for each definition, so write here whatever you want.

```
Unit = GondorFighterHorde
```

Basic definition of unit.

```
PercentageOfArmyPhase1 = 30.0
PercentageOfArmyPhase2 = 20.0
PercentageOfArmyPhase3 = 10.0
```

Definition of how many percent of computer army will this unit take in which phase of game.

```
HeroBuildOrder = ElvenGaladriel_RingHero RohanFrodo RohanEowyn RohanEomer
GondorBoromir RohanTheoden GondorFaramir GondorAragornMP GondorGandalf
```

In which order will AI build heroes. AI tries to build Galadriel first if it is impossible he continue to Frodo then Eowyn etc.

This is all from basic AI settings in `skimmishaidata.ini` .

2. New abilities and spells

Definition of this is in code of each hero and in data\ini\object\system\system.ini for spells.
Note: passive powers doesn't need AI cause they are still active.

```
Behavior = AISpecialPowerUpdate SpecialWoundingArrowAoE
    CommandButtonName = Command_SpecialAbilityWoundArrow
    SpecialPowerAIType = AI_SPECIAL_POWER_ENEMY_TYPE_KILLER
End
```

This is all you need to get new ability for AI controlled heroes.

Note: **SpecialWoundingArrowAoE** this part must be unique for each definition, so write here whatever you want.

```
CommandButtonName = Command_SpecialAbilityWoundArrow
```

Says what Commandbutton from unit's commandset should AI use.

```
SpecialPowerAIType = AI_SPECIAL_POWER_ENEMY_TYPE_KILLER
```

This says how should AI use this ability. (complete list of possible setting with explanation is at the end of tutorial)

In some cases this **SpecialPowerRadius = 100** is also in. Just to define that it cant be used anywhere on map but only in selected radius around hero. (maybe it should fit to radius given in specialpower.ini. i'm not sure about that)

Note: AI will use the power as soon as it is active. So if hero gets some power at level 2 but in command buton is NEED_UPGRADE and upgrade that says that he can use it from level 6. AI will use it from 2.

```
Behavior = AISpecialPowerUpdate SpellBookDwarvenRichesAI
    CommandButtonName = Command_SpellBookDwarvenRiches
    SpecialPowerAIType = AI_SPELLBOOK_BUFFECONOMYBUILDING
End
```

Code for spells is the same, only commandbuttons are from spellbook's commandset and two new settings can used here. **RandomizeTargetLocation = Yes** to get random location for this spell and **SpellMakesAStructure = Yes** just say that it build structure??? I don't know.

This is all you need to create AI for most of new stuff. I hope someone will consider it usefull.

Enjoy new matches against your computer

Cahik

Overview of all possible setting for AI controlled spells and abilities

I get those from game.dat . I am not sure if it is possible to use spellbook ones for abilities and the other way around but it looks possible. Also I don't say that you must use my suggestions but this is the best way for your spells to work correctly in game.

AI_SPECIAL_POWER_STANCEHOLDGROUND
AI_SPECIAL_POWER_STANCEAGGRESSIVE
AI_SPECIAL_POWER_STANCEBATTLE

Used for stance behavior. I have never worked with those.

AI_SPECIAL_POWER_TOGGLE_MELEE_AND_RANGE

To give your hero toggle. I didn't use it yet but Zimoo tries it and says it works fine.

AI_SPECIAL_POWER_HEAL_AOE

Powers that heal (not only heroes) units and in some cases give them some boosts use this.

AI_SPECIAL_POWER_SELFAOEHEALHEROS

Heals nearby heroes. Athelas etc.

AI_SPECIAL_POWER_GIVEXP_AOE

This is used for spells that give target units experience, but I use to give them boost and it works fine on that too.

AI_SPECIAL_POWER_LEGOLAS_TRAINARCHERS

Special version of the previous one, only for archers.

AI_SPECIAL_POWER_BASIC_SELF_BUFF

All powers that give boost to hero/unit use this. Blademastery or Glorious charge are good examples. In some cases it is fine to use this for weapons as well. This power is activated when hero is surrounded by enemies so it is perfect for WoP type of weapons.

AI_SPECIAL_POWER_ELENDIL

I think that this type of power is active when unit is low on health to help it to get to safety. But it could be wrong.

AI_SPECIAL_POWER_TARGETAOE_SUMMON

For all spells that summon units.

AI_SPECIAL_POWER_ENEMY_TYPE_KILLER

Spells with ranged attack use this. Wound arrow for example.

AI_SPECIAL_POWER_RANGED_AOE_ATTACK

This is used for Gimli's Leap attack. So abilities like this should use this.

AI_SPECIAL_POWER_CHARGE

Dwarven guardians use this for their special ability so it probably selects target to crush.

AI_SPECIAL_POWER_LEGOLAS_ARROWWIND

Legolas has special on for his Arrowwind attack.

AI_SPECIAL_POWER_GANDALF_WIZARD_BLAST

Every weapon similar to wizard blast should use that.

AI_SPECIAL_POWER_TOGGLE_MOUNTED

This allows unit to mount and dismount. But I am not sure if anything else isn't needed.

AI_SPECIAL_POWER_ENEMY_TYPE_KILLER_STRUCTURES

Used for attacks that cause high damage to structures.

AI_SPECIAL_POWER_GOBLINKING_MOUNTED
AI_SPECIAL_POWER_GOBLINKING_CALLOFTHEDEEP
AI_SPECIAL_POWER_GOBLINKING_BATTLEFRENZY
AI_SPECIAL_POWER_ENEMY_TYPE_KILLER_RANGED
AI_SPECIAL_POWER_CAPTURE_BUILDING
AI_SPECIAL_POWER_TOGGLE_SIEGE

These i don't completly underdstand. They look similar to other ones or not needed.

AI_SPELLBOOK_CITADEL

For spells that summons citadels.

AI_SPELLBOOK_STRUCTURE_BASEKILL

Spells that use that usually summons unit that destroys buildings. Dragon strike, Balrog etc

AI_SPELLBOOK_TREE_KILLER

Used for Isengard power that gives money from trees.

AI_SPELLBOOK_SHROUD_REVEAL

Palantir power, Farsight and power like that.

AI_SPELLBOOK_CALLTHEHORDE

Spells that boosts all buildings on the map.

AI_SPELLBOOK_BUFFECONOMYBUILDING

This is used to boost economy buildings. Dwarven riches etc.

AI_SPELLBOOK_REBUILD

Heal for buildings

AI_SPELLBOOK_BUFFTERRAIN

Spells that gives some bonus from terrain like Elven wood and Taint land.

AI_SPELLBOOK_ENSHROUDINGMIST

Any spells that hide your units should use this.

AI_SPELLBOOK_STRUCTURE_BREAKER

Spells that destroy buildings use this setting.

AI_SPELLBOOK_STRUCTURE_BREAKER_PREF_WALLS

Ents and Wyrms use that.

AI_SPELLBOOK_HEAL

Heal powers work with that.

AI_SPELLBOOK_CAPTURE_CREEP

Untamed Alliance works with this.

AI_SPELLBOOK_ARMY_BREAKER

Spells that are used against big armies, Army of Death etc.

AI_SPELLBOOK_ASSIST_BATTLE_DEBUFF

Everything that help computer win a battle use that. Like small summons (Wild men, Watcher, Bats, Bombadil tec.) but some other like ArrowVolley or lone tower use it as well.

AI_SPELLBOOK_ASSIST_BATTLE_BUFF

Powers that boosts units. Rally Call and War Chant.

AI_SPELLBOOK_ALWAYS_FIRE

Very special one that is use for power that makes area flammable.