Base concept: Convert everything a card does to some universal metric so that the program can evaluate and compare them.

Metric Concept 1: Powers

Each effect is assigned a power value, with various other metrics being translated to power. The program will buy cards on its turn accordingly:

* If a supervillain can be bought, buy it.
* If there are 3 or fewersupervillains left, **OR** 15 or fewer cards in the main deck, maximize the victory point value of your buys (if two or more options have the same value, proceed to the next step, looking at only those combinations). For playtesting, note the caveat for defenses in this stage.
* With the remaining power, buy the combination of cards that would maximize the average power of your deck.
* Also, if you can end the game, do

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| Effect | Amount of power | Notes |
| Power | n/a | Power generated is worth the power generated |
| Drawing cards | +Max (1.99 power, avg. of other cards in deck) | The concept behind this is that cards that replace themselves get better as the game goes on, so they should be valued at at least 1.99 to start or you will never buy them early game. Early solution for counting their value when looking at average of power to buy other card draw cards is to always count them as 2 when in your deck. This may change in later iterations, but by and large, you will end up with an average value of more than 2 at some point. The value 1.99 was specifically chosen to be functionally 2 except when compared to a card that actually generates 2, which should probably be selected over a cantrip early game. |
| Destroying card from top of deck | +(0.05\*num punches + 0.1\*num vulnerabilities + 0.15 \* num weaknesses) | These numbers are pretty arbitrary, rough evaluation of what the ratio between different card types should be. Destroying cards in different zones has different values. |
| Destroying card from hand | +(0.01\*num punches+ 0.15\*num vulnerabilities + 0.2 \* num weaknesses) | Destroying punches in hand is less good because you’re giving up on power, but you get to look at more cards to destroy weaknesses and vulnerabilities in hand. |
| Destroying card from hand or discard pile | +(0.1\*num punches+ 0.2\*num vulnerabilities + 0.25 \* num weaknesses) | This is obviously the best option, getting to look at your entire discard pile means you will almost always be able to destroy something. |
| Putting a card you buy on top of your deck | +0.5 | May end up being wrong, we’ll see. No easy way to quantify this |
| Discarding a card | -0.5 | You generally end up discarding a vulnerability, weakness or punch. May end up creating a more active way of calculating this, but seems like a good heuristic |
| Making each opponent discard a card | +0.5 | The base idea is that it makes everyone else lose on average 0.5 power, so it puts you at +0.5 power relative to the rest of the table. Have yet to figure out answers for the way it compounds (second discard worse than 1st, etc.) |
| Making each opponent gain a weakness | +2 if you’re through less than a third of the deck (both decks), +1 if your through between ⅓-⅔ of at least one of the decks (and not through more in either), +0.25 if you’re through at least ⅔ of one of the decks. | The number is actually backfigured, with my looking at how high I would like to be prioritizing the cards that give weaknesses at various points of the game. I had to use this method as there is no easy way of fitting cards like this into our algorithm. This is a problem I’d be super interested to see machine learning solve. For things that conditionally give a weakness, multiply by the probability that the condition is met. |
| Defense | +0.75 (additional +1 vp if you can put it on top of your deck and there are 3 or fewer villains left) | I have no clue how to calculate this. Only putting in simple defenses (discard to draw 1 and forcefield) for now, alg will only ever defend supervillains for now. Defending supervillains is important, though, so when in the final stages of the game, if you can put a defense on top, you can be pretty sure it’ll be used, so it’s worth an extra victory point (which is the deciding factor in what to buy at that point of the game) |
| +1 for each of a type in discard | +½ of number of cards of that type in your deck + an additional 0.05 for each card in the main deck if hastype, + 0.01 if does not have type and has one or more other types, +0.02 if has no types | 50% of time cards are in your discard (approximately), and then the amount of heroes you are likely to end up with in your deck. Some heuristics used plus approximations based on play. |
| +Some effect for playing card of a specific type | Always consider it met if hastype and not met if hastype for some other type. Else multiply effect by 5 times percentage of your deck that is that type of card | You draw 5 cards in a hand. Heuristic that really isn’t mathematically correct but should be close enough to be functional all of the time. |

Different powers modifiers:

Batman: +1 to all equipment (hastype equipment)

Hawkman: +1 to all heroes (hastype hero)

Black Canary: +1 to all villains (hastype villain)

Superman: +1 to all non-kick superpowers, +0.8 for kicks base, +0.5 if 10% of your deck or more is kicks, +0.25 if 20% of your deck or more is kicks. If breaking a tie, take a card you have less copies of. If that is not a sufficient tie-break, always take a card from the line-up over a kick. (hastype superpowers)

Cyborg: +0.8 to superpowers if you have less than 10% superpowers, + 0.5 if 10-20%, +0 if over 20%, +0.8 card to equipment if you have less than 10% equipment, + ½ card if 10-20%, +0 if over 20% (hastype superpowers and hastype equipment)

Sphinx: +1 card to heroes if you have less than 20%, 20-50% +0.5 cards, over 50% how did this happen but +0 (hastype heroes)

Commodore Vunerable: When evaluating destruction, vulnerabilities are considered punches

Shazam: value of a Shazam activation considered 3 power (2.5 +0.5 from putting on top of deck was the breakdown in my head, may change)

Green lantern:

If proc condition not met:

All cards worth +0.1 power if that card makes up less than 10% of your deck, drawing a card worth +0.5 power

Proc condition: 60% of your deck not starter cards. For each card that a card could draw, discount one starter card (eg, if you have 7 starters and 6 others, 3 of which draw cards, then treat this as 4 starters and 6 others).

Regardless of whether proc condition is met, if breaking a tie, take a card you have less copies of. If that is not a sufficient tie-break, always take a card from the line-up over a kick.

Aquaman: Cards that draw 1 or more cards are worth 0.2 less

Wonder Woman: +1.5 power for villains you buy