Emerald Kaizo AI Analysis

There are 13 AI flags in base Emerald. Only six of these are used on enemy trainers, the other eight are either unused or used in special circumstances such as the safari zone so will not be covered. The flags that an AI uses are noted in the master sheet by a number in square brackets next to their name. The guide to these is as follows.

- 1: Check Bad Move
- 5: Check Bad Move, Check Viability
- 7: Check Bad Move, Try To Faint, Check Viability
- 11: Check Bad Move, Try To Faint, Setup First Turn
- 15: Check Bad Move, Try To Faint, Check Viability, Setup First Turn
- 23: Check Bad Move, Try To Faint, Check Viability, Risky

1 is used by only a handful of trainers in the game, and 5 is used exclusively by the level 70 Ralts joke fight. 7 is the default which is used by all trainers that do not have a specified number. 11 is used only 5 times in the game, but one of those is on Wallace in Sootopolis Gym. 15 is used twice in the game, once being on Sidney in the Elite 4. Finally, flag 23, the infamous "Risky AI" is used on Winona and more than a dozen other trainers, primarily Team Aqua and Magma enemies.

The sixth important flag is the double battle AI, it is applied to every double battle in the game in addition to their normal AI. Note that all flags other than the double battle flag are ignored when checking moves with their ally as the possible target, using only the double battle flag.

In a double battle, both sets of AI flags are combined. This is how we get the second 15, a double battle with an AI 11 and an AI 7.

The basic idea of how the AI works is that each move is given a score via running a set of rules over it, once it totals up all of these scores it picks the move with the highest score. If multiple moves are tied best, it picks one of them at random.

For all the specific score breakdowns, refer to this document. This document will exist largely just to be an analysis of how these factors interact in the context of Emerald Kaizo and will only briefly cover those to be able to better combine multiple move logics.

Note: This guide attempts to be written in the context of EK. Abilities and moves that are not mentioned if they are not in EK, and logic around things such as if the player has boosted evasion will not be mentioned due to the lack of ability to boost evasion as the player.

Smart AI

This is essentially the baseline that all AI build off in EK, and the smart AI of the base game. An important piece of information is that the AI does not cheat, the AI stores information on any moves, abilities, or items it sees the player use and bases any logic off these. It forgets this information whenever you switch out, having to learn from nothing again the next time you switch in.

First, the AI avoids any move that would fail, whether due to immunity, ability, trying to use Substitute at low HP, Teleport in a trainer battle, or anything else. However, see the Dual Non-Immunity Glitch and Intimidate Knowledge Glitch sections in the appendix, sometimes the AI does not actually see your ability or immunities correctly so does not avoid all moves that it should. It also avoids explosion or self destruct if it is on its last pokemon. A notable outlier is that the AI does not look for flinch immunity with Fake Out, so will not treat Fake Out as worth avoiding if the player is known to have Inner Focus.

Next, the AI looks for a kill. It will by default put a move that can kill at +4 score. Explosion and Self Destruct never get the +4 for being able to kill. Priority moves that can kill get an additional +2 score, Fake Out does not count here only getting the normal +4 for a kill. Note that as per the Fake Out section Fake Out does get an additional +2 on the first turn, so will normally get chosen over other non-priority moves, but not other priority moves.

If a move cannot kill, then it gives that move a -1 score if it is a damaging move other than the highest damage move and is not discouraged or power 1. The AI calculates if a move is highest damage by rolling damage for all moves other than discouraged or power 1 moves, ignoring crit chance, accuracy, or absorbing abilities. All other moves have a ~69% chance of getting +2 score if they would be doubly super effective, even if a status move.

Note that it is possible no damaging moves are at +0 score, such as if the highest damage move is Thunderbolt on a Lanturn with Volt Absorb, Volt Absorb will cause Thunderbolt to be placed in the bad category, but it is still the highest damage move otherwise so other moves would still get the -1 score. This also happens if the move would be unusable for some reason, such as being out of PP or being disabled.

This means that after the first two checks, our scores should look as follows.

+6	Priority moves that can kill (not Fake Out)
+4	Moves other than Explosion or Self Destruct, and power 1 moves that can kill
+2	Status moves, power 1 moves, discouraged moves, and the highest damage move if they are doubly super effective, ~69% of the time
+0	The highest damage move if the target lacks an absorbing ability; all other moves, including any status move, power 1 move, or discouraged move that is not doubly

	super effective the other ~31% of the time
-1	Damaging moves that are not the highest damage move. Explosion or Self Destruct if both the player and AI are on their last pokemon.
Bad	Any move that would fail or the target would be immune to. Explosion or Self Destruct if the AI is on their last pokemon but the player is not. These will be in the range of -5 to -12 score.
-100	Moves that cannot be used at all (normally out of PP)

All future analysis will be in reference to this table, and whether a move would ever be picked over the highest damage move, or over a kill. Conversely, whether it can cause a move to not be picked despite being those.

The following section tackles moves on a move by move basis, it is recommended to use a find feature or the contents to search for the relevant moves. A move is only listed here if at least one trainer in Emerald Kaizo has it according to the master sheet. All moves are run through the following section, regardless of their score from these initial checks, a move that kills, a move that will fail, or anything else, it still runs through the following section.

Ability Changing Moves

Moves: Skill Swap

The AI is looking for certain abilities to swap to in this step. The abilities are Battle Armor, Chlorophyll, Cute Charm, Effect Spore, Huge Power, Marvel Scale, Pure Power, Rain Dish, Sand Veil, Shed Skin, Shield Dust, Speed Boost, Static, Swift Swim, or Wonder Guard

If the target does not have any of these abilities or the user currently has one, the move gets -1 score making it unlikely to ever be used. If the target does have any of these abilities, it has an 80% chance of giving this to +2 score making it very likely to be used over a non-kill move.

Note this move in EK is only ever seen in double battles, and the double battles section of this document covers in more detail how this works.

Always Hit

Moves: Aerial Ace, Faint Attack, Magical Leaf, Shadow Punch, Shock Wave, Swift

These moves only have special logic if the user has been dropped to at least -3 accuracy, so it is unlikely they will ever have special prioritization in practice, but sufficient use of sand-attack can trigger this.

If the user is at -3 accuracy or lower, the moves get boosted to +1 score ~61% of the time, making them reasonably likely to be used. If the user is at -5 accuracy or lower, the move gets

an additional +1 making it either +1 or +2 score, and thus will almost always be used over a non-kill move.

Attack Boosting Moves

Moves: Swords Dance, Meditate

The use of these moves is somewhat complicated, being based on both the user's current HP and current attack stages. If the user is at +3 attack or higher, there is a 61% of an additional -1 score beyond the following table.

100% HP	If the user is at +2 attack or lower, there is a 50% chance of +1 score, and otherwise no change.
71-99% HP	No change.
40-70% HP	84% of -2 score
0-39% HP	-2 score

Due to this, the AI is very unlikely to ever boost if already boosted to at least +3, or at 70% or lower HP. It should essentially never boost if at less than 40% HP if it has any alternatives. It is however very likely to boost if it is unboosted and at full HP.

Attack Lowering Moves

Moves: Charm

If your attack has been lowered, Charm gets -1 score, with an additional -1 if the user is under 90% HP, and a high chance of another -1 if you are already down to -3 attack or lower. As a result, the AI will rarely ever use Charm on something that already has lowered attack.

If your attack has not already been lowered, the AI will avoid Charm if at 70% HP or less via a -2 score. Assuming it is above 70% HP, the AI will leave Charm at +0 and thus reasonably likely if its target has a physical type, or about 20% of the time if it has only special types. If it does not find these, it will put it at -2 and thus will almost never be used. However, there is a bug here and it does not see Flying, Poison, or Ghost as physical types for this purpose.

As a result, the AI will normally only ever use Charm while at >70% HP, and will only very rarely use it if the target does not have a physical type other than Flying, Ghost, and Poison.

Baton Pass

Moves: Baton Pass

The AI encourages Baton Pass only if its attack, special attack, defense, special defense, or evasion is at least at +3 stages or higher and the user is at low HP, there is a ~69% chance of +2 score. Low HP here is 60% or lower if the user is faster, and 70% or lower if the target is faster. If the HP is high or the chance was missed, there is no change.

If the user is instead at +2 stages in one of the aforementioned stats, Baton Pass gets -2 score if at high HP as per the previous HP thresholds. If the user is at +1 or lower in all of the aforementioned stats, Baton Pass always gets a -2 score.

The most notable factor about the Baton Pass logic is that speed boosts are not considered a reason to switch. This in conjunction with always getting a -2 score while unboosted means that if a pokemon is only boosted in speed, it should never Baton Pass given a non-bad alternative. Baton Pass is also only ever encouraged over best damaging move while at +3 or higher, so the move should rarely be seen in practice.

Belly Drum

Moves: Belly Drum

Belly Drum gets a -2 score if the user is 90% or lower HP. As a result, almost any chip damage should prevent the use of Belly Drum.

Brick Break

Moves: Brick Break

Brick Break gets +1 score if you are protected by Reflect. This will allow it to be chosen even if it is not the best damaging move, and if it is the best damaging move it can push the +0 status moves out of contention for being chosen. Note that it only checks for Reflect, not Light Screen.

Charge Up

Moves: Solarbeam

Solarbeam is the only move that still has a charge up turn and is on an AI trainer in Emerald Kaizo. The AI does not care about the presence of Sun in determining whether or not to use Solarbeam, and it is important to note that Solarbeam is always +0 by default due to being a discouraged move, regardless of how much damage it does. The exception is in the case of a pokemon that is double weak to solar beam, as then it may be +2 score.

The AI should never use Solarbeam if it is resisted or it knows you have either Protect or Detect, via a -2 score.

If the AI has 38% HP or less, it gives a minor discouragement of -1 score, so it is still likely to never be used.

If neither of those criteria were met, it remains unchanged. As a result of these, the AI will almost always always have a chance of using Solarbeam if it is unresisted and the AI is at high HP. If you have a pokemon out that is doubly weak to Grass such as Golem then it may go for Solarbeam even if it is not the highest damage move somehow. Conversely, if you have a pokemon out that resists Solarbeam, it will almost never go for it even if it is the highest damage move.

Confusing Moves

Moves: Confuse Ray, Supersonic, Sweet Kiss, Flatter^, Swagger^

These moves are treated almost identically so are grouped together, although Swagger and Flatter have an additional clause.

For Swagger and Flatter, before running the normal logic it has a 50% chance of giving them an additional +1. After that the normal logic that applies to all five of these moves runs, for each HP threshold of 70%, 50%, and 30% that the target is at or below, it has a 50% chance of giving a -1 score.

In practice, this means that the AI is most likely to use Swagger and Flatter while you are at high HP, with a high chance thanks to the +1 score, and a moderate chance for other confusing moves. As your HP decreases the chance of the AI using confusing moves rapidly decreases, as the chance of being at +0 starts at 50% while in the 50-70% range, halving again for each of the lower two ranges.

Conversion

Moves: Conversion

The AI will almost never use Conversion unless it is the first turn of battle and it is at >90% HP. In that scenario, Conversion is at +0 so moderately likely. If the AI is at >90% HP and it is not the first turn of the battle, it has only a 20% chance to be at +0. If it's below 90% HP or the 20% chance wasn't met, it is at -2 score, and thus will almost never be picked.

Countering Moves

Moves: Counter, Mirror Coat

Counter and Mirror Coat are somewhat complex moves that appear to be buggy, and importantly have radically different logic when a pokemon knows both of the moves than when it knows just one.

Regardless of whether one or both is known, if the target is infatuated, confused, or asleep this is given -1 score and no additional logic is run.

Assuming that you are not infatuated, confused, or asleep, there are two HP thresholds checked. -1 96% of the time if user is <30% HP, and an additional -1 61% of the time if user is <50% HP.

At this point, the move should have either +0, -1, or -2 score based off the user's HP.

Now the special logic kicks in, if the user both Mirror Coat and Counter it has a 61% of +4 score, and a 39% of remaining unchanged. This is not very relevant in EK as no pokemon has both mirror coat and counter other than wobbuffet, but it does lead to a significantly higher usage of these than destiny bond, encore, or charm. Since the logic is the same for both, it makes it pure RNG whether counter or mirror coat is chosen on a given turn.

Assuming the AI only has one of Mirror Coat or Counter logic progresses differently, and it now checks the most recent used move by its target. If it just switched in and has yet to use a move, it has the same effect as a status move for this.

If the move was a status move, and the user has only the opposing type, it has an ~49% of +4 score. For example, a Water type on Counter, or a Bug/Steel on Mirror Coat, but not a Water/Flying on Counter or Mirror Coat.
If the move was a damaging move of the matching type (so special type with Mirror Coat), it has a ~61% of +1 score.
If the move was a damaging move of the opposing type, it gets -1 score.

To address how that all comes together, if the user most recently used a status move there is a not insignificant chance it will counter/mirror coat over even a kill, ~25% at high HP. It is also generally very likely to counter if your most recent move was a damaging move the matching type.

There is one additional interaction, if you have out a pokemon such as Aggron that is double weak to fighting, remember that Counter has a chance of getting an additional +2 score thus making it significantly more likely to be used regardless of what move you used or what HP it is at.

Curse

Moves: Curse

This move has two entirely distinct sets of logic if the user is Ghost type compared to if they are not.

If the user is Ghost type, there is a ~69% chance of -1 score. This means that in general, curse will be rarely used by ghost types, +0 score and winning the tie is only about a 1/6th chance.

For non ghost types, it is based off defense stage thresholds. For each threshold that the user meets of +3 or below, +1 or below, and +0 or below, there is a 50% chance of a +1 score. This means that curse while unboosted or even only a single +1 boost has a relatively high chance to be prioritized.

Defense Boosting Moves

Moves: Bulk Up, Harden, Acid Armor, Iron Defense

These moves are encouraged if the user has 100% HP and is +2 defense or lower, with a 50% chance of +2 score. If the user has at least +3 special defense, there is a 61% chance of -1 score.

If the user has less than 40% HP, it receives an additional -2 score. If the user is at least 70% HP, there is a 78% chance to not run the final check.

The final check runs if the check while above 70% HP fails, or while the pokemon is between 40% and 70% HP. It checks the most recently used move by the target, with chances of 100% if special, 59% if physical, and 77% if status, it applies a -2 score.

Overall this means that the AI is reasonably likely to lead with a defense boosting move if it has one, around 75% chance normally. If it has had its HP lowered however the chance is much smaller, dropping significantly once it drops below 70% HP, and to effectively zero when below 40% HP.

Defense Lowering Moves

Moves: Tickle

Tickle is only on a few early game trainers and essentially doesn't matter. However, it is at +0 by default at high HP causing it to have a reasonable chance to be used. Once the user drops below 70% HP or the target drops down to -3 attack the chance plummets, with an automatic -2 if below 70% and an additional -2 80% of the time if either is met. In practice this means it will almost never be used once you hit the pokemon once.

Destiny Bond

Moves: Destiny Bond

Destiny Bond always gets a -1 score, making it always unlikely to be used. If the user is faster than the target it gains a bonus based off HP thresholds, 50% of +1 at 70% HP, 50% of +1 at 50% HP, and 61% of +2 at 30% HP.

This means that the AI should only rarely use destiny bond while it is slower, and even while faster it should only use it once its HP starts to drop.

Disable

Moves: Disable

Disable is relatively straightforward, if the target is faster, the move is left unchanged. If however the user is faster, it receives a +1 score if the most recent move by the target was a damaging move, and 61% of -1 score if it was a status move.

Only a single AI trainer has this, and only on a single pokemon. As it is a dewgong at a point in the game you will be relatively overleveled, you should almost always be able to outspeed this causing it to have an unchanged score. If for some reason you underspeed, it will be extremely trigger happy with this move if the most recent move you used was a damaging move.

Dragon Dance

Moves: Dragon Dance

This move receives a 50% chance of +1 score while it is slower than the target, and a 73% chance of -1 score while it is below half HP. These do not stack, if it is slower the HP check is not made.

Due to this the AI will generally be quite likely to use this in order to speed control, but once it is faster it will still have a chance to use it, although this chance drops significantly while it is at low HP.

Draining Moves

Moves: Giga Drain, Leech Life, Mega Drain

Draining moves receive a -3 score 80% of the time while resisted. This allows them to be potentially unchosen even if a certain kill, or more likely to be rarely chosen when a pokemon has multiple options to kill of which this is one.

Dream Eater

Moves: Dream Eater

Dream Eater receives a -1 score if the target resists the move. This causes it to lose ties, such as when given two options that can kill, Dream Eater will not be picked.

Encore

Moves: Encore

Encore receives a -2 score if the target is faster than the user, allowing you to manipulate the AI into not encoring via speed control.

Assuming the user is faster than the AI, it checks a long list of moves, and if the most recently used move by the target was any of the following, it has an 88% of +3 score. If it is none of these moves, it receives a -2 score. The +3 allows it to outweigh essentially anything other than kills.

Encore Moves: Attract, Camouflage, Charge, Confuse Ray, Conversion, Conversion 2, Detect, Dream Eater, Encore, Endure, Fake Out, Follow Me, Foresight, Glare, Growth, Harden, Haze, Heal Bell, Imprison, Ingrain, Knock Off, Light Screen, Mean Look, Mud Sport, Poisonpowder, Protect, Recycle, Refresh, Rest, Roar, Role Play, Safeguard, Skill Swap, Stun Spore, Super Fang, Supersonic, Swagger, Sweet Kiss, Teeter Dance, Thief, Thunder Wave, Toxic, Water Sport, Will-O-Wisp

Endeavor

Moves: Endeavor

Endeavor is discouraged if the target is <70% HP via -1 score, and thus will almost never get picked if you have taken some damage.

If the target has at least 70% HP on the other hand, it receives +1 if above a HP threshold, and -1 if below it. That HP threshold is 40% if the user is faster, and 50% if the target is faster. This means fairly intuitively that if the user is low HP and the target is high HP, it'll almost always use the move, and it'll almost never use the move if that is not the case.

Endure

Moves: Endure

Endure gets -1 score if the user is not in the range of 4% - 34% HP, if it is in that range, it has a 73% chance of +1 score.

The relatively narrow band of the HP range here and the fact it is always discouraged when not within that range should make it relatively predictable, having a very high chance of being used when within the HP range and a low chance outside of it.

Evasion Boosting Moves

Moves: Double Team

Evasion boosting is somewhat complicated, as it has several distinct checks and the score from all of those checks stack. All of these checks are made.

If the user has 90%+ HP, there is a ~61% chance of +3 score.
If the user has +3 or higher evasion, 50% chance of -1 score
If the target is badly poisoned, +3 score with chance 80% if >50% HP, 55% chance if lower
If the user has less than 40% HP, -2 score
If the user is not on +0 evasion and has 41-70% HP, 73% chance of -2 score

Overall, this means that the AI is quite unlikely to ever use double team unless it is on very high HP, having a chance still if on high HP and not significantly boosted, and much higher if you have been Toxic'd. It is actually possible for it to go for double team over a kill if it is on 90%+ HP and you are badly poisoned.

Evasion Lowering Moves

Moves: Sweet Scent

This move remains at +0 score always if the target and user are both on 70%+ HP and is on -2 evasion or higher. Once the AI is below 70% HP, it is only a 20% chance of being +0. In the extremely niche case the AI is above 70% HP and you are on -3 evasion or lower, the 20% also applies.

Due to these factors, on the one trainer with Sweet Scent, the AI should generally only use it as long as both of you are at high HP, switching over to only damage or sleep powder once your HP starts to lower.

Facade

Moves: Facade

If the target is burned, paralyzed, poisoned, or badly poisoned, +1 score. This mostly means that if Facade is not the highest damage move, it will still be weighted at +0 same as that if the target is statused. This is counterintuitive, but the AI does check whether the target is statused, not the user.

Fake Out

Moves: Fake Out

Fake Out always gets +2 score, so it will be chosen over almost everything other than a kill on the first turn a pokemon is out.

Focus Punch

Moves: Focus Punch

Focus Punch has a few steps, as follows. If the target resists the move, it is given -1 score; if the target is asleep, it is given +1 score; and if it is the first turn the user is out there is a 61% chance of +1 score.

In practice this means that Focus Punch is quite unlikely to ever be used if you resist, but with the proviso that if Focus Punch is highest damage despite the rest all damaging moves would likely be -1 and thus it would be a random move. In addition, the AI is quite likely to focus punch if asleep, capable of doing so even if not the best damage move, and a chance of doing so if it is the first turn it is out.

Forced Switch Moves

Moves: Roar, Whirlwind

These moves receive a +2 score 50% of the time if the target is boosted to at least +3 stages in attack, special attack, defense, special defense, or evasion, and receives a -3 score if that criteria is not met.

In practice this means the AI should almost never choose these moves, as actually reaching +3 in one of those stats is incredibly rare in Emerald Kaizo unless you decide to set up with Sunflora on one of these pokemon for some reason.

HP Restoring Moves

Moves: Milk Drink, Softboiled, Moonlight, Morning Sun, Recover, Slack Off, Swallow, Synthesis

These are interesting, and quite notable as there is some unexpected logic here. The AI gets a -3 score if it is at 100% HP, making it almost never used. However, if it is below 100% HP, it gets a -8 score if it is faster than the target.

If it is slower than the target, and below 100% HP there is only a single HP threshold. If at 70% or more HP it has an 88% chance of -3 score, if that chance fails or it is below 70% HP, it has a 92% chance of +2 score.

Due to the interactions of these factors, in practice the AI should effectively never use HP restoring moves while it is faster than the player. While it is slower, it will use HP restoring moves while at 70%+ HP rarely, but while below 70% HP it will almost always heal, having upwards of a 95% chance to heal in normal circumstances.

Heal Bell

Moves: Heal Bell

This move in contrast to most does not get an increased score in its favored conditions, instead getting a penalty when in unfavorable conditions. Specifically, this move gets a -5 penalty if no pokemon within the users party or the user itself are statused, and remains unchanged otherwise.

As a result of the above, it should never be used when there is nothing to heal, and even when there is a status to heal would have no more than a 50% chance normally.

High Crit

Moves: Blaze Kick, Aeroblast, Crabhammer, Cross Chop, Dragon Claw, Drill Peck, Drill Run, Karate Chop, Leaf Blade, Razor Leaf, Slash, X-scissors

While more infamous for the favoritism in Risky AI, normal AI favors high crit moves as well. A high critical move has a 50% chance of getting +1 score if the move is super effective on the target, 25% if the move is neutral, and 0% if the move is resisted.

This means that unless you resist the move, there is always a chance that it will go for a high crit move over the highest damage move. Due to equal weighting around 1 in 8 for neutral moves and 1 in 4 for super effective moves, assuming no other moves with unusual weighting.

Imprison

Moves: Imprison

Imprison has a 61% chance of getting a +2 score, if it is not the first turn the user is out.

As a result, the AI is generally quite likely to use Imprison as long as it is not already imprisoning a pokemon.

Knock Off

Moves: Knock Off

If the AI has at least 30% HP and it is not their first turn in the battle then they have a 27% chance of +1 score. Knock Off is only considered a bad move when the target is known to have Sticky Hold, not if it's known to have no item.

Knock Off will get picked quite rarely as a result if it's not the highest damage move, but it has a chance to be used.

Leech Seed + Toxic

Moves: Leech Seed, Toxic

For an unknown reason both of these moves use exactly the same logic at this step, but they do so they are being approached together.

If the user has any non-status move and is at 50% HP or below, there is a 4% chance of unchanged score, 31% of -3 score, and 65% of -6 score. In addition, regardless of moves or current HP, the move gets +2 score 77% of the time if the pokemon also knows either Protect or Detect.

This means that a pokemon with a damaging move will almost never use either Toxic or Leech Seed, if however it is a pokemon running four status moves it will have a chance to use them regardless of their HP, and a very high chance to do so if they have Protect.

Low HP Moves

Moves: Flail, Reversal

These moves have their AI determined almost deterministically off HP thresholds, although the HP thresholds are different depending on whether the user or the target of the move is faster.

If the user is slower than the target, the HP thresholds are -1 at >60% HP, +0 at >40% HP, and 61% chance of +1 at 40% HP or below.

If the user is faster than the target, the HP thresholds are -1 at >33% HP, +0 if >20% HP, +1 if <8% HP. In addition, likely due to a bug, the final HP threshold of what would be 12-20% is actually 0-20% with a 61% of +1. This overlap allows for a pokemon that is faster and below 8% HP to achieve +2 from this part.

There is no real way to simplify this, it avoids using Flail or Reversal when it's not at low HP, and is much more willing to use them if it's slower. Just look at the HP thresholds and know that it has a high chance of just going for this move at low HP, note these are power 1 moves so were not factored into the normal highest damage calculations.

Magic Coat

Moves: Magic Coat

Magic Coat has two variables for determining score, whether the user is low HP, and whether it is the first turn the pokemon is out.

If the user has 30% or less HP, it has a 61% chance of -1 score. In addition, it is 39% of +1 if it is the first turn it is out, and 88% of -1 if it is not the first turn it is out.

This combines to ensure that if it is not the first turn a pokemon is out, it will almost never use Magic Coat (~6% of +0), even if at high HP, and the chance drops dramatically once at low HP.

Pain Split

Moves: Pain Split

If the target has less than 80% HP, the move gets -1 score. If the target instead has high HP, then this move gets a +1 score if the user is below 40% if faster, or 60% if slower, and -1 if the user is above this threshold.

Due to this, the AI will basically never use Pain Split unless you are at very high HP, and it is on low HP.

Paralyzing Moves

Moves: Glare, Stun Spore, Thunder Wave

If the target is faster than the user, there is a 92% chance of +3 score. If the user is faster than the target, the move gets -1 score if 70% HP or less.

As a result, this is extremely likely to occur as a form of speed control. However, when not speed controlling it should only be used while at high HP, and with only +0 score. Note that due to being a status move with +3, if you have a pokemon double weak to it out (such as Gyarados with Thunder Wave) it is possible to reach the +5 total and thus override the choice to use a move that kills.

Poisoning Moves

Moves: Poisonpowder

If the user has less than 50% HP or the target has 50% HP or less, this move gets a -1 score. The AI does not like poisoning pokemon when either side is getting close to KO.

Priority

Moves: Extremespeed, Ice Shard, Mach Punch, Quick Attack, Shadow Sneak

The only special logic here occurs in the previously addressed code about choosing kills with a priority move over kills with a non-priority move.

Protecting Moves

Moves: Protect, Detect

The AI discourages the use of protecting more than twice in a row, granting a -2 score on the third and later turns, and running none of the additional logic which might incentivise it.

If the user is badly poisoned, infatuated, or is under the effects of Perish Song, this logic just ends, leaving the move on +0 score. This is presumed to be some kind of bug, as it means it will happily protect while poisoned.

Then the move always gets a +2 score as the circumstances to avoid this +2 are unavailable to the player in EK. In addition, at this point the move has a 50% chance of receiving an additional -1 score regardless of statuses, and then if the user successfully used Protect/Detect in their last turn gets an additional -1 or -2 score with 50/50 chance of each.

Due to these, the AI generally heavily dislikes using Protect multiple turns in a row, although is more willing to for some reason if it is badly poisoned or under the effects of Perish Song, but the AI will spam Protect if the player is under these effects.

Pursuit

Moves: Pursuit

Pursuit receives +1 score 50% of the time if it is the first turn the pokemon is out and their target is a ghost or psychic type. So the AI should not use pursuit if it is not highest damage unless it is their first turn and you have a type weak to it, or there are other mitigating factors.

Recharge

Moves: Blast Burn, Frenzy Plant, Hydro Cannon, Hyper Beam

Note first, that as a recharge move is discouraged that it does not receive the normal -1 if it is not the highest damage move. However, if the target resists the move then it does receive a -1 score and the rest of the logic here is not run.

If the target does not resist, then it checks relative speed and grants a -1 score if the user is at high HP. This is at least 60% HP if the user is slower, and 41% if the user is faster. This means that the AI will generally try to avoid the recharge turns unless it is at low HP, presumably considering it might not live to see it anyway.

Recycle

Moves: Recycle

This move receives a base -2 score unless the user would regain an encouraged item, if it would then it is instead an 80% chance of +1 and 20% of +0. The encouraged items are Chesto Berry, Lum Berry, and Starf Berry.

As a result, Beauty Shirley's Chimecho should not use Recycle, as the Sitrus Berry is not on the list. All other three users of Recycle have Starf Berry, and thus will be highly likely to Recycle at any given time if possible unless it sees a kill or other high priority move.

Rest

Moves: Rest

There are three separate HP thresholds here, but they differ based on relative speed. Only a single HP threshold is used, despite high HP meeting multiple.

First, if the user is faster and has 100% HP, this move gets -8 score, to ensure it should avoid using Rest if the move would be entirely worthless.

Second, if the user is faster and has at least 50% HP, or slower with at least 71% HP, this move gets a -3 score.

Third, if the user is faster and has at least 40% HP there is a 73% chance of -3 score, or is slower with at least 60% HP there is an 80% chance of -3 score.

Finally, if either the user had too low HP for any threshold or the chance of -3 in the third threshold failed, there is a 96% chance of +3 score.

Overall this is relatively intuitive, the AI prefers to use Rest when it is at low HP, and is more lenient about what low HP is if slower.

Revenge

Moves: Revenge

Revenge gets a +2 score 27% of the time if the user is not asleep, infatuated, or confused, if the chance fails or it has a relevant status it instead gets -2 score. This means that you always have to watch out for Revenge on pokemon that have it, as it is always a small but significant chance of occurring.

Screens

Moves: Light Screen, Reflect

Light Screen and Reflect are treated differently, but are fundamentally the same except for physical specialness so are grouped here.

If the user of the move is below 50% HP, the move gets a -2 score to significantly discourage it from being used. If they had at least 50% HP and the target has a type corresponding to the move, then the move gets no change in score leaving it at probably +0. If however the target does not have a type applicable to the move, there is an 80% chance of -2 score.

As a result, the AI will normally only use Reflect or Light Screen when it would block one of your pokemons types, and it is above half HP, but has a small chance (~10%) of doing it even without your pokemon being the relevant type.

Self KO moves

Moves: Explosion, Selfdestruct

First, remember that these are discouraged move, and as normal types can never get the +2 for being double super-effective, so these moves will always start at 0 base score.

The logic for this move is based almost entirely off HP thresholds. These are as follows.

HP Threshold	Scoring
80-100%	80% chance of -1 score, or -3 score if the user is faster.
51-79%	80% chance of -1 score
30-50%	50% chance of +1 score
0-29%	40% chance of +2 score, 50% chance of +1 score, 10% chance of nothing

The distinction between -1 and -3 score at high HP rarely matters, as both make the move score below the highest damage move value of +0. The general logic most people will care about,

assuming no other moves with special logic or kills, the AI has about a 10% chance of exploding at 51%+ HP, a 75% chance at 30%+ HP, and a 95% chance at 30%+ HP.

Semi Invulnerable Moves

Moves: Bounce, Dig, Dive, Fly

First, if the AI knows that you have either Protect or Detect, the move receives -1 score and thus is unlikely to ever get picked. It does not even run any of the additional logic to encourage it further.

Next there is a 69% chance of +1 score if any of the following three criteria are met: if the user is faster than the target; if the target is badly poisoned or under the effects of leech seed; or it is either a Hail or Sandstorm, and the user is immune to the other one of these weathers.

This is indeed switched, Ice types stall with these moves in Sandstorm, and Ground, Rock, and Steel types in Hail. There is no simple summary here, just check to see if any of the criteria are met.

Sleep Talk

Moves: Sleep Talk

This move gets +10 score if the user is asleep, and -5 if they are not asleep. This stacks with the normal -8 for using it while not asleep due to it being a bad move. This means it should always be picked while asleep, and never while awake.

Sleeping Moves

Moves: Grasswhistle, Hypnosis, Lovely Kiss, Sing, Sleep Powder, Spore, Yawn

If the target has Dream Eater or Nightmare, this move gets +1 score 50% of the time. Note this checks whether the target knows said move, which is presumably a bug and it should check the user's moveset but it does not. In addition, the only pokemon that learns either of these moves is Noctowl which requires a Heart Scale to use Dream Eater.

As a result of those factors, sleep inducing moves will normally receive no change in score from their base.

Snore

Moves: Snore

Snore always receives a bonus +2 score. It still receives a -8 score while awake as a bad move however.

There is a quirk that can occur due to this, since a move receives +4 score for being a kill, a snore that kills while the user is awake sits at a total of -2 score. As Rest normally sits at -3 score while at high HP, a pokemon running Rest, Snore, and two other moves which should not be used (such as Curse while already at +6) a pokemon can pick Snore over Rest, seeing the -2

as better than the -3. Norman is the only practical case for this in most cases, as most Snorlax in EK have a second damaging move.

Special Attack Boosting Moves

Moves: Tail Glow

The use of these moves is somewhat complicated, being based on both the user's current HP and current attack stages. If the user is at +3 special attack or higher, there is a 61% of an additional -1 score beyond the following table.

100% HP	If the user is at +2 attack or lower, there is a 50% chance of +1 score, and otherwise no change.
71-99% HP	No change.
40-70% HP	84% of -2 score
0-39% HP	-2 score

Due to this, the AI is very unlikely to ever boost if already boosted to at least +3, or at 70% or lower HP. It should essentially never boost if at less than 40% HP if it has any alternatives. It is however very likely to boost if it is unboosted and at full HP.

Special Defense Boosting Moves

Moves: Cosmic Power, Stockpile, Calm Mind, Amnesia

These moves are encouraged if the user has 100% HP and is +2 special defense or lower, with a 50% chance of +2 score. If the user has at least +3 special defense, there is a 61% chance of -1 score.

If the user has less than 40% HP, it receives an additional -2 score. If the user is at least 70% HP, there is a 78% chance to not run the final check.

The final check runs if the check while above 70% HP fails, or while the pokemon is between 40% and 70% HP. It checks the most recently used move by the target, with chances of 100% if physical, 59% if special, and 77% if status, it applies a -2 score.

Overall this means that the AI is reasonably likely to lead with a special defense boosting move if it has one, around 75% chance normally. If it has had its HP lowered however the chance is much smaller, dropping significantly once it drops below 70% HP, and to effectively zero when below 40% HP.

Special Defense Lowering Moves

Moves: Fake Tears

If the user has less than 70% HP, or the target is already down to -3 stages or lower, there is an 80% chance of -2 score. If the user has 70% HP or lower, there is an automatic -2 score.

Those do stack, causing a pokemon at less than 70% HP to normally give this move -4 score. The AI really does not like lowering your special defense while it is at low to middling HP.

Speed Boosting Moves

Moves: Agility

The AI gives this move -3 score if it is already faster than your pokemon, if it is slower than that it has a 73% chance of +3 score and 27% chance of +0 score, producing an 86% chance of using it if there are no other unusually weighted moves.

Speed Lowering Moves

Moves: Icy Wind, Mud Shot, Rock Tomb, String Shot, Scary Face

Similar to speed boosting moves, this receives -3 score if the user is faster than their target. If however the user is slower than their target, there is a 73% chance of +2 score. As a result, the AI will attempt to use the move 86% of the time for the status moves.

For the damaging moves in this list, it means that 73% of the time it will use it over the highest damage move, and it won't use it while faster unless it sees a kill. Even a kill is only +1 net score, and thus will get looked over for other kill moves or even a lot of other moves that can hit +2 or higher.

Substitute

Moves: Substitute

This move uses stacking HP thresholds, unlike most moves that care about HP thresholds. What this means is that for each HP threshold the user is under of 50%, 70%, and 90% HP the AI will have a 61% chance of -1 score, potentially being up to -3 score if below 50% HP and all three chances succeed.

After these initial checks, the AI runs an additional check but only if it is faster than the target. In this case, if the most recent move used by the target was a status move that poisons, badly poisons, burns, paralyzes, confuses, or sleeps and the user does not have the relevant status the move has a 61% chance of getting +1 score.

Due to these, the AI likes using substitute to protect against status moves, but only if it outspeeds in the turn following the use of the status move, and the AI generally likes Substitute less if at low HP.

Super Fang

Moves: Super Fang

Super Fang gets -1 score if the target has more than half their health remaining, causing the AI to avoid it while you're at low HP as makes intuitive sense.

Trapping

Moves: Sand Tomb, Whirlpool, Wrap, Mean Look, Spider Web

If the target is under badly poisoned, infatuated, or under the effects of Perish Song there is a 50% chance of +1, allowing the move to get picked to trap you with these conditions even if not highest damage, or making the move significantly more likely for the status moves.

Vital Throw

Moves: Vital Throw

This move is not a discouraged move, and this logic only decreases score, so is only really relevant in the case that the move kills or is highest damage. This logic also only runs if the user is slower than the target. If the user has 40-60% HP, there is a 24% chance of -1 score, and if the user is 0-39% HP then there is a 20% chance of -1 score.

Due to the chances being relatively low, the AI should generally not get confused, but it is still worth noting as if vital throw is the highest damage it may cause the AI to go random move if the chances are triggered.

Water Sport

Moves: Water Sport

If the user has at least 50% HP and the target is Fire Type, this move gets +2 score, otherwise it gets -1 score.

It is however only on a single optional trainer, but if you bring fire types against that trainer which leads Milotic and Wailord it should open with a Water Sport assuming for some reason Milotic's Hydro Pump doesn't kill.

Weather

Moves: Hail, Rain Dance, Sunny Day

These moves all have largely identical logic so are grouped. Note that the Moves list is correct, Sandstorm does not have any special logic.

If the move is Rain Dance, and the user has the Swift Swim ability, and the user is slower than the target, then the move gets +1 score from this check instead of running the normal weather logic. The three moves otherwise function identically except for the weather type being checked.

The moves receive -1 score if the user is below 40% HP, and +1 score if the weather is currently one of the other three weather conditions. If both would apply, only the -1 score is applied. As a result, the AI is reluctant to use weather if you can get it to low HP before it sets it up. Setting a different weather is only possible in the postgame as Smeargle is the only pokemon which can learn weather setting moves so is mostly irrelevant.

Other Moves

Moves: Acid, Air Slash, Ancientpower, Assist, Attract, Aurora Beam, Bite, Blizzard, Body Slam, Bone Rush, Bubblebeam, Camouflage, Confusion, Crunch, Crush Claw, Cut, Defense Curl, Double Kick, Double-edge, Draco Meteor, Dragon Rage, Dragonbreath, Earth Power, Earthquake, Egg Bomb, Ember, Extrasensory, Fire Blast, Fire Punch, Flame Wheel, Flamethrower, Flash Cannon, Follow Me, Force Palm, Frustration, Gunk Shot, Gust, Head Smash, Headbutt, Heat Wave, Helping Hand, Hi Jump Kick, Hidden Power, HP Bug, HP Electric, HP Fighting, HP Fire, HP Flying, HP Ghost, HP Grass, HP Ground, HP Ice, HP Psychic, HP Rock, HP Water, Horn Attack, Hydro Pump, Hyper Voice, Ice Ball, Ice Beam, Ice Punch, Ingrain, Iron Tail, Jump Kick, Lick, Luster Purge, Magnitude, Mega Kick, Megahorn, Metal Claw, Meteor Mash, Metronome, Mist Ball, Mud-slap, Muddy Water, Nature Power, Needle Arm, Night Shade, Nightmare, Octazooka, Overheat, Pay Day, Peck, Perish Song, Petal Dance, Poison Fang, Poison Sting, Poison Tail, Powder Snow, Present, Psybeam, Psychic, Psycho Boost, Psywave, Return, Rock Slide, Rock Smash, Rock Throw, Rolling Kick, Rollout, Sacred Fire, Safeguard, Sand-attack, Sandstorm, Secret Power, Seismic Toss, Shadow Ball, Signal Beam, Silver Wind, Sky Attack, Sky Uppercut, Sludge Bomb, Sonicboom, Spikes, Steel Wing, Stomp, Superpower, Surf, Tackle, Teeter Dance, Teleport, Thief, Thrash, Thunder, Thunderbolt, Thunderpunch, Thundershock, Transform, Tri Attack, Twister, Uproar, Volt Tackle, Water Gun, Water Pulse, Water Spout, Waterfall, Weather Ball, Weather Ball (Fire), Weather Ball (Water), Wild Charge, Will-o-Wisp, Wing Attack, Wish

All moves in this section have no special logic under normal smart AI. They are listed here merely for reference.

Setup First Turn

This encourages the AI to like moves that the game considers as "setup moves", but only applies on the first turn of the battle. If a move is considered a setup move, it has ~31% chance of getting a +2 score.

What the game considers as setup moves are as follows
Stat increasing moves (Except Dragon Dance)
Stat lowering moves
Light Screen, Reflect, Focus Energy, Substitute, and Ingrain
Status moves that confuse, poison (except Toxic), burn, or paralyze, but not moves that sleep
Substitute, Leech Seed, Curse, Torment, and Imprison
Conversion (but not Conversion2), and Camouflage

Analysis

Due to the limited list, and only applying on the very first turn of battle, this flag is largely irrelevant. In fact, in EK there is only a single trainer it matters for, Cooltrainer Wendy having a higher chance of using Confuse Ray on turn one.

Risky

The infamous Risky AI, bringer of RNG. Risky AI is extremely straightforward, if a move is a risky move, the AI will have a 50% chance of giving it +2 points.

Risky moves are as follows
Attract, Counter, Destiny Bond, Focus Punch, Mirror Coat
Sleep moves (Sleep Powder, Hypnosis, Lovely Kiss, Spore)
Exploding (Self Destruct, Explosion)
High critical moves (Drill Run, X-Scissors, Cross Chop, Dragon Claw)
Confusing moves (Confuse Ray, Teeter Dance)
Omniboosting moves (Ancient Power)

Analysis

Overall not too much to watch out for here, but be on guard as the element of RNG added makes any AI with this flag much less predictable.

Double Battle

This is the flag that tries to make the AI act smart in double battles, and this is the only flag the AI cares about when considering whether it should use a move on an ally.

There are two primary sections of logic here, the logic for using moves on allies and the logic for using moves on the player.

First, if the target is an ally.

- If the move is Will-o-Wisp or Toxic and the ally has Guts, is not statused, and has at least 91% HP, +5 points
- If the move is Skill Swap and the ally has Truant, +10 points
- If the move is Skill Swap, the user has Compound Eyes, and the ally has Thunder, +3 points

If none of the above criteria were met, then it gets -30 points ensuring it will never use the move on an ally.

Next, in doubles battles when checking whether to use against the player. Importantly it checks these all in order and stops once one matters.

- If the move is Skill Swap, +5 points if the user has Truant; +2 points if the target has Shadow Tag or Pure Power; and no change otherwise
- If considering using Earthquake or Magnitude and their ally is immune, +2; if their ally is weak, -10 points; and -3 points otherwise.
- If considering using an electric move, and the targets partner has Lightning Rod; -10 if the partner is ground type, -2 if not.

- If the AI does **not** have Guts and is statused; -5 to power 1, discouraged, and status moves; +3 to highest damage move; +1 to non-best damaging moves.

Analysis

The AI really likes using Toxic on an ally with Guts, which is very significant for the Tyra & Ivy fight as this is a higher priority than even a sure kill. The AI also prioritises using skill swap on an ally with Truant over just about anything else possible, and so should always open with that on Norman.

The logic behind the use of moves on the player is slightly more complex. The AI will like using skill swap to lose truant, and has almost no chance of ever picking something else which is why Espeon nearly always does this on turn two of the Norman fight.

Earthquake logic can be seen multiple times, but just generally means that earthquake is likely to get picked in a double battle if the ally is immune even if it is not the highest damage move, as long as at least one of the player's pokemon is not immune to it.

The final component is quite rare due to SHF spamming lum berries like they're required to exist, but it does cause the AI to incessantly avoid any status or discouraged move if it is statused in a double battle.

Appendix

Ability Knowledge

The AI in many cases will try to act based off its knowledge of the player's abilities. The AI does not innately know the abilities of the player's pokemon. The AI always starts with no knowledge on the ability of a freshly switched in pokemon, even if it has been in previously in the battle.

If the AI has no knowledge on the ability of a pokemon and tries to do something based off the ability of a pokemon, it will blindly guess what ability the pokemon has. As a result, on pokemon with only a single ability it will know what ability the pokemon has as it is aware of the possibilities. For the most part, the AI gains knowledge of an ability when it is used, as would make sense.

Intimidate Knowledge Glitch

There are two major exceptions to the above rules, these are Intimidate and Trace. Trace rather than making the AI believe the ability is Trace makes it believe it is the ability copied with Trace. The notable exception with these however is that the AI does not believe the pokemon using the ability is the one with Intimidate or Trace, but rather the player's pokemon is the one with it. In a double battle it is the left pokemon on the player's side. This overrides previous knowledge,

causing use of Intimidate or Trace to cause the AI to "forget" about your ability, and works even on pokemon with only a single ability.

For example, if Gengar is out and the AI switches in an Intimidate pokemon then the AI will believe that Gengar has Intimidate instead of Levitate until something happens like a ground move being used on Gengar to cause it to refresh knowledge of Levitate. This does not cause the AI to calculate damage incorrectly, as the damage calculation is separate from ability knowledge.

Discouraged Moves

Certain moves are discouraged when looking at powerful moves, and are treated differently as a result. The moves are as follows.

- Exploding Moves (Explosion, Self-Destruct)
- Charging Moves (Razor Wind, Solar Beam)
- Recharge Moves (Blast Burn, Hydro Cannon, Frenzy Plant, Hyper Beam)
- Dream Eater
- Focus Punch

Power 1 Moves

Some moves are internally implemented as having a power of 1, marking them as not a status move, but still not normal damaging moves. All of these are treated specially for how much damage they deal, and are listed below.

- Variable Power Moves (Flail, Magnitude, Present, Reversal)
- Reflecting Moves (Counter, Mirror Coat)
- Flat Damage Moves (Dragon Rage, Endeavor, Night Shade, Psywave, Seismic Toss, Sonic Boom, Super Fang)
- Bide
- Hidden Power

Note that Hidden Power only applies to the original Hidden Power, which is extremely rarely used in game.

Dual Non-Immunity Glitch

Due to a bug, the AI does not see a pokemon that has its immunity in its first checked typing and a non-neutral matchup in its second checked typing. A manual scan indicates it applies only in the following five situations.

- Girafarig is not seen as immune to Ghost
- Gligar is not seen as immune to Electric
- Flygon is not seen as immune to Electric
- Scyther is not seen as immune to Ground
- Butterfree is not seen as immune to Ground
- Beautifly is not seen as immune to Ground

- Yanma is not seen as immune to Ground
- Masquerain is not seen as immune to Ground
- Ninjask is not seen as immune to Ground
- Skarmory is not seen as immune to Ground
- Aerodactyl is not seen as immune to Ground

This doesn't matter most of the time as the AI still avoids damaging moves other than the highest damage, but it can matter for status moves. Most notably for EK, the AI is perfectly happy to use Thunder Wave on Flygon, and will prioritize it if the Flygon is faster as normal.

For information on matchup priority, you can refer to the switching logic document here.

Speed Ties

In the case of a speed tie, the AI normally functions much as you would expect. When making this check, the game will decide at random each time it checks whether to treat the player or the AI as faster, identical to how it acts in actual battle.

However, there is a bug in how it approaches this within the move choice code for the AI. As a result, normally when the AI checks whether the player or AI is faster when deciding on a move and there is a speed tie the AI will always act as if it was faster. There is no random chance.

There is an exception, it works correctly within the Rain Dance logic. This is because due to the way the bug works, the AI only functions incorrectly when it checks whether the target is faster than the user, but it functions correctly when it checks whether the user is faster than the target. The latter only occurs within Rain Dance.