

# Azzy AI v 1.55

An advanced and comprehensive AI for use with the mercenary and homunculus systems in Ragnarok Online.

## Features:

- Easy to use GUI Configuration Utility
- Default configuration works for most players with no or minimal configuration changes
- Full support for homunculus S system.
- Automatically use skills:
  - Offensive skills for homunculus and homunculus S, including debuffs
  - Pushback skills like Skid Trap and Arrow Repel
  - AoE skills depending on number of targets (configurable)
  - Self-buff skills – will not try to recast buffs after teleport
  - Provoke / Painkiller / Sacrifice on owner
  - Painkiller on other players (automatically recast)
  - Healing skills, on owner and self (for chaotic blessings)
  - Castling – to get monsters off owner, or even to move around the map
- Friend other players so your homunculus or mercenary defends them
  - Mercenary and homunculus automatically friended if both out at once
  - Cross and Circle motions when friending, like MirAI
- Support for multiple accounts in use simultaneously
  - Mercenary/homunculus autofriending not broken with multiple accounts
  - Buff timers not confused by using multiple accounts
  - Support for automatically friending multiple accounts
  - Framework for supporting different configurations for different accounts.
- Idle walk – have your mercenary or homunculus roam around you when there's nothing else for it to do.
- Sniping – homunculus can use attack skills on a different monster than it's currently fighting, to avoid wasting sp on a monster that's already half dead, or to aggro monsters.
- Tanking – have the mercenary or homunculus tank for you or another player, or to mob for its own AoE.
- Dance Attack – homunculi (but not mercenaries) can attack slightly faster by moving while attacking.
- Kiting – mercenary or homunculus can run away from attacking monsters.
- Rescue – mercenary or homunculus can drop current targets to defend you, itself or friended players.
- Optional auto-shutdown feature (homunculus only) to exit game if certain monsters (such as those summoned by DBs) show up.

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## **AzzyAI Installation and setup**

- 1.If you are using Windows Vista or Windows 7, please see below.
- 2.Download and extract the AzzyAI 1.50 package.
- 3.Copy all files inside the AI package into the USER\_AI folder (inside the AI folder in RO folder). The files must be placed in the USER\_AI folder, not a folder inside it.
  - a. If you already have a homunculus AI and do not want to replace it with AzzyAI, do not copy over AI.lua
  - b. If you already have a mercenary AI and do not want to replace it with AzzyAI, do not copy over AI\_M.lua.
4. If needed, edit the configuration to meet your needs, either manually or using the included GUI configuration utility, AzzyAIConfig.
5. Start Ragnarok Online
6. Type /merai until it says your mercenary soldier AI has been customized, or /hoai until it says that the homunculus AI has been customized, as appropriate.
7. Summon mercenary/homunculus (or relog if it's already out, or vap/recall for homunculus) and have fun.
8. A file named AAISStartH.txt or AAISStartM.txt will be created in the RO folder when the AI is used in game. This file contains full version information, as well as record of certain error conditions. If this file is not created when using the AI in game, the AI is not installed correctly.

### ***Upgrading from a previous version***

When upgrading from a previous version, you should retain the file A\_Friends.lua – this contains the list of people who you have ‘friended’. For other configuration files:

- No configuration files from 1.4x can be used with 1.50 or later.
- Config files from 1.50 dev 4 or earlier are not compatible with 1.50 dev 5 and later, including the final version of 1.50.
- Tactics and Extra files from 1.50 dev versions can be used with all 1.50 versions.

### ***Important note for users of Windows Vista and later***

Due to the UAC feature of these operating systems, it is extremely difficult to make a mercenary or homunculus AI work when Ragnarok Online is installed in a protected folder (of which Program Files is one). We recommend that you move the entire Ragnarok Online folder to an unprotected location, such as C:/Games. After doing this, delete the contents of USER\_AI and reinstall the AI. Note that these steps are unnecessary if UAC is disabled.

### ***Important note for players on illegal private servers***

Illegal private servers are not supported by AzzyAI. The technical challenges are considerable; there are a number different server emulators, and each of these behaves differently. AzzyAI relies on the idiosyncratic behavior of the official server software with regard to the allocation of actor IDs compensate for deficiencies in the API. It is known and expected that AzzyAI will have targeting problems on most illegal private servers. There are no plans to support these servers in future releases.

### ***Configuration Quick-Start Guide***

If you are using AzzyAI with a homunculus S that previously was something other than a Vanilmirth or Filir, you must set OldHomunType in the configuration.

Other than that, AzzyAI 1.50 should be usable out-of-the-box most users. Using default settings, it will be aggressive when its HP is above 60% (and below that it will only fight in defense of itself or the owner. To make it non-aggressive, set AggroHP to 100. It should use any offensive skills available to it when fighting a monster, and when chasing a monster (if the skill has longer range than normal attacks, ie, homunculus bolts). It will attempt to use any self-buff skills available to it except homunculus S skills, including ones that affect the owner. This can be changed in the skill options.

### ***How to configure the AI using the GUI***

Open the program AzzyAIConfig in your in your USER\_AI folder. There are 8 tabs, 4 each for homunculus and mercenary: Configuration, Tactics, PVP Tactics, and Extra Options. More information will be added when I get the new GUI in my hands.

### ***How to manually configure the AI***

The AI configuration is controlled by three files each for mercenary and homunculus AI, a config file, a tactics file, and an extra components file. For the homunculus, these files are H\_Config.lua, H\_Tactics.lua, and H\_Extra.lua respectively.

For the mercenary, these files are M\_Config.lua, M\_Tactics.lua, and M\_Extra.lua respectively.

These files can be edited with any text editor. To easily edit them in windows, double click the file, and when you get the message saying that windows cannot open this file, choose "Select the program from a list", and choose Notepad, or a similar program (I recommend Notepad++ ). Check the box "always use this program to open files of this type", and click okay.

# Using AzzyAI

## *Documentation conventions*

Regardless of which method is used to configure the AI, refer to the following chapters for details on the settings available. In the next sections, when the GUI Configuration tool and the config files use a different name for an option, the name used in the GUI is written first, followed by the name used in the config files, in parentheses. In many cases, the config file uses a numeric value for an option, while the GUI uses a word or check box; where it is not obvious what an option in the GUI refers to, that will be noted under that option. Except where otherwise noted, all functions work for both mercenaries and homunculi.

## *Commanding a homunculus*

From within the game, the client provides for a means of giving a limited number of commands to your homunculus

- **Alt + R:** Enter standby mode. During this mode, the homunculus will become non-aggressive. If *DefendStandby* is enabled, it will defend you while in this state. If *StickyStandby* is enabled, it will return to this mode after it finishes fighting something. Press Alt + R again to exit standby mode.
- **Alt + Right click:** Move to this location. See *MoveSticky* and related options. Also used for friending.
- **Alt + Double right click, on monster:** Drop everything, and attack this monster. You can configure the homunculus to use skills more aggressively when commanded to attack via Berserk Mode
- **Using monster/player targeted homunculus skill:** If the target is a player in a non-PVP situation, move into range and attempt to use the skill on them. Otherwise, attack the target, opening with the specified skill. You can configure the homunculus to use skills more aggressively when commanded to use a skill via Berserk Mode.
- **Using an untargeted or ground targeted homunculus skill:** This uses the skill without notifying the AI. This can result in the AI getting confused about skill delays, durations, and similar.
- **Sit:** When you sit, the homunculus will become non-aggressive unless *DoNotUseRest* is disabled.

## ***Commanding a Mercenary***

From within the game, the client provides for a means of giving a limited number of commands to your mercenary.

- **Ctrl + R:** Enter standby mode. During this mode, the mercenary will become non-aggressive. If *DefendStandby* is enabled, it will defend you while in this state. If *StickyStandby* is enabled, it will return to this mode after it finishes fighting something. Press Alt + R again to exit standby mode.
- **Ctrl + Right click:** Move to this location. See *MoveSticky* and related options. Also used for friending.
- **Ctrl+ Double right click, on monster:** Drop everything, and attack this monster. You can configure the mercenary to use skills more aggressively when commanded to attack via Berserk Mode
- **Using monster/player targeted mercenary skill:** If the target is a player in a non-PVP situation, move into range and attempt to use the skill on them. Otherwise, attack the target, opening with the specified skill. You can configure the homunculus to use skills more aggressively when commanded to use a skill via Berserk Mode.
- **Using an untargeted or ground targeted mercenary skill:** This uses the skill without notifying the AI. This can result in the AI getting confused about skill delays, durations, and similar.
- **Sit:** When you sit, the mercenary will become non-aggressive unless *DoNotUseRest* is disabled.

## ***How to friend another player***

Friendied players will be defended by the mercenary or homunculus as if they were the owner. Friending will last until unfriended. Although it is possible to friend other players' mercenary or homunculus, the ID of a mercenary or homunculus changes each time the user relogs, teleports, or summons the homunculus – as a result, friending another players mercenary or homunculus will last only until they do one of those things.

1. Command mercenary/homunculus to walk to 1 cell north or south from the player.
2. Mercenary/homunculus will walk a circle around the target if the friend was added, or move back and forth in a straight line if the friend was removed.

Alternately, friends can be added by directly editing *A\_Friends.lua*, using the account ID of the player from ROPD or other sources. To add a friend, add a line:

```
MyFriends[(account number)]=1
```

# Configuration options

These options control both the basic and advanced behavior of the homunculus.

**OldHomunType** - For homunculus S, this value is used to determine what the homunculus was in its past life. For your convenience, the three possibilities are listed in `H_Extra.lua`, and you need only comment out the incorrect option (by adding "--" in front of it) and uncomment the correct option (by removing the "--" in front of it). This setting is ignored if your homunculus was previously a Vanilmirth; Vanilmirth-ness can be automatically detected.

**LagReduction** – On some servers, a peculiar type of lag is observed on crowded or heavily loaded maps, where both the player and homun lag when the homunculus is out, but lag is not observed with the homun not out. Setting this to 1 (true) will try to reduce the number of commands the homun sends; this has the disadvantage of reducing responsiveness on servers that don't lag. *This setting is recommended for all users with homun and merc out at same time!*

As of AzzyAI version 1.55, this can be set to a number larger than 1. In this case, after sending a command, the homun will wait one or more AI cycles before sending further commands. This will dramatically lower responsiveness, but it should make use of the homunculus practical even on very poorly performing servers.

## Options related to engaging and fighting enemies

Your homunculus will normally engage (ie, seek out and attack, without having been attacked) monsters which it is configured to *attack* (see: Tactics) when they are near the mercenary or homunculus.

**StationaryAggroDist, MobileAggroDist** – This is the distance from the owner, in cells, within which the homunculus will attack targets while the owner is stationary or moving, respectively. These options replace *AggroDist* in 1.35 and earlier. These do not control how far the homunculus will move from owner, nor to what distance it will return to (see *MoveBounds* and *FollowStayBack*).

**AggroHP, AggroSP** – The homunculus will engage monsters only when it has **more** than this percentage of its HP or SP. If you set either to 100, it will never engage targets and will only attack when homunculus/owner/friend is attacked.

**AttackLastFullSP** – For monsters where the tactic is set to `ATTACK_LAST`, if this is enabled, these monsters will be attacked only if the homunculus has 100% SP (this is a good setting for event monsters and plants, where you don't want them sacrificing any SP regen to kill them, but might as well kill them when at full SP).

**DoNotAttackMoving** – Set to 1 to not attack moving monsters. This may help prevent wasted time against fast moving targets, kill-stealing from people mobbing monsters, and so on. Obviously, it is unsuitable for use while AFK leveling in OD2 for example.

**SuperPassive** – If set to true (1), the homunculus will never fight another monster unless directly commanded to.

**DoNotChase** – If set to true (1), the homunculus will never move to attack a monster. It will still engage monsters at range if it has access to a ranged attack and is configured to use it.

**DefendStandby** – If set to 1, when homunculus is placed in standby mode using alt+t, it will continue to defend the owner.

**StickyStandby** – If set to 1, when homunculus defends owner while in standby, it will return to standby afterwards. If set to 2, this will be remembered even if the owner teleports or relogs. Recommend setting to 1 or 2 when *DefendStandby* is in use.

**UseDanceAttack** – If set to 1, when homunculus is attacking with normal attacks, it will “dance” to increase it’s effective attack speed. homunculus only (dancing no longer increases the attack speed of mercenaries). Note that dancing prevents the homunculus from regenerating SP while fighting monsters – if your homunculus has an active attack skill, you are likely better off NOT using dance attack.

**TankMonsterLimit** – Set this to the maximum number of monsters that the homunculus should attempt to tank for another killer using the *TACT\_TANK* tactic.

**AutoDetectPlant** (*mercenary only*)– When this is set to 1, the mercenary will assume that all monsters that it has not seen move or attack are plants/mushrooms, and should be treated differently (ignored, by default, see Tactics). This setting should be set to 0 if you are fighting stationary monsters (such as Geographers).



### *Options related to movement*

**FollowStayBack** – Your homunculus will stay this many cells behind you when following you.

**StationaryMoveBounds, MobileMoveBounds** – This is the distance from the owner, in cells, within which the homunculus may move, for example, to respond to attacks, while the owner stationary or moving, respectively. If it finds itself beyond this distance, it will drop everything to try to get back to you. These options should be set no higher than 15. To control the distance at which it will attack monsters, use the *AggroDist* options. To set how close to the owner it will return to after killing, use *FollowStayBack*. This replaces *MoveBounds* in 1.35 and earlier.

**MoveSticky** – If set to 1, if you command your homunculus to move, it will stay there, and not return to you, until you tell it to move again.

**MoveStickyFight** – If set to 1, when your homunculus is in the above “sticky move” state, it will still fight normally.

**UseIdleWalk** – Set this to a value other than 0 to enable walking motions while idle and when HP and SP are over AggroHP/SP, and SP is *IdleWalkSP*. The options are:

1. Circle, around owner.
2. Cross, around owner.
3. Square, around owner.
4. Random
5. Route – Linear (see Route Walk in advanced options)
6. Route – Circular (see Route Walk in advanced options)

**IdleWalkDistance** – For circle, cross, square, or random idle-walk, move this far from owner.

**IdleWalkSP** – When SP (as a percentage) is lower than this, do not use IdleWalk.

**RelativeRoute** – Route is specified in relative terms (see Route Walk in advanced options)

**RestXOff, RestYOff** – When you sit down, your mercenary/homunculus will go non-aggressive, and if it isn't doing anything else, it will move close to you. This is the x and y offset it from the player's position that it will move to. Can be positive or negative.

**DoNotUseRest** – When this is set to 1, the homunculus will not “rest” when the owner sits.

**ChaseSPPause** – When this is set to 1, the homunculus will delay chasing monsters and following of the owner immediately before an SP-regen tick, and will wait until that SP regen tick occurs before moving. This can be overridden on a per-monster basis by TACT\_CHASE; if set to CHASE\_ALWAYS for a monster, it will disregard this consideration.

**ChaseSPPauseSP** – If *ChaseSPPause* is enabled, it will be used when the homunculus has less than this much SP. If specified as a negative number, it will be treated as a percentage.

**ChaseSPPauseTime** – If *ChaseSPPause* is enabled, this is the maximum time (in milliseconds) that the homunculus will wait for an SP tick (if an SP tick is farther away than this, it will not try to wait for it).

## *Options relating to use of attack skills*

**UseAttackSkill** – Set this to 1 to enable automatic use of offensive skills.

**UseSkillOnly** – Set this to Skill Only (1) to only use skills to attack. Set this to While Attacking (0) to use skills while attacking, but not while chasing a monster. Set this to Chase (-1) to use while chasing or attacking. The key difference between using while chasing+attacking vs attacking only is that if set to attacking only (1), it will not use ranged attack skills until it is within melee range. ***Chase (-1) is the recommended setting, and is the correct setting for most users – Do not change this unless you understand why you are doing so!***

**AutoMobCount** – If the mercenary/homunculus has a mob attack, it will use it only if there are at least this many targets attacking it. This is subject to the *Weight* tactic (see below)

**AoEFixedLevel** – If the homunculus has a mob attack, it will always use the level specified by the *(homunculus S type)(homunculus s skill name)Level* option, regardless of tactics skill level settings. homunculus only, defaults to 1.

**AutoSkillLimit** – Set this to a number to limit the number of times an offensive skill will be used on any target. This can be overridden by tactics settings.

**UseHomunSSkillChase** – Set to 1 (default) to use the homunculus S single target attack skills while chasing

**UseHomunSSkillAttack** – Set to 1 (default) to use the homunculus S single target attack skills while attacking.

The purpose of these two options is to give players a way to disable the skills while attacking or chasing. For example, many of the homunculus S skills have interruptible cast times – if you're on a map with monsters that your homunculus cannot flee, you probably do not want to use these skills while attacking – on the other hand, while chasing, the monster is not attacking the homunculus, and you can safely use interruptible attack skills on it.

**AttackSkillReserveSP** – The homunculus will not use offensive skills if they would leave it with less than this amount of SP. This is overridden on a per-monster basis by TACT\_SP. The purpose of this option is to keep a reserve of SP for emergencies (via BerserkMode and Berserk\_IgnoreMinSP), or particularly dangerous monsters (via TACT\_SP) and/or to ensure that homunculus reserves enough SP to maintain buffs. For limiting use of the buff skill Amistr Bulwark, see *UseSmartBulwark*

**UseEiraEraseCutter** – If set to 1, enable use of the Eira skill, Erase Cutter.

**UseEiraXenoSlasher** – If set to 1, enable use of the Eira skill, Xeno Slasher.

**UseBayeriStahlHorn** – If set to 1, enable use of the Bayeri skill, Stahl Horn.

**UseBayeriHailageStar** – If set to 1, enable use of the Bayeri skill, Hailage Star.

**UseDieterLavaSlide** – If set to 1, enable use of the Dieter skill, Lava Slide. See *LavaSlideMode*.

**UseSeraParalyze** – If set to 1, enable use of the Sera skill, Needle of Paralysis.

**UseDieterVolcanicAsh** – If set to 1, enable use of the Dieter skill, Volcanic Ash, as a debuff skill.

**UseSeraPoisonMist** – If set to 1, enable use of the Sera skill, Poison Mist. See *PoisonMistMode*.

**UseSeraCallLegion** – If set to 1, enable use of the Sera skill, Call Legion. See

TACT\_SKILLCLASS.

**UseEleanorSonicClaw** – If set to 1, enable use of the Eleanor skill, Sonic Claw.

**UseEleanorTinderBreaker** – If set to 1, enable use of the Eleanor skill, Tinder Breaker.

**EleanorDoNotSwitchMode** – Normally, we try to track what mode we're in and correct it with Style Change. It has been found that this does not always provide acceptable behavior, due to challenges in determining what mode the homunculus is in. If *EleanorDoNotSwitchMode* is set to 1, we instead assume we are always in the right mode, and will never autocast Style Change – it is up to the owner to make sure it is in the right mode.

**EiraEraseCutterLevel** – Use this level of the Eira skill, Erase Cutter.

**EiraXenoSlasherLevel** – Use this level of the Eira skill, Xeno Slasher.

**BayeriStahlHornLevel** – Use this level of the Bayeri skill, Stahl Horn.

**BayeriHailageStarLevel** – Use this level of the Bayeri skill, Hailage Star.

**DieterLavaSlideLevel** – Use this level of the Dieter skill, Lava Slide. See *LavaSlideMode*.

**SeraParalyzeLevel** – Use this level of the Sera skill, Needle of Paralysis.

**SeraPoisonMistLevel** – Use this level of the Sera skill, Poison Mist. See *PoisonMistMode*.

**SeraCallLegionLevel** – Use this level of the Sera skill, Call Legion.

**EleanorSonicClawLevel** – Use this level of the Eleanor skill, Sonic Claw.

**EleanorSilverveinLevel** – Use this level of the Eleanor skill, Silvervein Rush.

**EleanorMidnightLevel** – Use this level of the Eleanor skill, Midnight Frenzy.

**EleanorTinderBreakerLevel** – Use this level of the Eleanor skill, Tinder Breaker.

**EleanorCBCLevel** – Use this level of the Eleanor skill, C. B. C.

**EleanorEQCLLevel** – Use this level of the Eleanor skill, E. Q. C.

**AoEFixedLevel** – If set to 1 (the default) the AI will always use the level specified by the *(homunculus S type)(homunculus s skill name)Level* directive when using AoE skills – if this is set to 0, the level used can be overridden by the monster-specific tactics settings. Usually you want to leave this at 1, so your homunculus will, for example, use a low level of bolts on an enemy (to save SP), but use the max level of the AoE skill in order to maximize the size of the AoE. homunculus only (as mercenaries can only use max level of their skills).

**AoEMaximizeTargets** – Set this to 1 to try to hit as many targets as possible with AoE attacks, at the risk of aggroing additional monsters and not hitting the original target (for example, if there are a large number of monsters stacked up on the northeast side of the homunculus, as it attacks a solitary monster to the southwest, using a skill with a 3x3 AoE – if this was 0, it will not use an AoE (as it would only hit 1 target). If this was 1, it would use the skill on the stack of monsters to the northeast, resulting in it not hitting it's current target, but hitting the whole stack of monsters).

**AoEReserveSP** – If this is set to 1, attack skills will not be used if doing so would leave the homunculus without enough SP to use it's AoE skill

**AllowSBR44** – If this is set to 0 (the default), the AI will block any attempt to manually cast SBR44. This is to help prevent accidental use of the skill. Unfortunately I can't find a way to do the same thing for Self Destruct, which is much easier to accidentally use.

## *Options relating to use of buff skills*

For each buff skill, you can set it to be used at different times depending on what you set the option to. The options are:

- 2: When idle, if nothing else to do
- 1: While chasing (so it won't waste the skill when nothing else to kill)
- 0: Do not use this skill.
- 1: While idle
- 2: While chasing or attacking in berserk mode (see Berserk Mode options below)
- 3: As soon as possible, interrupting other actions. This will not result in the target being dropped EXCEPT in the case of Painkiller and Provoke.

For homunculus S buff skills, no facility is provided to set the level, on the grounds that the higher levels of those skills are all-around better to use. For non-S homunculus skills, there is an option to set the level, because the higher levels have longer cooldowns; as a result the lower levels are more useful in many situations.

**UseOffensiveBuff** – This controls use of offensive self-buff skills:

- Flitting
- Mental Charge
- Weapon Quicken
- Bloodlust

**UseDefensiveBuff** – This controls use of defensive self-buff skills, if it has one:

- Amistr Bulwark
- Accelerated Flight
- Guard
- Parrying
- Urgent Escape

**UseAutoSight** (*mercenary only*) – This controls use of Sight.

**UseAutoMag** (*mercenary only*) – This controls use of Magnificat.

**UseDieterGraniticArmor** – This controls use of the Dieter skill Granitic Armor.

**UseDieterMagmaFlow** – This controls use of the Dieter skill Magma Flow.

**UseDieterPyroclastic** – This controls use of the Dieter skill Pyroclastic.

**UseEiraOverredBoost** – This controls use of the Eira skill Overred Boost.

**UseSeraPainkiller** – This controls use of the Sera skill Painkiller on the owner.

**UseBayeriGoldenFerse** – This controls use of the Bayeri skill Golden Ferse.

**UseBayeriAngriffModus** – This controls use of the Bayeri skill Angriff Modus.

**UseBlessingOwner** – This controls use of the GM Support Mercenary skill Blessing on the owner.

**UseBlessingSelf** – This controls use of the GM Support Mercenary skill Blessing on the mercenary.

**UseKyrieOwner** – This controls use of the GM Support Mercenary skill Kyrie Eleison on the owner.

**UseKyrieSelf** – This controls use of the GM Support Mercenary skill Kyrie Eleison on the mercenary.

**UseIncAgilOwner** – This controls use of the GM Support Mercenary skill Increase Agility on the owner.

**UseIncAgiSelf** – This controls use of the GM Support Mercenary skill Increase Agility on the mercenary.

**PoisonMistMode** – If set to 0, Poison Mist will be used as a normal AoE attack. Otherwise, it will be kept up centered on owner, in which case, this controls when to use it. It is recommended to set this to 1 when AFK leveling on crowded maps, as it will improve exp/hr and cause less disruption to other players on the map. Setting this to ASAP is not recommended.

**LavaSlideMode** – If set to 0, Lava Slide will be used as a normal AoE attack. Otherwise, it will be kept up centered on owner, in which case, this controls when to use it. It is recommended to set this to 1 when AFK leveling on crowded maps, as it will improve exp/hr and cause less disruption to other players on the map. Setting this to ASAP is not recommended.

**UseProvokeOwner** (*mercenary only*) – This controls use of Provoke on the owner.

**ProvokeOwnerMobbed** – If this is set to a non-zero number, provoke or painkiller will not be used on the owner if there are less than this many monsters on the owner, AND the owner is below 90% hp. TACT\_WEIGHT applies here.

**DefensiveBuffOwnerMobbed** – If this is set to a non-zero number, Painkiller and Kyrie Eleison will not be used on the owner if there are less than this many monsters on the owner, AND the owner is below an HP threshold set by *DefensiveBuffOwnerHP*.

**DefensiveBuffOwnerHP** – If *DefensiveBuffOwnerMobbed* is set to a non-zero number, Painkiller and Kyrie Eleison if the owner's HP as a percentage is higher than *DefensiveBuffOwnerHP*.

**UseSacrificeOwner** – This controls use of Sacrifice on the owner. This only works if the mercenary is within 10 levels of the player, and the skill behaves inconsistently due to game bugs – under certain conditions which remain unclear, it is possible for the mercenary to enter a state where it is never able to cast Sacrifice, as if Sacrifice is still up, even though it is not. Mercenary only.

**AmiBulwarkLevel** – This is the level of Amistr Bulwark to use. Default is 5.

**FilerFlitLevel** – This is the level of Flitting to use. Default is 1.

**LifEscapeLevel** – This is the level of Urgent Escape to use. Default is 5. Zero (0) is not a valid value – disable use of Accelerated Flight using *UseAutoQuicken*.

**FilirAccelLevel** – This is the level of Accelerated Flight to use. Default is 1. Zero (0) is not a valid value – disable use of Accelerated Flight using *UseAutoGuard*.

**UseSmartBulwark** – For an Amistr type homunculus, if this is set to 1, Amistr Bulwark will only be cast if doing so would leave the homunculus with at least 120 SP, so that it will be able to use Bloodlust if/when the cooldown ends. This will be disregarded if the homunculus has less than 160 max SP or use of bloodlust is not enabled.

**UseAutoHeal** – Set this to 1 to enable automatic use of healing skills (chaotic blessing or healing hands). Set this to 2 to enable automatic use of healing skills, but only when idle (including the time between killing one target and selecting the next). Set this to 3 to enable use of healing skills only when otherwise idle if there's nothing else to do. This works only with Lif and Vanilmirth based homunculi.

**HealOwnerBreeze** – Set this to 1 to have the AI use Silent Breeze to heal it's owner (in accordance with above UseAutoHeal, HealOwnerHP) if available. This should only be enabled if you're on a server with the silent breeze nerf AND you have 100% silence resist.

**HealOwnerHP** – This is the owner’s HP, as a percentage, below which the homunculus will attempt to use a healing skill to heal the owner (assuming *UseAutoHeal* is enabled). Lif will use level 5 of Healing Hands, while a Vanilmirth will use level 3 of Chaotic Blessings (unless it’s HP is below *HealSelfHP* and it is currently idle (so it has no enemy to heal), in which case it will use level 5).

**HealSelfHP** – For a Vanilmirth with Chaotic Blessings, set this to the HP (as a percentage) at which the homunculus will use Chaotic Blessings (level 4, see note above for when it will use level 5) to heal itself. This does not work for Lif, as Healing Hands can only heal the owner.

**PainkillerFriends** – Set to 1 to auto-painkiller friended players. Players will be added to the painkiller list if you manually command the homunculus to use Painkiller on them

**PainkillerFriendsSave** – Set to 1 if using *PainkillerFriends* to have homunculus remember players who you have prescribed painkillers to.

## *Options related to other skills*

**UseAutoPushback** – Set this to 1 to enable automatic use of pushback skills to get monsters off of the mercenary. This is subject to override by the tactics list, but must be enabled here to use. This is most useful for archer mercenaries, particularly the level 6 one (with skid trap). Mercenary only.

**AutoPushbackThreshold** – This is the distance between the mercenary and target at which the mercenary will attempt to use a pushback skill on it. Mercenary only.

**UseCastleDefend** – For an Amistr, enable this to use Castling if the owner is being attacked by enough monsters, and the Amistr is being attacked by fewer monsters than the owner.

**CastleDefendThreshold** – If *UseCastleDefend* = 1 then castling will be cast when there are at least this many monsters on the owner. The *Weight* tactic does apply to this.

**UseCastleRoute** – For an Amistr, enable this to use Castling to walk the owner along a route; see *Route Walk* under advanced options.

**UseBayeriSteinWand** – Enable this option to use the Bayeri skill Stein Wand (“Stone Wall”) when a sufficiently large mob is attacking the owner or homunculus.

**UseSteinWandOwnerMob** – Use steinwand when there are this many monsters attacking the owner (TACT\_WEIGHT applies here).

**UseSteinWandSelfMob** – Use steinwand when there are this many monsters attacking the homunculus (TACT\_WEIGHT applies here).

**BayeriSteinWandLevel** – Use this level of the Stein Wand.

**UseStienWandTele** – Use stienwand when you log in and when you land from teleport, but never any other time after a short delay. I'd suggest using this with *DoNotChase*, and use of Hailage Star enabled. The idea being that you teleport around, and if you see monsters, you stop teleporting, the Bayeri casts Stein Wand, and then blows the mob away with Hailage Star. This should not be used with *UseBayeriSteinWand*, as this may result in unexpected behavior.

**SteinWandTelePause** – Time to pause after landing (from teleport or summoning) before using Stein Wand if *UseSteinWandTele* is enabled.

### *Options related to Berserk Mode*

Through this feature, you can have the homunculus attack more aggressively in response to commands or large mobs. In the case of responses to commands, it will leave berserk mode upon killing the target.

**UseBerserkSkill** – Set to 1 to enter berserk mode when commanded to use an offensive skill.

**UseBerserkAttack** – Set to 1 to enter berserk mode when commanded to attack.

**UseBerserkMobbed** – Set to 0 to disable, otherwise, when fighting this many or more monsters at once (total of monsters on homunculus and friends/owner), homunculus will go into berserk mode until there are fewer than this many monsters.

**Berserk\_SkillAlways** – Set to 1 to always use offensive skills when in berserk mode.

**Berserk\_Dance** – Set to 1 to use dance attack when in berserk mode (homunculus only).

**Berserk\_IgnoreMinSP** – Set to 1 to ignore *AttackSkillReserveSP* when in berserk mode.

### *Options related to Kiting*

When using archer mercenaries, it is frequently advantageous for the mercenary to try to run away from monsters that try to attack it, while attacking them. This is called kiting (pronounced kite-ing). The default values for the kiting steps, thresholds, and bounds have been chosen empirically – you should not change them unless you have a good reason.

**KiteMonsters** – Set this to 1 to enable kiting.

**KiteParanoid** – Set this to 1 to default to kiting before being attacked. This can be overridden by tactics settings.

**KiteStep** – This is the number of cells that homunculus will move to kite. Leave at 5 unless you have good reason to change.

**KiteThreshold** – How close a monster has to be before triggering kiting, when monster has attacked homunculus. 3 works pretty well.

**KiteParanoidStep** – This is the number of cells that homunculus will move when kiting before being attacked. Leave at 2 unless you need the homunculus to be unusually fearful.

**KiteParanoidThreshold** – How close a monster has to be before triggering kiting without being attacked.

**KiteBounds** – This is the maximum distance the homunculus will move from owner to kite. Must be less than *MoveBounds*.

**FleeHP** – Only kite when below this much hp, as a percentage. Set to 0 to ignore this condition.



## *Other Options*

These options may be used to tune behavior, particularly on laggy connection.

**SpawnDelay** – After spawning, the homunculus will wait this long (in milliseconds) before trying to act. It is important to not allow the homunculus to act immediately; that can result in failure of killsteal prevention measures while teleporting.

**AutoSkillDelay** – homunculus will wait this long between trying to use skills, even those with no skill cooldown, to prevent problems like “double casting” of skills. This is the length of the delay in milliseconds.

**AssumeHomun** – With this set to 1, the homunculus will attempt to automatically friend the owner’s mercenary (and vice-versa). Set to 0 only if you (for whatever reason) do not want your homunculus to “ks” your mercenary (or vice-versa)

**UseAvoid** – homunculus only. When this is set to 1, whenever the homunculus sees a monster of a type listed in H\_Avoid.lua, it will forcibly exit the RO client. H\_Avoid.lua comes populated with all MVPs that can be summoned from Bloody Branches, as well as several nasty DB monsters. You may customize it by following the examples in H\_Avoid.lua. **It is recommended to test this before relying on it**, because on some versions of windows, os.exit() simply errors the client, without disconnecting you until you respond to the error message.

**PVPmode** – Set to 1 to enable PVP functionality

**StandbyFriending** – Set to 1 to use the old AzzyAI friending method.

**MirAIFriending** – Set to 1 (default) to emulate MirAI friending.

# Tactics

Through the tactics system, it is possible to configure your mercenary or homunculus to treat different types of monsters differently – for example, prioritizing powerful monsters, and ignoring plants and mushrooms.

## *Mercenaries and tactics*

Mercenaries cannot identify monsters. In order for any entry other than the default entry to be used on a mercenary, you must have an updated MobID file for the map and server you are on. See the separate document describing the use and creation of MobID files. For mercenaries, only the default tactic, and the two others noted below, can be used without creating a MobID file.

There are two ways to create a MobID file.

The first is manually, using the AzzyAI Improved Data Gathering basic AI. See the documentation included with that AI for more information

The second way is to use the mercenary and a homunculus at the same time, with LiveMobID. See the section below under Advanced Features below. Whenever merc and homun are used simultaneously, it is recommended to enable LagReduction.

## *Editing the tactics list manually*

The tactics is stored in H\_Tactics.lua or M\_Tactics.lua, for mercenary and homunculus respectively. The file contains an entry for each kind of monster you plan to be fighting. For each entry, there are 7 fields for different settings. The format of a tactics list entry is:

```
MyTact[id]={TACT_BASIC,TACT_SKILL,TACT_KITE,TACT_CAST,TACT_PUSH  
BACK,TACT_DEBUFF,TACT_SIZE,TACT_RESCUE,TACT_SP,TACT_SNIPE,TAC  
T_KS,TACT_WEIGHT,TACT_CHASE}
```

The 'id' is the type id of the monster (obtained from database site)

In addition to the IDs of monsters, there are several IDs used for more general behavior:

MyTact[0] is the default set of tactics the homunculus will use

MyTact[10] is the default set of tactics used with monsters detected as being summoned

MyTact[11] is the default set of tactics used for monsters that appear to be plants when AutoDetectPlants is turned on (mercenary only)

There is no limit to the number of tactics that can be added, however, there can only be one tactic for any given monster. See the notes in the Extras file for guidance on expanding the tactic system.

## *Editing the tactics list using the GUI editor*

Using the GUI, open the appropriate tactics tab.

- To add a new tactic, click the Add button, and fill in the monster name and id. The name is only cosmetic; the key value is the ID, which can be obtained from a database site. Select the tactics from the dropdown menus.
- To edit an existing tactic, click the tactic, and select the desired tactics from the dropdown menus.
- To remove a tactics entry, click the tactic, and click the remove button.
- When finished, click the Apply Settings button to save changes.

## ***Basic Tactics***

This option controls when and if the homunculus or mercenary should attack this monster.

**Tank (TACT\_TANK):** Hit monster once, and then hold it until something kills it.

**Tank & Mob (TACT\_TANKMOB):** Hit monster once, and then hold it until something kills it. If (when) there are enough targets attacking the homunculus or mercenary, attack one and use anti-mob skills to kill the mob.

**Ignore (TACT\_IGNORE):** Do not attack the monster, at all, unless manually commanded to do so

**Attack – Low (TACT\_ATTACK\_L):** Seek out and attack this monster only if there are no higher priority targets, and do not prioritize attacking this monster if it is currently attacking the homunculus or owner/friend.

**Attack – Medium (TACT\_ATTACK\_M):** Seek out and attack this monster, unless there are higher priority targets.

**Attack – High (TACT\_ATTACK\_H):** Seek out and attack this monster, assuming not busy responding to React monsters.

**Attack – Top (TACT\_ATTACK\_TOP):** Seek out and attack this monster – top priority.

**Attack – Last (TACT\_ATTACK\_LAST):** Seek out and attack this monster only if there's nothing better to do. See *AttackLastFullSP*. This option is a good choice for plants/mushrooms, worthless event monsters, and similar.

**React – Low (TACT\_REACT\_L):** Attack this monster when self/owner/friend attacked, low priority. *Attack – Medium* and *Attack – High* take priority over this, and do not prioritize attacking this monster if it is currently attacking the homunculus or owner/friend.

**React – Medium (TACT\_REACT\_M):** Attack this monster when self/owner/friend attacked, medium priority.

**React – High (TACT\_REACT\_H):** Attack this monster when self/owner/friend attacked, high priority.

**React – Self (TACT\_REACT\_SELF):** Attack this monster when mercenary/homunculus only attacked, with top priority (excepting *ATTACK\_TOP*) – intended for use on things that would pose a threat to homunculus if they were attacking the homunculus, and hence need to be killed ASAP.

**Attack Low, React Medium (TACT\_ATK\_L\_REACT\_M):** As *Attack – Low* when

the monster is not currently attacking the homunculus or owner/friend. Otherwise, as React – Medium. This is a particularly good choice for weak assist monsters, like steel chonchons in OD2, which are not a priority to kill, but can lead to dangerous mobs once aggro'ed.

## Sniping

Sniping tactics are treated like attack for the purpose of normal attacks, but if your homunculus is attacking another monster, and has an appropriate attack skill, and SP to use it, and would not otherwise use an anti-mob skill, it will use its attack skill on a nearby monster with the Snipe tactic *which it is not currently fighting*. This works best with Caprice. Take care that if the bolt does not 1-shot the monster, this will result in aggroing additional monsters on the homunculus.

**Snipe – Low (TACT\_SNIPE\_L):** Attempt to snipe this monster even while attacking other monsters, low priority

**Snipe - Medium (TACT\_SNIPE\_M):** Attempt to snipe this monster even while attacking other monsters, medium priority

**Snipe - High (TACT\_SNIPE\_H):** Attempt to snipe this monster even while attacking other monsters, high priority

## Monster priority list

1. Attack – Top
2. React – Self
3. React – High
4. React – Medium
5. Attack – High or Snipe – High
6. Attack – Medium or Snipe – Medium
7. React – Low
8. Attack – Low or Snipe – Low
9. Tank or Tank & Mob
10. Attack – Last

## ***Skill Tactics***

This option controls if and how many times an offensive skill will be used on a target of this type:

- SKILL\_NEVER - never use skills
- SKILL\_ALWAYS - always use skills.
- Set to a positive integer to use a skill that number of times.
- Set to a negative number to use a level of the attack skill less than the maximum level. (homunculus only). This is the proper setting for SNIPE tactics.

## ***Kiting Tactics***

This option controls whether to kite (run away from, generally rather clumsily) from this target, if kiting is enabled.

- KITE\_NEVER - never kite from this kind of monster.
- KITE\_REACT - kite from this kind of monster only if attacked.
- KITE\_ALWAYS - always kite from this monster - recommended for aggressive monsters.

## ***Reacting to casts***

This option controls whether to assume casts from this monster are aggressive acts and react to them. Also, this includes options which will immediately use a skill on a monster targeting the homun or owner with a skill that has a cast bar. The options are:

- CAST\_PASSIVE – do not treat casting as hostile.
- CAST\_REACT – treat casting on self/player/friend as hostile
- CAST\_REACT\_ANY – React to casts by immediately using any offensive skill
- CAST\_REACT\_BREEZE – React to casts by immediately using Silent Breeze
- CAST\_REACT\_OLD – React to casts by immediately using Moonlight or Caprice
- CAST\_REACT\_MOB – React to casts by immediately using an anti-mob skill
- CAST\_REACT\_DEBUFF – React to casts by using a debuff.
- CAST\_REACT\_MINION – React to casts by dispatching minions (ie, Summon Legion)

## ***Pushback Tactics***

This option controls whether to use pushback skills to try to push monsters off of the mercenary or owner. This is available for mercenaries with pushback skills only, as no homunculus skills have a pushback effect other than Stahl Horn, which is thoroughly ineffective for pushing monsters away due to its long cast time.

- PUSH\_NEVER – do not use pushback skills on this monster.
- PUSH\_SELF – Use pushback skills on this monster if mercenary is attacked
- PUSH\_FRIEND Use pushback skills on this monster if owner/friend is attacked

## ***Debuff Tactics***

This option controls what, if any, debuff skills will be used (mercenary only):

- When using GUI, select the skill, and whether you want it to use it when attacking or chasing.
  - Set to All to use any skill listed in BasicDebuffs[] (default: everything except traps and provoke) .
- When editing tactics file directly, Set to the ID of the skill (you can use the skill name, ex 'MER\_PROVOKE') to use that debuff – use a positive number to use it only while attacking, or a negative number (or, if using the skill name, ex: '-

1\*MER\_PROVOKE' to use it while chasing.

- Set to 1 or -1 to use whatever debuff the mercenary might have while attacking or while chasing, respectively

## ***Skill-class Tactics***

This determines which kind of single-target attack skills to use against a given type of monster. This was intended for use with homunculi, but can be used for mercenaries; in that case, the only option that may be interesting is CLASS\_MOB, and even then, the mercenary tactics limitations may make this less than useful to mercenaries.

- CLASS\_BOTH – Default – use either type of skill on this monster.
- CLASS\_OLD – Use only pre-S single target skills (ie, Moonlight and Caprice).
- CLASS\_S – Use only homunculus S single target skills – on a mercenary, this will result in no use of skills versus the monster; don't do it.
- CLASS\_MOB – Use anti-mob skills against this target, even if there are not enough monsters around it to normally justify using an anti-mob skill.
- CLASS\_COMBO\_1 – When using combo skills, use the second combo skill after the first, but do not use the third. Note that Eleanor's combo skills do less damage than simply spamming sonic claw with 10 spheres, so this should be used only when another effect of the combo skills is desired.
- CLASS\_COMBO\_2 – When using combo skills, complete the combo. Note above caveat.
- CLASS\_MINION – Summon minions to attack this monster. Presently the only applicable skill is the Sera skill Call Legion. This works well with a snipe tactic, as it will send it's minions off to attack the target, and then go attack something else while it's minions shred their target; this also seems to reduce the incidence of the bug wherein the summoned minions stop attacking their target.
- CLASS\_GRAPPLE – Use Tinder Breaker against this monster (Eleanor only)
- CLASS\_GRAPPLE\_1 – As above, only combo to QBC.
- CLASS\_GRAPPLE\_2 – As above, but complete the combo.
- CLASS\_MIN\_OLD – Summon minions, AND use pre-S homunculus attack skills on this monster.
- CLASS\_MIN\_S – Summon minions, AND use homunculus s attack skills this monster.

## ***Rescue Tactics***

This option controls whether the homunculus or mercenary will drop everything to come to the rescue of the owner/friends/owner's other mercenary/homunculus if this monster is attacking them. See the configuration option *RescueOwnerLowHP* which can effect rescue behavior depending on owner's HP.

- RESCUE\_NEVER - Do not rescue anything from this monster.
- RESCUE\_FRIEND - Rescue friends, but not owner.
- RESCUE\_RETAINER - Rescue the owner's other homunculus/mercenary.

- RESCUE\_OWNER - Rescue the owner.
- RESCUE\_SELF - Drop everything to defend self against this.
- RESCUE\_ALL - All of the above except self.

## ***SP Tactics***

If this value is set to a positive number, that value will be used instead of *AttackSkillReserveSP* when fighting this monster. Otherwise, *AttackSkillReserveSP* will be used normally. By setting a higher value for weak monsters, you can keep SP in reserve for the stronger monsters, without entirely disabling skill use on the weaker ones.

## ***Snipe Tactics***

This tactic allows you to turn off sniping when attacking a particular monster, so it will be killed faster.

- SNIPE\_OK – Snipe other monsters while attacking this monster.
- SNIPE\_DISABLE – Do not snipe other monsters while attacking this monster.

## ***KS Tactics***

This tactic determines how polite the homunculus will be fighting this kind of monster.

- KS\_NEVER – Do not attack this monster if it is attacking or being attacked by another player.
- KS\_POLITE – Do not attack this monster if it is moving, which might indicate that it was chasing another player. Works like *DoNotAttackMoving*.
- KS\_ALWAYS – Treat this monster as free-for-all, and attack it without regard for other players. Warning: Per the iRO terms of service, players are responsible for the actions of their homunculus. Accordingly, use of this option on monsters which are not FFA may result in temporary suspension of your account and/or acts of vigilantism. Use of this option on monsters that are not free-for-all is strongly discouraged.

## ***Weight Tactics***

Set this to a positive number (decimals encouraged). The default is 1. In all cases where monsters are counted for some purpose (ex, determining whether to enter berserk mode or use mob skills), this monster will be counted as this many monsters. For example, if I have 2 monsters with a weight of 0.4 attacking me, 1 monster with a weight of 0.5 attacking me, and another with a weight of 1.2 attacking me, that will be counted as  $(2*0.4 + 0.5 + 1.2=)$  2.5 monsters.

## ***Chase Tactics***

This option controls whether to move to chase after a target. This behaves similarly to *DoNotChase*, only for specific monster types.

- CHASE\_NORMAL – Behave as per *DoNotChase*
- CHASE\_ALWAYS – Chase this monster, even if *DoNotChase=1* – this is a good choice for a vani in OD2 – set the orc archers to CHASE\_ALWAYS, and set *DoNotChase=1* to not chase anything else, so the homunculus doesn't move (and hence not regen sp) unless it has to in order to get to an archer.
- CHASE\_NEVER – Do not chase this monster, even if *DoNotChase=0* – this can lead to obvious undesirable behavior, as this does not prevent it from being targeted. It is the responsibility of the user to make sure that this is used in a manner that doesn't cause problems.
- CHASE\_CLEVER – Wait for an SP regen tick (per *ChaseSPPause*) when chasing this monster, even if *ChaseSPPause* is not otherwise enabled.



## Advanced Settings:

These advanced settings are controlled by the Extras configuration. This extras file is a page of lua code that is imported after all other parts of the AI are loaded. The included Extras files contain instructions for using them for several advanced features, and even guidance on using it to expand the AI. See the developer guide for more details on the facilities available in the Extras configuration.

Three relevant options are included in the default Extras configuration:

**NewAutoFriend** – Uncomment the `NewAutoFriend = 0` line if you are using an AI other than AzzyAI for your mercenary (if this is for the homunculus) or vice versa. If this option is used, you must summon your mercenary and homunculus, and then relog or teleport in order to trigger the friending.

**Autofriending** – If you have multiple accounts running on the same computer, and want their homuns to help each other, friend the players (this should be done by hand, due to race conditions, since friend list is shared by all homuns running from a specific locations - but if you insist on doing it through the game, only have one homunculus out at a time while friending). AzzyAI will attempt to detect their `H_ID/M_ID` files and automatically friend their homuns and mercs. To ensure that this behavior works, summon homuns on all accounts, and then walk the players off screen of each other and back.

**AggressiveAutofriend** – Additional option for Autofriending. This will much more aggressively synchronize friending between multiple accounts running on one computer - you do not need to walk off screen, and resummoning homunculus will not confuse it. This relies on frequently checking `H_ID/M_ID` files, and may result in poor performance on slower machines. Set `AggressiveAutofriend = 1` in `H_Extra/M_Extra` to enable this behavior.

**FriendAttack** – In this section, you can configure which motions, on the part of the owner of a friend, should be interpreted as offensive acts, and hence a cue for the homunculus to attack the targeted monster. Set them to 1 to treat them as offensive acts.

**BasicDebuffs** – In this section, you can configure which debuffs will be used if debuffs are enabled, but no specific debuff is specified in Tactics. Set a debuff to 1 to enable use of it.

**LiveMobID** – If this is enabled, on both mercenary AND homun, both owned by same player and out simultaneously, the homunculus will record monster ID's continuously, while the mercenary loads it. It will be written to the `AggressiveRelogPath`, because this will generate a lot of disk activity. Whenever merc and homun are used simultaneously, it is recommended to enable LagReduction.

**AggressiveRelogTracking** – Uncomment this line to enable much more rigorous tracking of relog events for tracking of skill durations. This is done by repetitively

writing a file to record when the homunculus is not logged in. This generates a large amount of disk activity, and may result in performance degradation on some systems. You can specify where to store this file using `AggressiveRelogPath` – if you have a particularly fast storage device, set the path to put the file on that device. The write activity generated by this is not so great as to cause a problem for a solid state drive, even when used for an extended period of time.

**Route Walk** – Route walk instructs the mercenary or homunculus to walk along a pre-defined route. On a mercenary, it is possible to auto-follow the mercenary, and let it drag you around the map, and on Amistr type homuns, it can be set to use `Castling` to have it move you around the map (see *UseCastleRoute*). You can also define a “relative route” (see *RelativeRoute*), to provide a custom alternative to the usual options for `IdleWalk` (for example, it could be made to follow a heart-shaped pattern).

To enable it, set `UseIdleWalk` to 5 or 6 (`Route_Circle` or `Route_Linear` in the GUI)

To use this feature, you must also define a Route in `H_Extra` or `M_Extra`. This consists of a single line with the following format.

```
MyRoute={{x1,y1},{x2,y2}, ... {xn,yn}}
```

These points should be no more than 8 cells distant from each other, and making a route for a map can be a laborious exercise.

In previous versions of AzzyAI, this was stored in the `Route.lua` file. It is now stored in `M_Extra.lua`, with other advanced feature configuration.

Example – Relative route for heart-shaped idle walk:

```
UseIdleWalk=6 (Route – Circular)
```

```
RelativeRoute=1
```

```
MyRoute={{-5,0},{1,4},{3,2},{1,0},{-3,2},{-1,4}}
```

**Alternate Tactics** – the included (commented out) code serves as an example of switching between two tactics lists. See the Development documentation for more information.

### **PVP\_Tactics:**

The tactics used in PVPmode are stored in `(H or M)_PVP_Tactics.lua`. They are edited in the same way as normal tactics, however they are used only against other players. PVP tactics do not include the SP, Chase, Weight or KS tactics, because those are not appropriate options for PVP. There are two ways to mark players.

- Add a tactic to `PVP_Tactics` using the player’s account id number (from ROPD), and configure appropriately.
- Add a line to `A_Friends.lua` for that player including one of the key words KOS, ENEMY, NEUTRAL, FRIEND or ALLY, and configure the `PVP_Tactics` for those classes of target, eg:

MyFriends[1234567]=ALLY

### Expanded logging:

In addition to the built-in TraceAI logging, AzzyAI can keep several additional logs to record activity around general or specific events. These can be enabled by setting the *LogEnable* options in H\_Extra/M\_Extra to 1. Logged data is saved in the RO folder, in files named for that option, for example, the error log is saved in *AAI\_ERROR.log*. Log rotation is not performed – this can result in very large log files, particularly if SKILLFAIL and CLOSER logging are enabled.

- LogEnable[“AAI\_ERROR”] – Record error conditions. This is enabled by default. Contact support if you are getting a large number of messages recorded in AAI\_ERROR.
- LogEnable[“AAI\_SKILLFAIL”] – Record events involved with skill failure detection and recasting. This should be enabled when investigating issues involving skills being recast excessively, or interrupted skill casts not being recognized as such.
- LogEnable[“AAI\_CLOSER”] – Record the behavior of the Closer() function, which is used very frequently within the AI, and has often been involved in problems in the past.
- LogEnable[“AAI\_DANCE”] – Record the cells moved to and from when *UseDanceAttack* is enabled.
- LogEnable[“AAI\_LAG”] – Record lag reduction actions taken when *LagReduction* is enabled.
- LogEnable[“AAI\_ACTORS”] – Record all actors seen, their location, and their type IDs. This will produce huge log files very quickly on busy maps (>1MB/minute) and may result in client crashes due to the volume of data being recorded. Be prepared for this when using this logging option. This is intended for use when you need to find out the ID of a monster or player.

# Version History

## 1.55

- ChaseSPPause, UseDieterLavaSlide/UseSeraPoisonMist message in GUI.
- Add UseDieterVolcanicAsh and associated tactics options to GUI.
- Add UseSmartBulwark to GUI - for some reason it was missing.
- Add support for using Volcanic Ash as a debuff.
- LagReduction can now be set to values higher than 1, this further slows homun responses, in an effort to reduce homun-lag on busy zone servers.
- New logging option to log all actions of lag reduction mode in H\_Extra and M\_Extra.
- Change default LavaSlideMode and PoisonMistMode to 1 (Idle) by popular demand.
- Improve logging for config errors.
- Disable painkiller if sera doesn't have poison mist, since it can't have painkiller. It will still log complaint in AAISStartH.
- Handle case where owner is surrounded by monsters so painkiller is impossible.
- Improved logging in PROVOKE\_ST
- Correct issue with skill selection where tact\_skillclass is set to a combo or grappler option.
- Correct issue with grappler combos not working at all.
- Correct issue with sphere counting.
- Correct issue with AoEFixedLevel not being applied due to a typo.
- Added missing timeout globals to Const\_.lua

## 1.541

- Correct client crash issue.
- Tighten limit on movement to 14 cell from owner instead of 15.

## 1.54

- Reorganize Standpoint to simplify code and give us a place to check for occupied cells
- Record occupied cells in AI() data gathering.
- Check and correct for occupied cells on clients using Lua 5.1 only.
- AI no longer uses monster location as "last resort" for chasing, as this no longer works.
- New measures to prevent unwanted behavior from AttackTimeLimit
- Corrected two issues that resulted in spurious errors being logged.
- AoEMaximizeTargets is now checked for skills other than brandish spear and focused arrow strike.
- Corrected issue with debuffs obeying attack vs chasing tactic option.
- Added AttackDebuffWhenAttacked option - if set, debuffs set to be used while attacking are only used if the monster is attacking the homun or owner.
- Corrected issue where skills could be erroneously determined to have failed, resulting in multicasting certain skills. This is not a perfect fix, but it should improve the matter.
- Specific changes to painkiller to address issues with the cast time of that skill not matching expected values.
- Corrected issue with monsters set React (Self) being attacked when they were attacking owner/friends, not just homun.
- Corrected error when using ATTACK\_LAST and AttackLastFullSP options
- Corrected issue with AoEMaximizeTargets counting targets set to 'ignore'
- Corrected range of spear mercenary skills and normal attacks to 2, Dec Agi to 9, Lex Div to 5.
- Corrected range and target mode of mercenary recovery skills.
- Added improved logging to Attack State
- Corrected issue with manually commanding merc to use ground targeted skills.
- Corrected cooldown of bloodlust. Added 10 sec grace time to bloodlust and mental charge to prevent it from missing the recast.
- Reworked obstacle avoiding and poslag detection.
- Documented AttackLastFullSP
- Add DoNotAttackMoving, LiveMobID to GUI

- Clarify AttackTimeLimit description
- New icon by Kami Kali.

### 1.53

- The case where the homun is in move command state but the location to move to is off screen or invalid is now recognized and the movement command is ignored. Previously, the homun would hang in this state.
- UseSmartBulwark will now check ALL buff skills, and make sure you'll have enough SP for a full suite of buffs after casting bulwark. Note that you will want to also set ReserveSP if you want it to ever cast bulwark, otherwise it could keep it's SP below this threshold by casting attack skills, and it would never use bulwark
- Added LiveMobID option, under H\_Extra and M\_Extra. This allows MobID to be auto-generated as long as both homun and merc are present, with the homun "spotting" for the mercenary. Like AggressiveReLogTracking, this involves a lot of disk activity, and may produce poor performance if used on a system with a slow hard drive.
- Merc AI will no longer crash if no Mob\_ID.lua file is present.
- Mob\_ID file no longer requires array definition at start of file (MobID={}).
- Corrected issue that could lead to double-casting of lava slide.
- Cleaned up logic around skill fail detection to prevent potential bad things.
- Improvements to the use of V\_POSITION\_APPLY\_SKILLATTACKRANGE, it is hoped that these will correct some emergent issues in 1.52 related to use of the new API calls; it will now be ignored:
  - If it tells us to move to the location of the target to use a normal attack.
  - If alt ~= nil, indicating trouble moving to the target - we will now assume it's having trouble because we're getting bad target cells.
  - If it tells us to move to the location of the target and it's a player (this is doomed to fail)

### 1.521

- Corrected issue with 1 range skills being used on players. This was particularly relevant with painkiller, rendering the autocast useless.

### 1.52

- If we see lua version 5.1.x we do the following differently;
  - Use builtin method to find stand point, unless doing motion prediction.
  - Use V\_SKILLATTACKRANGE\_LEVEL as fallback if we face a skill we don't know the range for.
- Fixed rarely encountered issue with Tanking which reduced responsiveness.
- Added kludgy workaround to deal with the bathory in eden group. This will cause bathories in MOTION\_STAND at 174,33 to be ignored.
- AAI\_ACTOR logging no longer hangs the client
- Add support for using Silent Breeze to heal owner, now that it's possible the owner could be immune to it's silence effect. Enable with HealOwnerBreeze
- IdleWalk should be more fluid.
- If we can't write the startup log, we now throw an error that describes the problem.
- Improved coverage of Poison Mist when PoisonMistMode~=0
- We now default to PoisonMistMode=1
- Cleaned up AttackRange and related functions to take advantage of new functionality and remove dead code
- Added formatval() utility function for plugin developers, which will convert any value into something safe to concatenate into a string, and enclose strings in single-quotes. Meant for logging, where you want to get the logging message when some value you're logging is nil (the exact case where you want to know all you can!), not a "concatenate nil value" error message.
- Added HealOwnerBreeze to GUI
- Documented LagReduction

## 1.51

- Fix issue with Amistr Bulwark
- Issues with not attacking when at exactly 0 sp fixed
- Fix several issues with GUI not saving options correctly.
- Clarify GUI messages about MOB\_ID
- Corrected issue with PVP tactics in GUI
- Fix issue with Berserk Mode feature not working.
- No longer attack clones produced by the Illusion: Shadow skill by default
- Fixed issue where homun would fail to return to owner when UseIdleWalk was enabled, but homun was not eligible for using idlewalk due to low HP/SP.
- Integrated twRO lag mod as new option: LagReduction - Set to true (1) if you encounter lag with homun out. Setting this to true will reduce responsiveness of the homun, however. You may want to enable this only while using homun on particularly heavily loaded maps.
- New Feature: REACT\_tactics to use attack or defense skills in response to monster casting on you.
- Fixed issues with OnSKILL\_AREA\_CMD\_ST() which would be relevant if the devs ever fixed ground targeted skills to call SKILL\_AREA\_CMD instead of acting as though the player was using the skill (which causes the casts to often fail or cause the player to move, because it's trying to get the player in range instead of the homun).
- Added DoSkillHandleMode() function to developer API. This is called when a skill is used by DoSkill() when DoSkill() has been passed a negative argument for mode. This allows you to handle this case. It is passed all arguments that DoSkill() is called with.
- Added OnFailUnknownMode(mode) function to developer API. This is called when the AI thinks a skill has failed, and the mode is a positive value, but is not known to AzzyAI.
- UseAutoMag and UseBayeriSteinWand now work with options other than idle.
- UseAutoMag can now be set to the normal buff options
- Added support for new LagReduction option in GUI.
- Fixed issue where homunculi were terrible at detecting successful skill casts.
- Situation where buff timeouts are set to clearly bogus values now handled better for old buffs (we immediately attempt a recast, like we do for homun buffs, instead of waiting 300 seconds)

## 1.50 Final

- Fix issue with Amistr Bulwark
- Fix issue with timeout of mental charge getting reset
- Corrected issue with skill fail detection on mercenaries; they do not have the distinct tell that homuns do in event of successful cast.
- Corrected issue with spurious error log entries regarding skill info type 3 on skill 0 level 0.
- Add tactics to enable use of attack skills AND summon legion against a target.
- Corrected issue with obstacle handling and dance attack doing a bad job of selecting cells.
- For LavaSlideMode/PoisonMistMode = 3 (ASAP), if we're having trouble moving into range, we'll call the built in MoveToOwner().
- For Painkiller owner, for buffmode 3 (ASAP), if we're having trouble moving into range, try the usual ways to get close to owner (since MoveToOwner only gets homunculus into 2 cells of owner, not close enough).
- For buffmode 3 (ASAP) on targeted skills, we will no longer get stuck in a loop if unable to buff. Failed attempts will be retried in 20 seconds.
- Corrected missing 'local' keyword in several helper functions in AzzyUtil, removed some dead code.
- Improved logging around Closest() function.
- Corrected default SeraCallLegionLevel to 5, instead of 0 which disabled use of the skill.
- Corrected bugged bug detector for Call Legion to be less hasty to assume that the bugs are bugged, when they're still active and standing ready to assist their master.
- We will start trying to recast painkiller 1 second earlier now, since some people will rely on this staying up 100% of the time.

- Corrected issue where use of painkiller on other players via PainkillerFriends would be done at the wrong time, depending on UseSeraPainkiller. This would cause ASAP loops when UseSeraPainkiller was set to 3 (ASAP).
- Corrected issue where circular routes could not be used with Castling (there may still be other issues with Castling Route to be corrected in a future version)
- Corrected issue where route walk would produce "attempt to concatenate global 'distance' (a nil value)" errors while the homunculus was standing on one of the cells in the route (including while loading, because the default route has step 0,0 and that is sometimes returned for GetV(V\_POSITION) right after loading.
- When SuperPassive=1, commanding homunculus to use a skill on a monster will no longer cause the homunculus to begin attacking that monster with normal attacks or other skills.
- Corrected issue with new skill tactics not being handled while chasing
- Corrected issue with AoEFixedLevel not being honored while chasing
- Corrected issue with UseHomunSSkillAttack and UseHomunSSkillChase not being honored in all cases.
- Tightened code involved in skill failure detection to hopefully do a better job of dealing with the inconsistent responses of the server and/or API.
- Corrected issue with incorrect prioritization during opportunistic target changing.
- Fixed issue where error could appear when SuperPassive=1 and homunculus was being ordered to attack manually.
- Added LogEnable options to H\_Extra/M\_Extra, added more logging options.
- Corrected issue where sniping would not respect TACT\_SKILLCLASS when using less common skill class tactics.
- Expanded logging around error condition after manually commanding homunculus to use a skill.
- Corrected rare issue where opportunistic targeting or rescue could confuse predictive motion and generate errors or lead to erratic chasing movements.
- UseAvoid will not kill the client until 5 seconds have passed since summoning homunculus - disconnecting during this time will not immediately remove the character in game, so it won't do any good.
- Corrected issue with merc+homun autofriend
- Corrected issue with dance attack bypassing UseSkillOnly
- Attack() being called in superpassive is no longer logged as error; it is not an error, the owner can manually command homun to attack.
- Corrected issue where homun could become stuck when commanded to use a skill on an actor which subsequently moves offscreen.
- Added support for Isis monster mercenary.
- Corrected issue with monster mercenaries not correctly closing to melee range.

#### GUI:

- Add support for new tactics
- Corrected multiple issues with the SKILL\_CLASS tactic option for mercenaries - for mercenary, only two values are valid - CLASS\_BOTH and CLASS\_MOB.
- SeraCallLegionLevel can no longer be set to invalid values like 0.
- Clarified and corrected descriptions of AggroDist and MoveBounds options. Confusion over the difference between FollowStayBack and MoveBounds has been responsible for several spurious bug reports.
- Corrected issue with UseEiraSilentBreeze and EiraSilentBreezeLevel.
- Corrected issue with saving certain buff related tactics.
- Corrected issue with saving AutoMobCount
- Configuration Tool now forces itself to run as admin, just like the RO client. This should fix issues where the AI would load, but settings changes in the config tool would be ignored.
- Corrected issue with loading AutoMobCount

#### Doc:

- Docs updated

#### 1.50 dev 17.1

- Fixed issue with CHASE\_NEVER tactic.

#### 1.50 dev 17

- Fixed issue with Silent Breeze debuff tactic not being recognized.
- Corrected issue where Silent Breeze skill would not be recognized on Eira.
- Corrected issue with GetTact() handling of invalid tactics behaving incorrectly.
- Spurious error messages are no longer recorded when homunculus is summoned.
- Corrected issue with several Eira skills.

#### GUI:

- Added option for UseEiraSilentBreeze, EiraSilentBreezeLevel

#### 1.50 dev 16

- Fixed two critical issues with dev 15.

#### 1.50 dev 15

- Failed cast detection completely reworked, now based on a characteristic delay in AI() calls while the homunculus does the cast animation.
- Added EleanorDoNotSwitchMode option. When this is enabled, all eleanor mode switching must be done manually; we will always assume we are in the right mode. This was requested by Meoryou2.
- We now log the most recent time that the configuration tool has been used to modify the config file.
- Added raccoons to the default tactics to ignore.
- Corrected issue with default configuration enabling ChaseSPPause by default
- We detect when someone has modified the AI to use the ranged pierce exploit and write a warning to AAISStartM.txt (assuming the modification was done in the obvious manner). AzzyAI does not condone the use of this exploit, and it may be prohibited on the RO that you play.
- Global variables moved to Const\_.lua, this will make the code easier for me to manage.
- When StickyStandby and DefendStandby are both enabled, homunculus will not attack targets aggressively if the owner attacks a monster with a lower priority.
- Corrected issue where an Eleanor might use combo attacks when skill\_class tactic was set to minions (ie, sera's summon swarm).
- Added new grapple tactics.
- Corrected skill data to include Tinderbreaker cast time.
- DanceMinSP will not be checked when dancing due to being in berserk mode.
- Corrected issue with UseEiraOveredBoost
- Corrected spelling of Eira related options
- Corrected issue where low level vani with less than 30 max SP would not autocast caprice. It will now cast the highest level of caprice it can with it's current max SP.
- When we fail at moving into range to use Painkiller, or cast lavaslide or poison mist under the owner, we now take more aggressive actions.

#### GUI:

- ASAP option removed for auto-mist and auto-lava slide. There are issues that could occur when this option was used which could result in a hung situation.
- Added support for EleanorDoNotSwitchMode options
- Now records the date that start file was saved on to assist in debugging.
- StickyStandby = 2 now supported, this will save standby status through teleport/mapchange/relog.
- Added support for new grapple tactics
- Corrected spelling of Eira related options



#### **1.50 dev 14**

- Added PainkillerFriends option, if set to 1, will try to keep painkiller up on all friended players. Additionally, if a player is manually targeted with painkiller, they will be added to the list of players to Painkiller. If PainkillerFriendsSave option is 1, these lists will be recorded, otherwise, they will only last until the next resummon.
- Corrected incorrect SKILLCLASS tactic in default H\_Tactics.lua
- Success of casting targeted buff skills was not being checked. This has been fixed.
- Corrected issue where failure to use some skills would result in the AI crashing
- Corrected issue where failed skill use was not treated appropriately.
- Corrected issue with default mercenary configuration in M\_Config.lua
- Added OnAIEnd() callback to enable support for twRO-mod without losing stack space.

#### GUI:

- Added support for PainkillerFriends related options.

#### **1.50 dev 13**

- Fixed line 3135 error

#### **1.50 dev 12**

- Fixed issue with Eleanor mode switching
- Fixed issue with non-human-readable date/time in AAISStart file
- Enabled default/customized file detection in AAISStart file
- Added version checking to AAISStart file
- Improved handling of missing data folder; this will now log errors instead of crashing, and will also log to AAISStart.
- If you have two accounts logged in at once on the same computer from the same RO installation, AND they are friended with eachother, they will autofriend eachothers homunculi and mercenaries.

#### GUI:

- Added IdleWalkSP option
- Fixed issue with GUI crash when working with tactics
- Fixed issue where "once, level:" option could be set for mercenaries; mercenary skills are not level-selectable.
- Clarified description of LavaSlideMode and PoisonMistMode, corrected copy/paste error.
- Options relating to Painkiller now shown under autobuff options.

#### **1.50 dev 11**

- Added support for Pengineer mercenaries
- Improved mercenary identification.
- Resolved issue with counting monsters for AoEMaximizeTargets that also spammed the error log.

#### **1.50 dev 10**

- Corrected issue with default SeraCallLegionLevel, RestXOff and RestYOff values
- Trapped and handled obstacle handling issue in following state.
- Trapped and corrected several obstacle handling issues, including the one encountered at the entrance to anthell.
- Fixed spurious log messages in PVPmode.
- Fixed issue with enabling PVPmode.
- Fixed issue with spurious error messages when using a Sera homunculus.
- Fixed issue with IdleWalk logging errors when starting IdleWalk routines.
- Added IdleWalkSP option. Set this to the SP (as a %) above which IdleWalk will be enabled.
- Fixed issue with level 5 of Caprice not being used.
- Added verbose chase mode logging to facilitate debugging of likely issues with the new obstacle

handling.

- Logs to AAI\_ERROR and similar are now recorded in AI traces.
- Removed spurious AAI\_ATK log file.
- Corrected issue with document size bloat

#### 1.50 dev 9

- Corrected issue with StickyMove referring to a function I never wrote.
- Corrected issue with Summon Legion producing errors.
- Spelling errors in constant file fixed.
- ProvokeOwnerMobbed changed to DefensiveBuffOwnerMobbed, and now effects Kyrie not Provoke for mercenaries.
- ProvokeOwnerHP changed to DefensiveBuffOwnerHP, and now effects Kyrie, not Provoke for mercenaries.
- Painkiller use now controlled by new option UseSeraPainkiller.
- Added options to use the new GM mercenary skills
- Improved forward compatibility with future skills. Manual use will now not throw errors.
- Added support for new GM mercenaries.
- Corrected potential infinite loop scenario with skills set to be used "ASAP"
- Corrected issue where route walk caused errors.
- Corrected issue where IdleWalk did not correctly calculate the relative positions of homunculus and owner.
- Corrected issue where square IdleWalk pattern did not correctly deal with the top left corner.
- Corrected issue where random IdleWalk pattern did not correctly calculate destinations.
- Corrected issue where IdleWalk would become confused if the homunculus paused en route.
- Corrected several issues involving route walk.

GUI:

- Updated GUI to be compatible with systems running with non-US localization
- Updated GUI to include descriptions of kiting parameters.
- Updated GUI to perform data validation on most numerical options
- Corrected issue with skill tactics in GUI
- Updated GUI to account for new and renamed options related to buffs
- Corrected issue with the GUI blanking M\_Extra.lua
- Corrected several typos and option categorization issues.

#### 1.50 dev 8:

- Updated AI to be compatible with clients running LUA 5.1 (such as fRO)

#### 1.50 dev 7:

- Urgent Escape is now a defensive buff, not an offensive one
- Added support for using Mental Charge as an offensive buff for Lif type homunculi (not that you'd probably want to use it).
- Updated documentation to reflect recent changes.
- Updated documentation regarding installation procedure.

GUI:

- Added support for CLASS\_MINION for the skill class tactic.

#### 1.50 dev 6:

- Corrected issue with defensive buffs not working correctly when set to be used at times other than while idle.
- Corrected issue where homunculus could end up in endless loop after unsuccessfully attempting to

- provoke or painkiller owner
- Corrected issue where the AI would crash sometimes when attempting to use painkiller on owner.

GUI:

- Corrected issue with a crash while creating new tactics.
- Corrected issue where AttackTimeLimit and AggroHP were confused, resulting in bogus settings being saved and causing the homunculus to abandon targets inappropriately.

#### 1.50 dev 5:

- Fixed issue with missing PVP tactics files.
- Fixed error encountered with Sera homunculus S.
- Added "as soon as possible" option to all buffs. Set the option to 3 to enable.
- Renamed UseAutoQuicken to UseOffensiveBuff.
- Renamed UseAutoGuard to UseDefensiveBuff.
- Renamed ReserveAoESP to AoEReserveSP.
- Renamed MobSkillFixedLevel to AoEFixedLevel.
- Renamed UseSmartAoE to AoEMaximizeTargets
- Renamed UseAutoSkill\_MinSP to AttackSkillReserveSP
- Renamed UseAutoSkill to UseAttackSkill
- Renamed UseCleverChase to ChaseSPPause
- Renamed CleverChaseSP to ChaseSPPauseSP
- Renamed CleverChaseTime to ChaseSPPauseTime
- Added AttackTimeLimit option - time, in milliseconds, to attack something before deciding that you're not actually attacking it and mark it unreachable.

GUI:

- Added new config options, applied above renaming.
- Added support for new tactics options.
- Added support for independent homunculus and mercenary PVP tactics.
- Corrected issue where extras files were not properly saved.
- Corrected issue where PVP tactics were not saved.

#### 1.50 dev 4:

- Added support for CLASS\_MINION skill class tactic - if this is set as skill tactic, Sera will use Call Legion on this class of monster
- UseSmartAOE now supports all skills (except brandish is still done approximately)
- Clever chase now prevents normal following too
- Other changes and fixes - changelog file got reverted at some point.
- Added basic PVP support

#### 1.50 dev 3

- Fixed issue with TACT\_IGNORE and TACT\_TANKMOB not working as advertised or intended.
- Fixed multiple issues with CleverChase
- Added CHASE\_CLEVER tactic; This is probably the correct way to use CleverChase. Monsters with the chase tactic set to CHASE\_CLEVER will use CleverChase even if CleverChase is otherwise turned off. They will still observe CleverChaseSP and CleverChaseTime
- Fixed issue with Sera skill, Painkiller being spammed when it shouldn't.
- Added tracking for the status of Sera's Legion (the rest of this functionality isn't done yet)
- Added ProvokeOwnerMobbed option - If owner is below 90% hp, and has at least this many monsters on him, THEN use provoke (ie, painkiller) on them. This way you can use it on a fragile genetic without wasting time casting it when he's safe and healthy.
- Added a few options for stonewalling as a bayeri (Stien Wand that is. "Stien wand" is german for

"stone wall")

### **1.50 dev 2**

- Slimmed down documentation file size.
- Fixed error when using all mercenaries.
- Fixed error when using mercenaries with level 2 or higher of the skill Crash.
- Fixed issue with ReserveAoESP not working at all
- Fixed issue with ReserveAoESP not working for chase skills
- Fixed issue with ReserveAoESP not working for AoE-as-buff mode.
- Fixed issue with AOE-as-buff mode not working at all.
- Missing fix for Dieter skills (from 1.40 dev 20) replaced.
- Fixed issue with AOE-as-buff mode failing to account for skills having a finite range.
- Fixed AutoMobMode=2 to correctly count only aggro monsters.
- We no longer count dead or dying monsters when deciding whether to use an AoE. This should correct the long-standing behavior where a homunculus deals the dying blow to 1 monster as another monster arrives, and then (with AutoMobCount=2) uses it's AoE attack on them.
- Provoke only worked with mode 1 (during idle state). Now it works all the time.

### **1.50 dev 1 - Initial 1.50 release**

- Added SP, Weight, Chase, and Snipe tactics.
- Added support for use of castling.
- Replaced old system for idle walking motions
- Added option to use AoE skills like buffs on the owner.
- Added SP and skill failure watcher
- Added clever chase
- Implemented use of combo skills
- Added new basic tactics
- Added low priority heal option
- Added option for buffing at times other than in idle state.
- Improved support for multiple homuns
- Added option for aggressive tracking of relogs
- Treasure Boxes are now ignored by default as a fail-safe.
- Snipe will not be used if it should be using an AoE skill
- Added opportunistic target changes
- Added DanceMinSP option
- Various other changes and additions

### **1.41**

- Fixed critical issue with mercenary AoE skills introduced by 1.40 dev 19
- Fixed issue with UseSmartAOE when used with FAS which can cause the mercenary to incorrectly select targets with FAS when handling targets to the northwest or southeast of the mercenary.
- The area of Brandish Spear is calculated incorrectly for comparison to UseAutoMobCount. This will be fixed in 1.50 as the framework planned for this is not ready.
- Corrected improper use of FAS when there were not enough monsters on screen.
- Corrected issue with FAS target counting of monsters in the four cardinal directions being 2 cells narrower in the vertical direction (this meant that the area it was counting for east/west direction was only 1 cell wide).
- Corrected issue with FAS target counting of monsters in the diagonal directions always counting zero monsters.
- Corrected issue with mercenaries failing to correctly use debuff skills
- Corrected AutoMobCount to 2 in default mercenary settings.

### **1.40 Final**

- Padded skill delays to reduce the likelihood of the AI trying to recast skills before the cooldown is up due to lag, flywings, etc. This is 5 seconds for bloodlust, 1-1.5 for flitting/accel flight - so you can still make it bug by winging around alot - or of course if you log out or manually cast the skill - but this should help significantly
- Padded lava slide and a few other skills with a short delay, because my tests indicate that they seem to have one, and we were trying to cast other skills during that delay and failing.
- AI will not let you cast SBR 44 manually, unless you set AllowSBR44=1 in H\_Extra. Misclick insurance. Unfortunately, I can't do the same for self destruct
- Minor internal changes backported from 1.50

#### **1.40 dev 23 3/28/2012**

- Fixed MobSkillFixedLevel option
- RESCUE\_ALL will now rescue if the target is friend or owner, but not if target is self. This makes a lot more sense.
- Fixed issue with failing to use autobuffs on homunculi with more than one buff with a non-zero cast time and delay, due to failure to check delay status.
- Corrected default H\_Tactics to use basic tactic ATTACK\_M instead of REACT\_M, an error introduced by poor source control in dev 21 and 22.
- Improved logging around autobuff and healing skills.
- Added function to improve human readability of skill-usage logging in future updates.

#### **1.40 dev 22 3/27/2011**

- Fixed issue with Chaotic Blessings and Healing Hands not correctly using cooldown.
- Fixed issue in which UseAutoSkill\_MinSP would be ignored if Berserk\_IgnoreMinSP (defaults to 1) was enabled, even when the AI wasn't in berserk mode.
- Cleaned up SP checking, much easier to read and work on now
- Cleaned up attack state logging.
- New option for homuns: MobSkillFixedLevel - if set to 1, always use the level set via (homuntype)(skill)Level option (ex, DieterLavaSlideLevel)) for antimob skills, ignoring tactics stating otherwise. Defaults to 1. I've been seeing lots of people using lvl 1~4 of lava slide in OD2, and i'm pretty sure it's because they wanted to use lvl 1~4 of the bolt skills, but level 5 of lava slide.
- Fixed issue with commanding homunculus to use skills not behaving as expected.
- Fixed issue with UseSkillOnly mode not correctly using attack ranges
- Fixed issue with Sera skill Poison Mist not properly using cooldown
- Fixed major issue with incorrectly estimating casting times.
- Fixed issue with incorrectly calculating cooldown options
- Added cooldown on Lava Slide ("what? you didn't have one already?" you say? See last point).
- Improved logging around skill cooldowns.

#### **1.40 dev 21 – 3/26/2012**

- Fixed issue with sniping
- Fixed issue with tanking

#### **1.40 dev 20 – 3/20/2012**

- Fixed issue with Dieter selfbuff skills
- Added OnInit() call, for players to handle multiple homunculus AI configurations.
- Added protection for file conflict issue when using multiple homuns at once - will now fail gracefully.
- AoE skill count no longer counts killsteals as targets when deciding whether to cast an AoE
- Sonic claw delay is back, because the GMs added a short delay on it
- Added UseSmartBulwark option.

#### **1.40 dev 19 – 3/15/2012**

- Sonic claw will be spammed faster now
- Fixed issue with movement destination selection. This will fix issue with choosing non-optimal cells to move to, and prevent a hang possible under unusual conditions.
- Corrected issue with monster counting function.
- Corrected anti-mob skills to count the monsters within the AoE instead of the monsters currently near the homunculus.
- Fixed timing for Sera's Poison Mist skill
- Internal stability improvements
- Added improved tracing for issue with failure to call AI()
- Improved reporting of serious error conditions. Please delete all AAI\*.log files in your RO folder.
- Improved reporting of time in AAIStartH/AIStartM files.

#### **1.40 dev 18**

- Deactivate dance attack near edges of screen. This will prevent an obstacle-slide effect from pushing homunculus off screen.

#### **1.40 dev 17**

- Corrected bloodlust support
- Improved behavior when chasing moving targets - if you're faster, you'll catch it now.
- Fixed issue with loop at edges of screen

#### **1.40 dev 16**

- Corrected issue with improper default values contributing to improperly dropped targets.
- Improved system for chasing blocked targets.
- Improved catches for rescue loops.
- Possible improvement in dance attack
- Improved logging around chasing and movement.

#### **1.40 dev 15**

- Independent cooldown timers for Moonlight, Caprice, Chaotic Blessing, and Healing Hands. I have not tested this with a homunculus with more than 1 attack skill since I don't have any yet, so try it out and see if it works.
- Added improved logging to try to nail down a freeze bug.
- Support Bloodlust Autocast

#### **1.40 dev 14**

- Fixed critical issue that lead to homunculus running off screen.
- Fixed issue where fix for archers introduced with dev 7 was not applied when homunculus HP was above AggroHP
- Minor responsiveness tweaks.
- Fixed more improper tail calls.
- Fixed a number of cases where responsiveness measures were being used improperly, forcing me to use more conservative settings for the responsiveness measures. This has been corrected. (this will be tested with more aggressive settings, and these will be included in the next version if they do not adversely affect stability).
- Fixed issue with improperly dropped targets
- Fixed issue with follow state in strongly adverse conditions.
- Fixed issue with spurious warnings in AAI\_Warning.log - changes introduced in dev 9 had led to warnings being produced under normal circumstance.

#### **1.40 dev 13**

- Fixed issue with moving long distances.
- Improved chasing behavior, should fix the wobble.
- Improved boundary detection while chasing.
- Fixed issue with SP being counted incorrectly when using skill levels other than max level
- Fixed issue a distance function in AzzyUtil.lua (no reported issues in the field).
- Fixed issue with occasional target dropping while closing to melee range.
- Fixed numerous serious bugs with skill while chasing.

#### **1.40 dev 12**

- Fixed critical issue with sniping tactic.

#### **1.40 dev 11**

- Fixed issue with provoke state.
- Fixed issue with provoke skill info.
- Fixed issue with AI mistaking sacrifice for provoke
- Three above issues combined to cause crashes on homuns with sacrifice when autoprovoked was enabled.

#### **1.40 Dev 10**

- Fixed issue where we attempted to use math.huge which isn't implemented in lua 5.0.2
- Fixed issue where chase state tried to move to a target one last time after dropping its old target.
- Fixed line 667 error, which was caused by the combination of the two above bugs.
- Corrected error where stationary aggrodist and movebound would be used if the owner was moving only in the north-south direction.
- Improved logging for the closest cell calculations, because they're brittle and cause a lot of problems.
- Corrected issue with ranged mercenaries moving 1 cell closer than they need to when approaching targets from the west and south.

#### **1.40 Dev 9**

- Removed posbug correction code - was causing dropped targets, inappropriate dancing, and other issues because it is impossible to detect posbug due to GetV() bug, and hence was activating even when not posbugged.
- Fixed issue with Sniping - TACT\_SNIPE\_L/M/H should now work. If you can 1-shot in OD2, try it out! Makes much better use of SP.
- Fixed issue that could cause a high-speed homunculus to run off the screen chasing a monster. We will now drop the target instead. This was killing people in OD2.
- Fixed improper tail call from chase to idle.
- Default tactics are now a bit better: They default to not attacking the stupid event mobs, nor ants and gearths for doing ant eggs.
- Set DoNotAttackMoving in H\_Extra to make the homunculus not attack stuff that's moving. It'll still continue chasing them if they do move, though. This is not the final version of this feature, but it's been requested by several people - here's an interim solution.

#### **1.40 Dev 8**

- Quick bugfix release
- Fixed follow obstacle fix from previous versions as it was not being used correctly
- Fixed attack posbug fix, which was suffering from an almost identical issue
- Fixed missing geographer tactic.

#### **1.40 Dev 7x**

- Fixed the attack chase loop bug.

#### 1.40 Dev 7

- Added support for autoskill skill selection tactic - Manually edit H\_Tactics.lua and change the size tactic to CLASS\_BOTH (to use either pre-S or homunS skills), CLASS\_OLD (for pre-s skill only), or CLASS\_S (for S skills only), or CLASS\_MOB (if, for some reason, you want to use a mob skill on this, even if there aren't enough targets around to normally justify using a mob attack (per MobAttackCount) - i expect this to be most useful for mercenaries, particularly the lvl 10 sword mercenary, where you might want it to use BB for the higher damage - of course tactics for mercs require MobID - so maybe this isn't so useful.) For mercenaries, you can edit this using the GUI - use the TACT\_SIZE tactic, SIZE\_LARGE is the same as CLASS\_MOB, SIZE\_UNDEFINED should be used in all other cases (since there's no S-class skills for mercenary)
- Unified code between chase skill use and attack skill use
- Fixed longstanding issue with debuff while attacking which would prevent the homunculus from using debuffs while attacking if told via tactics to use a certain debuff skill. This bug has been present since 1.30 or earlier and had not been reported. Did anyone try to use this?
- Corrected boneheaded prioritization of targets which resulted in the homunculus aggroing new monsters while ignoring monsters currently attacking him. This was a really really nasty bug IMO.
- FOLLOW\_ST with FAST CHANGE did not use proper tail call when changing to IDLE\_ST, this was corrected (internal change)
- Removed more obsolete code
- Fixed a few potential error message
- Fixed issue with empty AAI\_Warning file
- Fixed error with bow mercenaries that have the skill Double Strafe
- Another change dedicated to truly eradicate the follow state hang.
- Fixed issue with inappropriate use of antiposbug measures which could cause problems around obstacles.
- Fixed issue where the wrong measure of range was compared to MoveBounds for attacking monsters outside AggroDist, resulting in failure to defend against ranged attackers (like those blasted orc archers!) on the edges of the screen.
- Improved tracing to try to trace down yet another freeze issue.

#### 1.40 Dev 6x2, 6x3

- Fixed issues in M\_SkillList.lua

#### 1.40 Dev 6x1

- Fixed missing config program and fixed an issue in M\_SkillList.lua

#### 1.40 Dev 6

- Corrected issue with AttackRange() leading to homuns not closing to 1 cell range, resulting in Filirs and Eleanors not closing to skill range
- Corrected issue with MotionClasses resulting in monsters currently targeting the owner not being correctly given priority
- Follow state no longer attempts to move to the owner's location; That doesn't work anymore. Follow state will now move to 1 cell range if it can't move to distance specified in FollowStayBack for ~500ms, and after another ~500ms it will use MoveToOwner() builtin.
- Corrected issue where follow behavior did not return to normal if the homunculus was interrupted while in follow state. Combined with above, homunculus could hang in freeze state until vap/recalled.
- M\_SkillList.lua now loads.
- Accelerated Flight now works. It is classified as a defensive skill (turn on UseAutoGuard to use it).
- Obsolete code removed from AzzyUtil



- Pierce size removed. This variable and tactic will be removed or repurposed in a future release.
- Added AoE info to the skill info database - this is not currently used.
- Added additional AI tracing.
- Removed unneeded files accidentally included in previous packages

#### 1.40 Dev 5

- HUGE internal overhaul of skill selection
- Fix for issue with manually commanding homunculus to use skills
- Fix for random error caused by new aggrodist/movebounds
- Fix for incorrect Stahl Horn range
- Closer to support for new buff skills
- Fix for vibrating homunculus when sitting issue.
- Support for homunculus S buff skills

#### 1.40 Dev 3

- Fixed issue with dance attack
- Fixed issue with chase targeting
- Fixed issue with sniping activating incorrectly
- Fixed issue that may have been triggering freezes (sending invalid move commands)
- Fixed issue with poor handling of ranged monsters near edge of screen. See the two new AggroDist values in H\_Extra
- Added support for Sera autocasting painkiller on you (set UseOwnerProvoke=1 in H\_Extra to enable!)
- Added support for vani's healing themselves ( turn on UseAutoHeal and it will kick in automatically. Control the %hp that it will activate at with HealHomunHP in H\_Extra)
- Added support for choosing which skills to use while chasing.

#### 1.40 dev 2

- Fixed issues with chase when UseSkillOnly=0 that really should have been fixed long ago. (special thanks to Notepad ++ for this one!). My apologies to the people who reported this and who I accused of installing the AI wrong. There was a bug there after all!
- Added framework to autouse homunculus S buffs.
- Fixed commands to use skills on non-monsters. Previously homunculus would not try to get in range to use the skill.
- Added some development logging. Please contact me if an AAI\_WARNING.log or AAI\_RMsg.log is created in your RO folder!

#### 1.40 dev 1, 1x:

- Fixes to critical (but trivial) bugs.

#### 1.40 dev 0 - 1/27/2012

- Added basic support for new homuns.
- You must tell the AI which homunculus you had before if it's not a vani
- Made some improvements to motion locking issue - this is an issue I'm currently not entirely sure of the underlying basis of. I think it has to do with the horrible change to Move() behavior recently.
- Added support for using homunculus S skills automatically. This has known issues, but is

probably better than before.

### 1.35

- Total rewrite of targeting, should fix many problems.
- Cross/Circle motions when friending
- Amistr/Lif buff behavior fixed.
- Autouse of healing skills (healing touch, chaotic blessings)
- Fixed Tank and Rescue tactics
- Extras feature functionality expanded greatly.
- Greatly improved debugging facility.
- AAISart files created to verify proper installation
- Newly rewritten GUI
- Major internal changes which should streamline future development
- Fixes to unreachable target handling
- Corrected issue with supplied friendlist, present apparently since the inception of the friend list feature, which could cause homunculus to kill-steal pistola, a specific iRO player.
- Fixed issue with obstacle avoidance, greatly increased efficiency of obstacle avoidance.
- Fixed longstanding issue with rescue, expanded rescue options.

### 1.30b

- GUI Bugfix

### 1.30

- New GUI configuration program by Machiavellian. Please give feedback on this.
- Added support for new monster mercenaries: Doppleganger, Egnigem Cenia, and Alice.
- Added feature to not return to owner when told to move beyond following distance.
- Added berzerk mode feature.
- Implemented data gathering to identify herb plants (AutoDetectPlant)
- Improved obstacle handling while chasing and while attacking.
- Reduced number of files in the AI to reduce clutter.
- Added extra options files
- Fixed issue with sword mercenaries not using single target skills.
- Fixed issue with some monster mercenary skills not working correctly.
- Fixed issue with pvp just plain not working.
- Fixed issue with pushback bugging the mercenary.
- Fixed issue with homunculus/mercenary not using skills when trying to tank.
- Fixed issue where deletion of H\_ID.txt or M\_ID.txt would cause crashes.
- General minor improvements.

### 1.29

- Fixed critical bug with bowling bash discovered during xmas lucky box event (affected level 8, 9, and 10 fencers)
- Made AI behavior with Focused Arrow Strike marginally better.
- Corrected AI behavior to account for newly added skill delay on Double Strafe..

### 1.282

- Added support for Wild Rose mercenaries. Other minor fixes.

### 1.281

- Fixed issue with use of Sacrifice skill
- Fixed issue where homunculus would use skills in a manner contrary to tactics settings with SkillWhileChasing selected (again).

### 1.28

- Fixed stack overflows involving the fast change responsivity optimizations.
- Fixed a random crash problem.

- Fixed issue where homunculus would use skills in a manner contrary to tactics settings with SkillWhileChasing selected.
- Fixed issue where homunculus or mercenary would refuse to use skills when mobbed.
- Fixed issue where GUI would improperly save several settings.
- Added GUI support for future implementation of Chaotic Blessing use (albeit in a terrible manner)

#### 1.271

- Critical bugfix.

#### 1.27

- Fixed bug with buff skills.
- Added sniping tactics.
- Added support for using debuff skills.
- Added support for selecting levels of skills to use (for homunculus; mercenary skills are not level selectable)
- Added basic emulation of MirAI friendlisting. Still doesnt do the movement upon friending.
- homunculus/Mercenary will now KS if you tell it to attack or skill on a monster that is fighting another player
- Various minor fixes/tweaks
- Updated AI to control features added with 1.26 and 1.27.

#### 1.263

- Critical bugfix.
- Added DoNotUseRest option.
- Added StickyStandby and DefendStandby options.

#### 1.262

- Critical bugfix.

#### 1.261

- Critical bugfix.
- Fixed bug with the autofriend added in 1.26 which prevented proper friending of mercenary/homunculus.

#### 1.26 (GUI v1.25, AI v1.26)

- homunculus and mercenary are now always friended to eachother using H\_ID and M\_ID files. Disable this by changing NewAutoFriend to 0 in defaults.lua.
- Dance Attack works now.
- Support for a new target class on mercs: Summons. Now there is an option for Default Summon, which is the default behavior for any summon or retainer not friended to the mercenary. This should probably be left as is (react low), so that mercs will not kill summoned plants, even if aggressive.
- Support for more sophisticated targeting of player/friend's enemies - targeting when player uses skills or is casting. Configured in H\_FriendMotion and M\_FriendMotion files.
- Improved use of buffs - will now not recast buffs right after spawning in if they're still up. This is particularly important with guard, which apparently works the same way as the player skill, being taken down when recast.
- Yet another attempt at fixing RouteWalk. This one appears to have been marginally successful.
- Added bug that prevented mercenary from using offensive skills or attacks, and caused homunculus to attempt to use skills improperly.

#### 1.25a (GUI v1.25, AI v1.21)

- Minor GUI improvements, support for v1.25 features, including debuffing, which is not implemented in the AI yet.
- Numerous minor tweaks to AI behavior that should significantly improve targeting and antiKS behavior.
- Routewalk no longer crashes the client; it fails gracefully instead.
- Dance attack temporarily out of order (something went wrong trying to improve it)
- Errors if the default AI was not installed fixed for good.

#### 1.20 Release

- GUI Improvements
- Dance mode no longer sucks as much.

- Fixed bug causing dependence on the default AI being in the \AI\ folder
- Various targeting changes for improved target selection:
  - Fixed detection of owner/friend targets. This had gone unreported since 1.09 or earlier!
  - Will now finish killing monsters that are on the owner/friend/self, before aggroing more targets.
  - Monsters with the ATTACK\_LOW and REACT\_LOW priority are exempt from that - they will be ignored, even if attacking the owner/self/friend, if there are higher priority targets to attack.
- Made an attempt at fixing use of skills while chasing.
- Debuff while chasing still doesnt work, but using attack skills while chasing does.

#### 1.20b0

- GUI for config
- Minor bugfixes
- Subtle changes to default config files and structure to make GUI easier to write.
- TACTIC\_IGNORE option removed for GUI compatability.

#### 1.09

- Added basic pvp support
- Removed bug with DoNotChase and UseSkillOnly
- Improved targeting speed

#### 1.08

- Added homunculus support.
- Added use debuff skills, but it doesnt work.
- Added DoNotChase option
- Recoded chasing routine, so it doesnt suck like it used to.
- Various tweaks and fixes.
- Added defaults file, so that missing lines from config wont choke the AI.
- Fixed unacceptable following behavior with archers, specifically in combination with AutoPushback
- Fixed friending bug.

#### 1.071

- Critical bugfix.

#### 1.07

- Added full tactlist support based on actor IDs, MobID file required.
- Fixed bug with follow command (standby mode)
- Added another bug with follow command (standby mode)
- Added support for live friending and unfriending
- Added support for autofriending of homunculus.

#### 1.061

- Critical bugfix.

#### 1.06:

- Added feature to autocast provoke or sacrifice on user.
- Added feature to auto use pushback skills (arrow repel and skid trap) if monsters are on the mercenary (doesn't work great).
- Added feature to make the mercenary go non-aggro if the player sits down.
- Added option to limit the number of times mercenary will use skills on a given enemy.
- Did work on future support of tactics based on actor IDs.
- Observed and captured several minor bugs with target acquisition for study (will be fixed later).
- Fixed bug with random walk.
- Improved friending AI (thanks Biochemist-ness)
- Expanded motion list in Const\_.lua for future expansion.
- Dug up and fixed buried treasure in the follow command processing routine.

#### 1.05:

- Recoded following to support following at distance (FollowStayBack),
  - Fast transition from Chase to Attack,
  - Added kiting support.
  - Also added an option to only use skill attacks.
  - Added bug with random walk.
- 1.04:**
- Critical bugfix.
- 1.03:**
- Added SuperPassive option, fixed random crash error (line 903 error).
- 1.02:**
- Successfully made AI coexist with MirAI.
- 1.01:**
- Unsuccessfully made AI coexist with MirAI.
- 1.00:**
- Initial release