

Bachelor Thesis

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Design, Implementation and evaluation of different strategies for playing Pokémon battles

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Abstract

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Zusammenfassung

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1. Introduction

1.1. What is Pokémon

To Be Done (TBD)

2. Related Work

[?]

3. Approach

3.1. Basic rules

(Game is turn based)

ToDo

(Each player has 6 Pokémon)

ToDo

(If a Pokémon has no HP left, it faints)

ToDo

(If all Pokémon of a player fainted, the player loses)

ToDo

3.1.1. Moves

(Moves either deal damage or give an advantage later in the battle)

ToDo

3.1.1.1. Move Categories

(Physical and Special moves)

ToDo

3.1.2. Damage calculation

The damage dealt by a move mainly depends on the *level* of the Pokémon that uses the move, its effective Attack or Special Attack stat, the opponent's effective Defense or Special Defense stat and the move's effective power.

Precisely, the damage is calculated as follows[1]:

$$\text{Damage} = \left(\frac{\left(\frac{2 \times \text{Level}}{5} \right) \times \text{Power} \times A / D}{50} + 2 \right) \times \text{Targets} \times \text{Weather} \quad (3.1)$$
$$\times \text{Badge} \times \text{Critical} \times \text{random} \times \text{STAB} \times \text{Type} \times \text{Burn} \times \text{other}$$

The only exception for this are moves that deal direct damage. A list of these moves can be found at [2].

3.1.2.1. Level

Level refers to the level of the attacking Pokémon[1]. In Pokémon Showdown, the level is displayed next to the name of the Pokémon. (Mainline games leveling)

ToDo

3.1.2.2. A / D

A is the effective Attack stat of the attacking Pokémon if the used move is a physical move, **(Reference to physical moves)**

or the effective Special Attack stat of the attacking Pokémon if the used move is a special move. **(Reference to special moves)**

D is likewise the effective Defense stat of the target if the used move is a physical move, or the effective Special Defense of the target if the used move is a special move[1].

There are four moves that use stats from different categories, more Information can be found at [3].

3.1.2.3. Power

Power is the effective power of the used move. **(When is the power not equal to the base power)** The *Base Power* of a move in Showdown can be seen when hovering over a move in the move list.

Note: The same move will always have the same base power. For example, *Fire Punch* will always have a base power of 75[4].

3.1.2.4. Weather

3.1.3. Effective Stats

3.2. Hazards

An *entry hazard* is a condition that affects a side of the field that causes any Pokémon that is sent into battle on that side of the field to be afflicted by a negative effect. Entry hazards are created by moves, usually status moves [5].

(This paragraph is copied word by word from Bulbapedia)

3.2.1. List of entry hazards

Currently, there are five moves that create an entry hazard

3.2.1.1. Spikes

Spikes is a *Ground*-type entry hazard that causes the opponent to lose 1/8% of their maximum Hit Points (HP) when they enter the field. This effect can be stacked up to three times. Two layers of spikes will deal 1/6% and three layers will deal 1/4% of the enemies maximum HP.

(Removal and Immunity of Spikes) Spikes are created by the move *Spikes*[6].

3.2.1.2. Stealth Rock

The move *Stealth Rock* sets an entry hazard around the target Pokémon causing Pokémon on the target's field to receive damage upon being switched in. The amount of damage inflicted is affected by the effectiveness of the type *Rock* against the target. Unlike Spikes, this entry hazard does not stack. The damage taken from the victim's maximum is denoted in table 3.2.1.2[7]. *Note:* Stealth Rocks can also be created by the move *G-Max Stonesurge*. This damage-dealing Water-type G-Max move is exclusive to Gigantamax Drednaw [8].

(Does this move exist in Showdown)

3.2.1.3. Sticky Web

The entry hazard set by the *Bug*-type move *Sticky Web* lowers the opponents speed stat by one stage upon switching in [9].

(Pokémon that are not affected by this)

Type effectiveness	Damage (Max. HP)
0.25x	3.125%
0.5x	6.25%
1x	12.5%
2x	25%
4x	50%

Table 3.1.: Damage dealt to Pokémon by Stealth Rocks[7]

3.2.1.4. Poison spikes

Poison Spikes set by the *Poison*-type move *Toxic Spikes* cause the opponent to become poisoned. If two layers of spikes are set, the Pokémon instead becomes badly poisoned [10].

(Pokémon not affected)

ToDo

(Explain (badly) poisoning)

ToDo

3.2.1.5. Sharp steel

This entry hazard works very similar to Stealth Rock described in 3.2.1.2. However, Sharp steel can only be set by the *Steel*-type move *G-Max Steelsurge* which is the exclusive G-Max Move of Gigantamax Copperhead. The damage dealt by Sharp steel does not stack, the amount of damage dealt is based on the Type effectiveness of the *Steel*-type against the target. Exact damage modifiers can be found in table 3.2.1.5 [11]. (Unaffected Pokémon)

Type effectiveness	Damage (Max. HP)
0.25x	3.125%
0.5x	6.25%
1x	12.5%
2x	25%
4x	50%

Table 3.2.: Damage dealt to Pokémon by Sharp Steel[11]

ToDo

3.2.2. Hazard counterplay

There are some moves that can remove entry hazards. *Rapid Spin* [12] removes entry hazards from the user's side of the field and *Defog*[13] removes entry hazards on both sides of the field¹. In addition, *Court Change*[14] will exchange the entry hazards on each side of the field, along with other one-sided field conditions. (What other one-sided field conditions are there?) If a grounded² *Poison*-type Pokémon enters the battle, it will remove Toxic Spikes, described in 3.2.1.4, from its side of the field. Lastly, Pokémon holding the item *Heavy-Duty Boots*[16] are unaffected by entry hazards, but grounded *Poison*-type Pokémon can still remove Toxic Spikes even if they hold the boots[5]. There are various exceptions and special cases to hazards. (Special cases of hazards)

ToDo

ToDo

¹In older games *Defog* would only remove Hazards on the target's side of the field. But as we only investigate the latest version, this won't be covered in detail.

²The term *grounded* is used to describe a Pokémon that can't be affected by damaging *Ground*-type moves and several other associated effects[15].

4. Evaluation

5. Conclusion

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Listings

Acronyms

TBD To Be Done

HP Hit Points

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Appendix

A. First Appendix Section

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Figure A.1.: A figure

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Ich versichere, dass ich die vorstehende Arbeit selbstständig und ohne fremde Hilfe angefertigt und mich keiner anderer als der in den beigefügten Verzeichnissen angegebenen Hilfsmittel bedient habe. Alle Textstellen, die wörtlich oder sinngemäß aus Veröffentlichungen Dritter entnommen wurden, sind als solche kenntlich gemacht. Alle Quellen, die dem World Wide Web entnommen oder in einer digitalen Form verwendet wurden, sind der Arbeit beigefügt.

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Der Durchführung einer elektronischen Plagiatsprüfung stimme ich hiermit zu. Die eingereichte elektronische Fassung der Arbeit ist vollständig. Mir ist bewusst, dass nachträgliche Ergänzungen ausgeschlossen sind.

Die Arbeit wurde bisher keiner anderen Prüfungsbehörde vorgelegt und auch nicht veröffentlicht. Ich bin mir bewusst, dass eine unwahre Erklärung zur Versicherung der selbstständigen Leistungserbringung rechtliche Folgen haben kann.

Place, XX. Month 20YY

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(Julian Schubert)