

1 State Definition

A state consists of the following:

- For each pokemon on our team:
 - Current health
 - Ability
 - Stats (HP, Attack, Defense, Special Attack, Special Defense, Speed)
 - Stat modifiers
 - Known Moves
 - PP left for each move
 - Held item
 - Non-volatile status, one of:
 - * Healthy
 - * Poison
 - * Toxic
 - * Paralysis
 - * Freeze
 - * Burn
 - * Sleep
 - Volatile status, any number of:
 - * Bound
 - * Trapped
 - * Confusion
 - * Curse
 - * Embargo
 - * Encore
 - * Heal Block
 - * Identified
 - * Infatuation
 - * Leech Seed
 - * Nightmare
 - * Perish Song
 - * Taunt
 - * Telekinesis
 - * Torment
 - Battle status, any number of:
 - * Aqua Ring
 - * Defense Curl
 - * Rooting
 - * Magnetic Levitation

- * Recharging
 - * Semi-invulnerable
 - * Substitute
 - * Taking Aim
- For each pokemon on the opponent's team:
 - Expected range of health
 - Expected ability (known if revealed)
 - Expected range of stats
 - Expected moves (known if revealed)
 - PP left for each known move
 - Expected held item (known if revealed)
 - Stat modifiers
 - Non-volatile status
 - Volatile status
 - Battle status
- For the battle itself:
 - Weather, one of:
 - * None
 - * Sandstorm
 - * Harsh Sunlight
 - * Rain
 - * Hail
 - Turns left of weather
 - Terrain, one of:
 - * None
 - * Electric
 - * Grassy
 - * Misty
 - * Psychic
 - Turns left of terrain
 - Presence of Trick Room
 - Light Screen and/or Reflect on either our or opponent's side
 - Entry hazards on either side
 - Tailwind on either side

2 Action Definition

An action is one of: *move* or *switch*, along with an index. A *move* action can also have the additional parameters *zmove* or *mega*.

move represents an action of using one of the pokemon's known moves, and can have an index in the range (1,4). An index is valid if that move is not blocked for any reason (e.g. trying to use a different move when the user is holding a Choice item) and that move still has at least 1 remaining PP. If the optional *zmove* parameter is added, then the move will be upgraded to a Z-Move. *zmove* is only a valid action if the user is holding a Z-Crystal and the chosen move matches the held Z-Crystal (usually based on type, but some moves have unique crystals). If the optional *mega* parameter is added, then the active pokemon will Mega-Evolve before performing the move. *mega* is only a valid action if the currently active pokemon is holding its corresponding Mega Stone and has not yet Mega-Evolved.

switch represents an action of switching out to another pokemon and takes an index in the range (1,6). An index is valid if the matching pokemon has not fainted (i.e. has greater than 0 HP remaining), the index does not represent the currently active pokemon, and the currently active pokemon does not have the Trapped status.

3 Feature Selection

Following is a non-exhaustive list of possible features to consider:

- Active pokemon's expected remaining HP at end of turn
- Opponent's active pokemon's expected remaining HP at end of turn
- Expected presence of entry hazards on our side at end of turn
- Expected presence of entry hazards on opponent's side at end of turn
- Probability active pokemon outspeeds opponent's active pokemon
- Expected weather conditions at end of turn
- Expected terrain at end of turn
- Active pokemon's expected status at end of turn
- Opponent's active pokemon's expected status at end of turn
- Active pokemon's expected stat boosts at end of turn
- Opponent's active pokemon's expected stat boosts at end of turn
- Expected presence of Trick Room, Light Screen, Reflect, and/or Tailwind at end of turn