Project 16
Weekly Update: Jun 2, 2026

Cards on the Table:

The Winning Move is Not in the Rules

♠ ♥ ♦ ♣

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Problem Formulation



Real card-game agents should improve after every game.

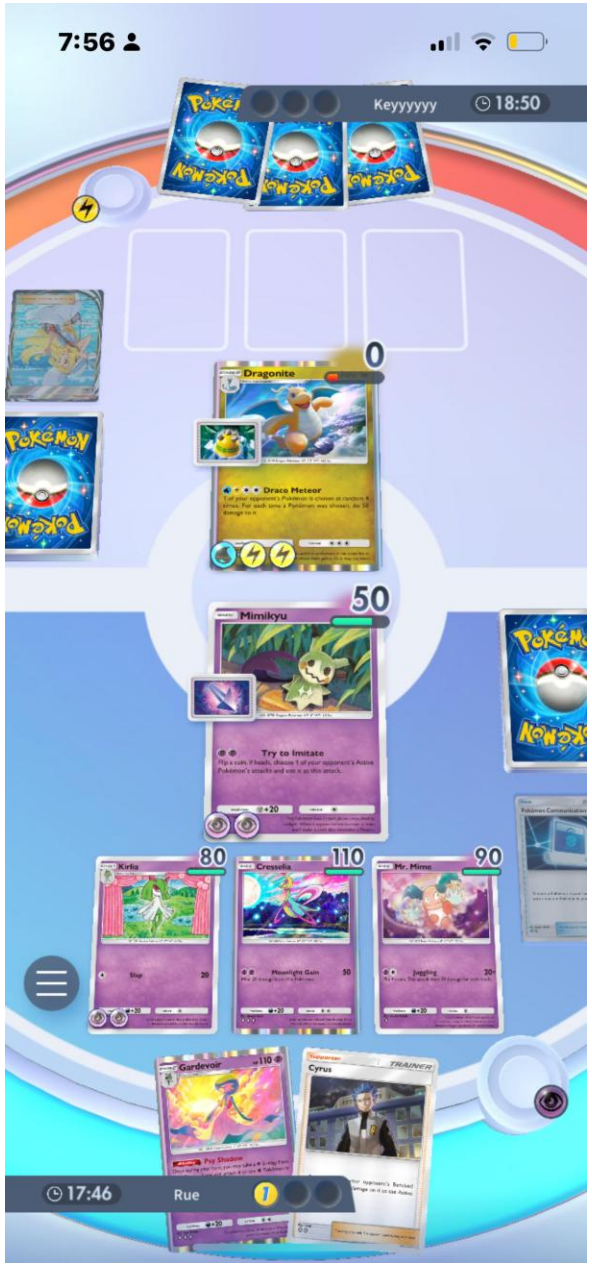
1. Card-game skill depends on learning what cards, effects, and combos exist.
2. Rules define legal moves, but card effects have higher precedence over rules.
3. A move that looks good now may be bad with knowledge on what cards exist.

Our contribution:

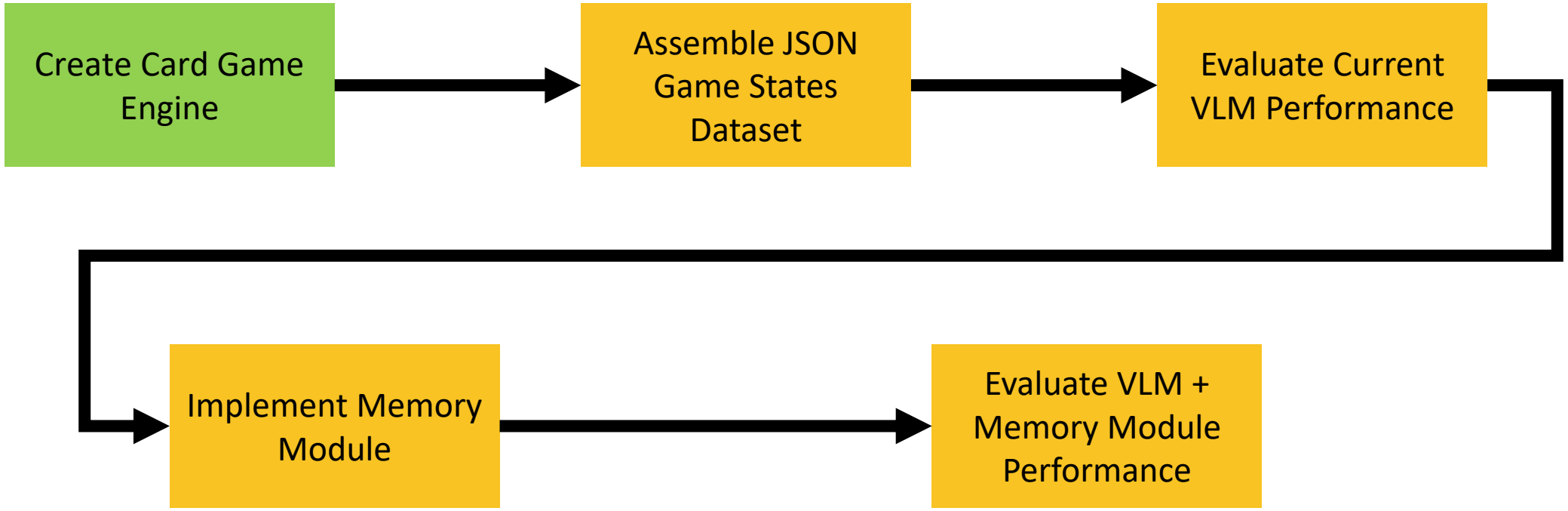
1. Benchmark: evaluate how well VLMs make decisions from board images, and rules.
2. Memory-based agent: test whether accumulated memory improves move ranking.

Manual Evaluation

- Various prompt types and difficulties:
  - OCR – Optical Character Recognition
    - Easy: How much HP does Mimikyu have? Qwen: 50
    - Medium: What move can Mimikyu use? Qwen: Try to imitate
    - Hard: List all Pokemon in the image. Qwen: Mew, Mewtwo, Dragaii, …
  - Logic
    - Easy: If Kirlia used slap, how much damage would it do?
    - Medium: How much energy does Draco Meteor require?
    - Hard: What item does Mimikyu have attached?
  - Decision-Making
    - Hard: What likely just happened to make Dragonite have 0 HP left?
    - Hard: Who's turn is it?



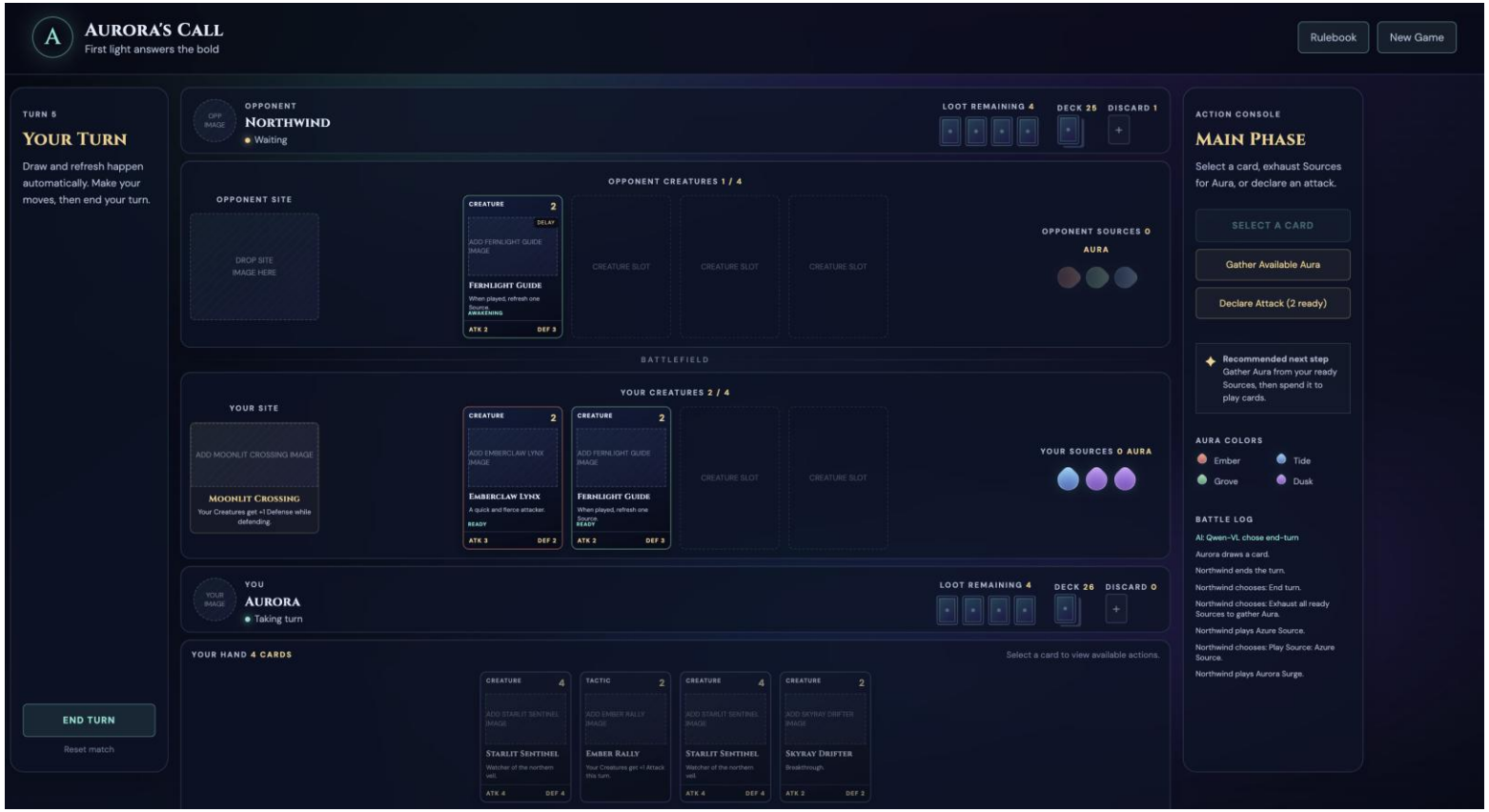
Progress


Create Card Game Engine
Assemble JSON Game States Dataset
Evaluate Current VLM Performance
Implement Memory Module
Evaluate VLM + Memory Module Performance

Weeks 1-2 Deliverables

Task	Status
Create Ruleset	✅
Create Game Engine	✅
Create initial balanced card decks + Generate artwork	🟡
Implement dataset schema	☐
Collect initial toy dataset	☐
Finalize game based on initial gameplay	☐

Game Engine


AURORA'S CALL
First light answers the bold
Rulebook
New Game
TURN 5
YOUR TURN
Draw and refresh happen automatically. Make your moves, then end your turn.
OPPONENT
NORTHWIND
Waiting
LOOT REMAINING 4
DECK 25
DISCARD 1
OPPONENT CREATURES 1 / 4
OPPONENT SITE
DROP SITE IMAGE HERE
FERNLIGHT GUIDE
OPPONENT SOURCES 0 AURA
BATTLEFIELD
YOUR CREATURES 2 / 4
YOUR SITE
MOONLIT CROSSING
EMBERCLAW LYNX
FERNLIGHT GUIDE
YOUR SOURCES 0 AURA
YOU
AURORA
Taking turn
LOOT REMAINING 4
DECK 26
DISCARD 0
YOUR HAND 4 CARDS
Select a card to view available actions.
STARLIT SENTINEL
EMBER RALLY
STARLIT SENTINEL
SKYRAY DRIFTER
END TURN
Reset match
ACTION CONSOLE
MAIN PHASE
Select a card, exhaust Sources for Aura, or declare an attack.
SELECT A CARD
Gather Available Aura
Declare Attack (2 ready)
Recommended next step
Gather Aura from your ready Sources, then spend it to play cards.
AURA COLORS
Ember
Tide
Grove
Dusk
BATTLE LOG
AI: Qwen-VL chose end-turn
Aurora draws a card.
Northwind ends the turn.
Northwind chooses: End turn.
Northwind chooses: Exhaust all ready Sources to gather Aura.
Northwind plays Azure Source.
Northwind chooses: Play Source: Azure Source.
Northwind plays Aurora Surge.

Thanks for listening!

Questions?

