SUPERCAT

a procedural non-player system for Arcs

version 0.1

This is a non-player system, or "bot", for playing the board game Arcs. It's intended for playing solo (one player versus one or more bots), but it can also be used in a multiplayer game.

Components

You will need a way to track two numbers per bot, for instance two dice of different colors rotated to show a specific number face up. They are referred to as "counters" in the rules.

Setup

Follow the instructions in the Arcs rulebook for your desired player count. If playing on "normal" difficulty, the player(s) will always be last in turn order with the bot(s) starting with the initiative.

Playing a chapter

Shuffle the action deck and deal each player(s) 6 cards. Place the remaining cards in a face down stack. Place a counter on each bot's board, with a value of 6. This represents the number of cards in the bot's hand. On the bot's turn, reveal two cards from this stack, and decrement the counter. The bot will play one of these cards, and discard the other. The procedures on the following pages will instruct you on how to select a card, and how to execute the bot's turn.

If at any time the stack runs out, shuffle the discard pile before revealing 2 cards. If at any time the bot gains an action card, place the card near the bot's player board, and increment the hand counter. Play card(s) gained as the last card(s) of the round. When the bot seizes initiative, decrement the counter to represent the bot discarding an extra card. Continue until the player has no cards and each bot's hand counter is at zero.

Additional advantages

At the beginning of a chapter, check the relative power of the bot(s) and player. If a bot is not ahead of the player, during this chapter the bot will gain the following advantages:

- Efficient Logistics: bot has 1 extra action per card
  - if lead card: number of pips plus 1
  - if pivot or copy: 2 actions
- Elite Pilots: bot collects 1 extra die during Battle

In this context, tied for first place does not count as ahead, so these advantages apply at the start of a game to all bots.

For a harder game:

- Apply the above advantages even if the bot is ahead in power.
- The bot with the most power starts every chapter with initiative.

For an easier game:

- Do not apply the above advantages even if the bot is behind in power.
- Randomly assign initiative at the start of the game.

How to follow the procedures

The procedures use some special vocabulary that is specific to SUPERCAT. See the "Terminology" page for explanations of words like **contend**.

Start with the "Bot Turn" page and read from top to bottom. Follow the instructions, executing statements if possible. When posed with a yes or no question, evaluate the situation, and follow the nested steps.

When taking actions using multiple pips from a card, follow the procedures to take as many actions as indicated. If action pips remain, restart the procedure from the top, re-evaluating questions from top to bottom.

Aside from the changes described above, the bot will follow every rule in the game.

Terminology

unbuilt city

a city on bot's player board (not a destroyed city in a rival's trophy area)

double city

a second loyal city on planet that already has a loyal city

new resources

type of resource that bot does not have OR type of planet bot does not have a city on

contend

take an action causing bot to improve its position with respect to an ambition AND bot will be either winning or tied for first or second place.

undeclared ambition

ambition that has not been declared yet AND there are markers available

combat card

any card combined with fuel and a weapon, or an aggression card. use aggression procedures to resolve

unclaimed

system that is not controlled by a rival

claim, claimed planet

planet with one or more open building slot controlled by current bot

contested planet

planet with open building slots, with bot pieces, controlled by rival

contested card

court card with bot agents and rival agents, and more rival agents than bot agents

uncontested card

court card with no agents

favorable combat

a series of Move and Battle actions that the bot considers likely to result in a specific goal (see Combat Doctrine)

threatened

bot building controlled by rival

task force

group of bot ships with the most fresh ships

Bot turn (START HERE)

✦ Does bot have no cards left? (check hand counter)

- Pass initiative

✦ Draw 2 cards. Decrement hand counter. Use the following procedures to select one card, then discard the other card.

✦ Does bot have initiative?

- Is bot winning or tied for first place for an **<u>undeclared ambition</u>** matching a card option?
    - Yes:
        - Declare the ambition. If more than one option, select card with more pips.
        - Go to page for selected card's suit.
    - No:
        - Is bot winning a declared ambition matching a card option?
            - Declare the ambition. If more than one option, select card with more pips.
            - Go to page for selected card's suit
        - Go to General Priorities.

✦ Can bot surpass with either card?

- Yes:
    - Surpass. If more than one option, select card with high number.
    - Remove seize counter.
    - Go to page for selected card's suit.
- No:
    - If seize counter is on bot's board, increment it, else place seize counter, with a value of 1.
    - If seize counter is on 4 and bot has 2 or more cards left and able to seize, then seize:
        - Decrement hand counter.
        - Remove seize counter.
    - Go to General Priorities

General Priorities

When directed to by the previous page, use the following priorities to select a card. Either lead or pivot with a card of the indicated suit from bot's options or copy the lead card if it is of the indicated suit. If indicated suit is not available, proceed to next question.

✦ Can bot Tax/Secure to **<u>contend</u>** declared ambition? → Administration/Aggression

✦ Can bot **<u>favorable combat</u>** to **<u>contend</u>** declared ambition? → **<u>Combat card</u>**

✦ Does bot have no starport?
  • Does bot have a **<u>claim</u>**?
    ○ Yes: → Construction
    ○ No: → Mobilization/Aggression

✦ Does bot have **<u>unbuilt cities</u>**?
  • Does bot have fewer **<u>claims</u>** than **<u>unbuilt cities</u>**?
    ○ Yes: → Mobilization/Aggression
    ○ No: → Construction

✦ Are any bot buildings under threat?
  • Can bot Move to neutralize control? → Mobilization/Aggression
  • Can bot Build or Repair to neutralize control? → Construction/Administration

✦ Can bot Tax/Secure to **<u>contend undeclared ambition</u>**, take captives, or gain a **<u>new resource</u>**?
→ Administration/Aggression

✦ Can bot Secure other card or grow a lead in a declared ambition? → Aggression

✦ Can bot Influence **<u>uncontested card</u>**? → Mobilization/Administration

✦ Can bot Influence **<u>contested card</u>** with more agents than rivals? → Mobilization/Administration

✦ Does bot have ships available to Build? → Construction

✦ Does bot have ships available to Repair? → Administration/Construction

Prelude

Restrictions

Bot will spend resources and guild cards according to these guidelines. If bot is **contending** a declared ambition and spending a resource or guild card will take it out of contention, it will not spend that resource or guild card.

Specifically:
- if tycoon is declared AND bot is **contending** for tycoon then do not spend fuel or material resources or guild cards
- if empath is declared AND bot is **contending** for empath then do not spend psionic resources or guild cards
- if seeker is declared AND bot is **contending** for seeker then do not spend relic resources or guild cards, UNLESS doing securing another relic card

Resources

Material: spend according to Construction procedures

Fuel and Weapon: spend for **Combat card**

Relic: Secure guild card to take captives or **contend** for a declared ambition

Psionic: Tax/Secure to **contend** for a declared ambition, or spend for **Combat card**

Guild cards

Bot will discard a Weapon guild card for effect, if it has 3 ships available. Place ships at starport with most fresh ships, otherwise with **task force**.

Bot will discard a Union card for effect. Place action card in bot's play area, and increment bot's hand counter. Play action card as bot's last card.

Administration - Tax | Repair | Influence

✦ Can bot Tax to **<u>contend</u>** a declared ambition?

✦ Can bot Repair to neutralize control of loyal city or take control of rival city?

✦ Can bot Tax a rival city and take captives?

✦ Can bot Influence a card which would **<u>contend</u>** a declared ambition, if Secured?
- Prefer:
    - Union card
    - Weapon card
    - Loyal card matching outraged resource
    - more keys

✦ Can bot Tax to **<u>contend</u>** an **<u>undeclared ambition</u>**?

✦ Can bot Tax to grow a lead in a declared ambition?

✦ Are there any **<u>contested cards</u>**?
- Can bot Influence to place more agents than rivals?
    - Yes:
        - Influence up to +1 agent vs rival
    - No:
        - Influence to match rival

✦ Can bot Influence a card which would take captives if Secured?

✦ Can bot Influence a card to **<u>contend</u>** an **<u>undeclared ambition</u>**?

✦ Can bot Tax for **<u>new resources</u>**?

✦ Can bot Repair any ships or buildings?
- Prefer:
    - ships in **<u>task force</u>**, then other ships
    - starport, if only one on map
    - cities

✦ Can bot Tax for other resources?

Aggression - Move | Battle

✦ Can bot Secure a card to **contend** a declared ambition?

✦ Can bot **favorable combat** to **contend** a declared ambition?
  - Use Combat Doctrine to resolve

✦ Can bot Secure a card to **contend** an **undeclared ambition**?

✦ Can bot Secure a card to take captives?

✦ Can bot Secure a card to grow a lead in a declared ambition?

✦ Does bot have **unbuilt cities**?
  - Does bot have fewer **claims** than **unbuilt cities**, and could bot Move to **claim** any open slots?
    - Spend Move actions to gain control of open slots, until bot has as many **claims** as **unbuilt cities**. Prefer:
      - **new resources**
      - **unclaimed**
      - two slot planets

✦ Can bot take control of a gate adjacent to a loyal starport or rival starport?
  - Prefer:
    - Gate previously controlled by rival
    - Other gate

✦ Can bot Secure a card to grow a lead in an **undeclared ambition**?

✦ Can bot **favorable combat** for control in a system with any bot buildings?

✦ Are there any **undeclared ambition**s and can bot **favorable combat** for trophies?

✦ Are there any ships which are not in the **task force**, and not controlling gates or **claims** or rival cities?
  - Concentrate ships towards **task force**
  - Move **task force** towards loyal starport if not already at a starport

Combat Doctrine

When asked if bot can **favorable combat** to achieve some result, first identify the goal, then refer to the corresponding section below. Goal will always be one of:

- Trophies for warlord
- Raid for resource(s) or card(s) to **contend** an ambition
- Control of a system

Trophies

A Battle for trophies is considered favorable if bot has at least 1:1 ratio of fresh ships.

If bot has multiple actions, first roll skirmish dice until ratio of fresh ships is better than 1:1, or only 1 action left. Then roll all assault dice if ratio is better than 1:1, or select half skirmish dice and half assault dice (round in favor of skirmish dice). Allocate hits prioritizing trophies.

Raid

A raid is considered favorable if bot can roll raid dice equal to 2x the number of keys on the target AND bot has better than 1:1 ratio of fresh ships to defender OR has 1:1 ratio AND more than one Battle action available after moving to the target.

If favorable, the bot will first spend actions to roll dice like a trophies Battle, up to the last action available, when it will roll raid dice.

Control

A Battle for control is favorable is bot can roll at least 1 die per fresh defending ship.

If favorable, bot will select dice like a trophies Battle. Bot will allocate hits to take control, then allocate hits to take trophies.

Outrage

Prior to Battle, check for risk of outrage. Battle not considered favorable if outrage would cause bot to stop **contending** a declared ambition. Otherwise, Battle which risks outrage is only considered favorable if bot could ransack the court after trigging outrage.

Construction - Build | Repair

✦ Does bot have no starport and a loyal piece at planet with an empty slot?

- Build a starport
- Prefer:
  - **claimed**
  - most ships
  - neutral control
  - least rival ships

✦ Does bot have **unbuilt cities** and at least one **claim**?

- Build cities at **claims**
- Only Build **double city** if winning a declared ambition AND **double city** is a bonus power city

✦ Are any loyal buildings controlled by rival, and can bot Build or Repair to neutralize control?

- Build or Repair ships to neutralize control

✦ Can bot Build or Repair to take control of rival city?

- Build or Repair to take control

✦ Can bot Build or Repair to defend any undefended buildings?

- Build or Repair until at least 1 fresh ship defending planets with buildings

✦ Does bot have ships available to build?

- Build ships
- Prefer:
  - With **task force**
  - Fresh ships

✦ Does bot have starports available to build?

- Build starports
- Prefer:
  - With **task force**

Mobilization - Move | Influence

✦ Are any bot cities threatened?

- Can bot neutralize control by moving?
    - Yes:
        - Move to neutralize control

✦ Does bot have **unbuilt cities**?

- Does bot have fewer **claims** than **unbuilt cities**, and could bot Move to control any open slots?
    - Move to control open slots, until bot has as many **claims** as **unbuilt cities**. Prefer:
        - **new resources**
        - **unclaimed**
        - two slot planets

✦ Can bot Influence a card which would **contend** a declared ambition OR take captives if Secured?

- Prefer:
    - icons or captives to **contend** declared ambition
    - captives even if tyrant not declared
    - icons to grow a lead in a declared ambition
    - icons to **contend** an **undeclared ambition**
    - Union card
    - Weapon card
    - Loyal card matching outraged resource
    - more keys

✦ Can bot take control of a gate adjacent to a loyal starport or rival starport?

- Prefer:
    - Gate previously controlled by rival
    - Other gate

Clarifications

There is difference between **contending** an ambition and winning or tied for first place: **contending** also includes second place. Bot will only declare an ambition if it is winning or tied for first place; it will not declare an ambition if it is in second place. However, bot will take often take an action if that action can cause the bot to get to second place.

Bot will only declare an ambition already declared (i.e. double or triple declare to add second or third marker) if it is winning the ambition. It will not double or triple declare if it is tied for first place.

Bot will not reset the seize counter between chapters. If a chapter ends and seize counter is at 4 or greater, bot will seize at the first opportunity in the next chapter.

Bot will reset the seize counter if it surpasses, even if a player or bot later in turn order plays a higher numbered card.