# Batch Experiment Report

**Date:** 2026-03-01 10:29:20 **Batch Directory:** `vision_temp_0.1`

## 1. Experimental Setup

| Parameter | Value |
|---|---|
| **Models** | Text: `openai/gpt-4o-mini`<br>Vision: `google/gemini-2.0-flash-001` |
| **Temperatures** | Text: `0.1`<br>Vision: `0.1` |
| **Iterations** | 30 |
| **Embedding Model** | `google/siglip-so400m-patch14-384` |

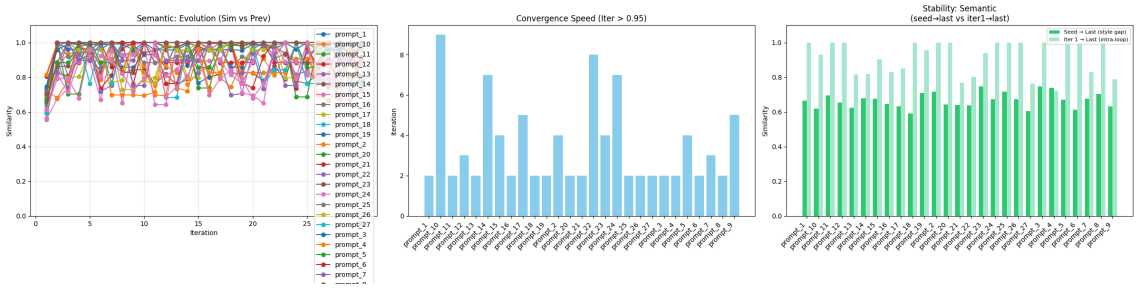
## 2. Batch Analysis

### Aggregate Statistics

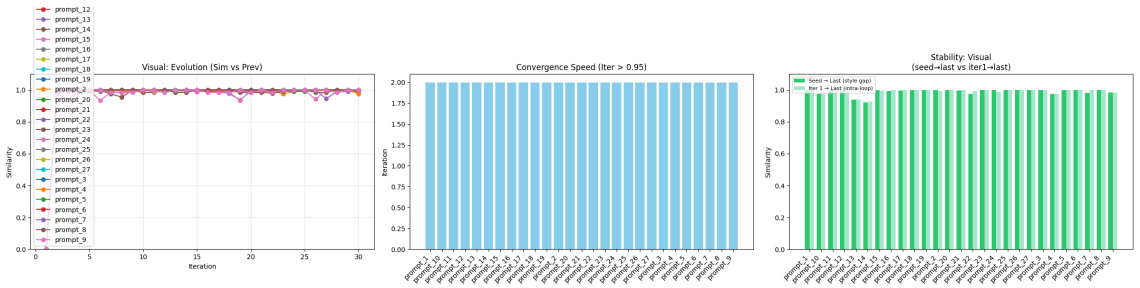
| Metric | Mean | Min | Max |
|---|---|---|---|
| **Semantic Stability** — Seed→Last (style gap) | 0.668 | 0.593 | 0.749 |
| **Semantic Stability** — Iter 1→Last (intra-loop) | 0.916 | 0.723 | 1.000 |
| **Visual Stability** — First Image→Last | 0.990 | 0.922 | 1.000 |
| **Visual Stability** — Iter 2→Last (intra-loop) | 0.991 | 0.927 | 1.000 |
| **Semantic Convergence** (Step) | 4.4 | 3 | 10 |
| **Visual Convergence** (Step) | 3.0 | 3 | 3 |
| **MMD Code Similarity** (mean step-by-step) | 0.889 | 0.719 | 1.000 |
| **Total Cost** | $0.2113 (Avg: $0.0078/run) | - | - |

### Visualizations

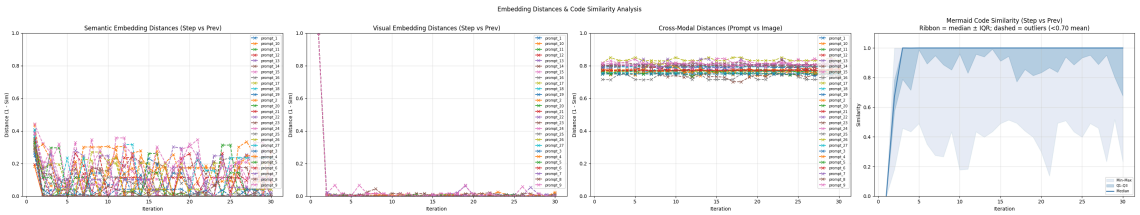
#### Semantic Analysis



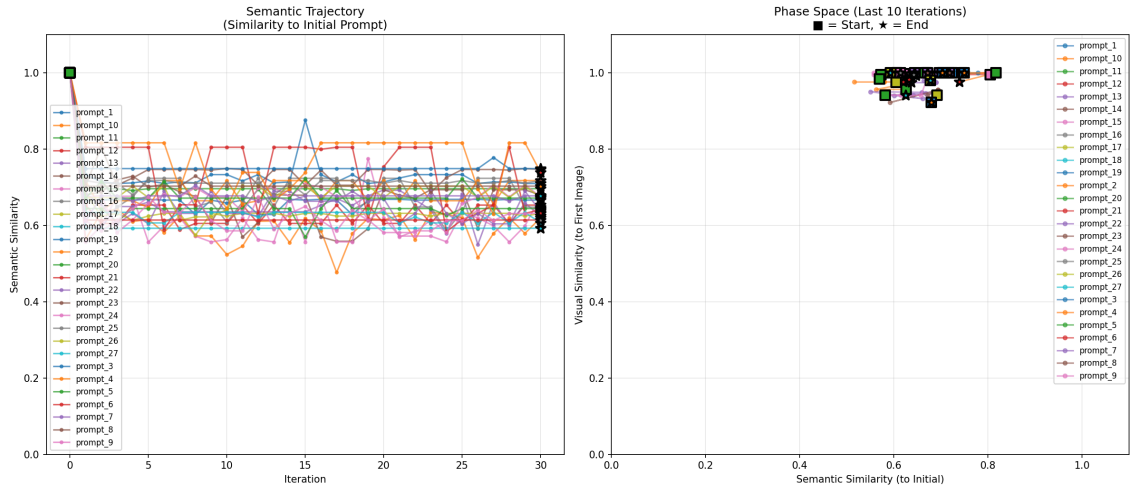
## Visual Analysis



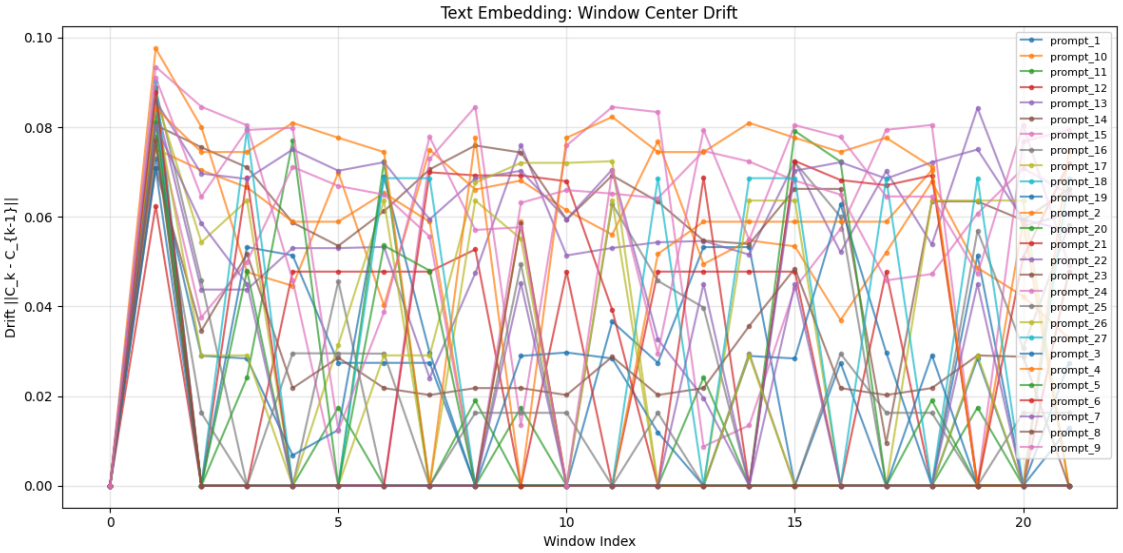

## Embedding Distances

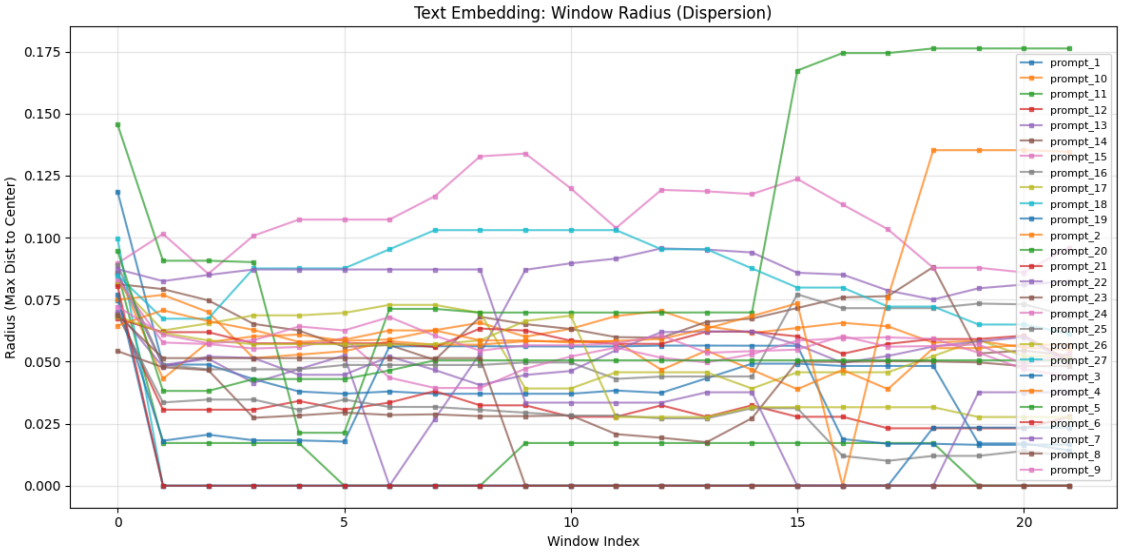



## Trajectory Analysis

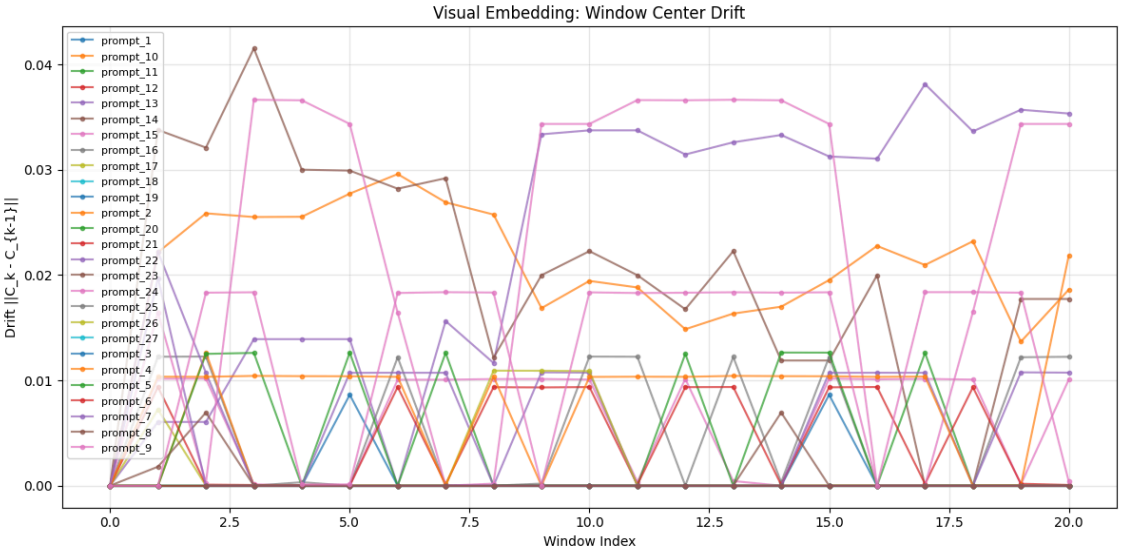


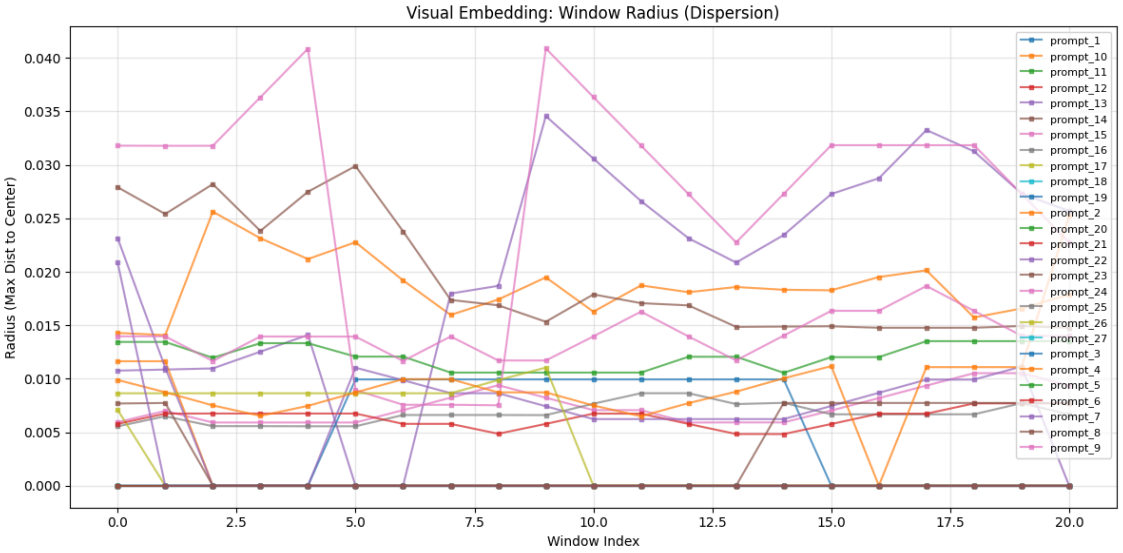

## Window Analysis - Text Embeddings




**Window Analysis - Visual Embeddings**




**Semantic Entropy Trajectories**

Text Trajectories

Image Trajectories

## 3. Individual Experiments

| Run | Initial Prompt | Sem Stab. | Vis Stab. | Cost |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| prompt_1 | A simple user authentication flow. User inputs credentials, ... | 0.666 | 1.000 | $0.0052 |
| prompt_10 | A CI/CD pipeline with rollback. Commit -> Test. Fail? Notify... | 0.620 | 0.976 | $0.0106 |
| prompt_11 | An event sourcing loop. User Action -> Event Bus -> Consumer... | 0.696 | 1.000 | $0.0085 |
| prompt_12 | A garbage collection mark-and-sweep. Scanner traces roots, m... | 0.653 | 1.000 | $0.0087 |
| prompt_13 | A home thermostat. Sensor reads Temp. If Low, Heater On. Tem... | 0.625 | 0.941 | $0.0067 |
| prompt_14 | The hydrological water cycle. Ocean water Evaporates into Cl... | 0.679 | 0.922 | $0.0072 |
| prompt_15 | An engine combustion cycle. Intake valve opens, Piston moves... | 0.676 | 1.000 | $0.0109 |
| prompt_16 | The Hero's Journey. Ordinary World -> Call to Adventure -> O... | 0.647 | 0.993 | $0.0083 |
| prompt_17 | The Scientific Method. Observe -> Hypothesize -> Experiment ... | 0.632 | 0.997 | $0.0088 |
| prompt_18 | The Design Thinking process. Empathize -> Define -> Ideate -... | 0.593 | 1.000 | $0.0074 |
| prompt_19 | E-commerce Microservices. API Gateway routes to Product Serv... | 0.710 | 1.000 | $0.0107 |
| prompt_2 | A password reset flow. User requests reset, System sends Ema... | 0.718 | 1.000 | $0.0079 |
| prompt_20 | A Kubernetes Cluster Architecture. Control Plane manages Nod... | 0.644 | 1.000 | $0.0067 |
| prompt_21 | A React Component Tree. App Component holds Header, Main, Fo... | 0.641 | 0.996 | $0.0103 |
| prompt_22 | The Solar System. Sun at center. Inner Planets (Mercury, Ven... | 0.637 | 0.975 | $0.0102 |
| prompt_23 | A Biological Trophic Pyramid. Producers (Plants) at base. Pr... | 0.747 | 1.000 | $0.0087 |
| prompt_24 | Human Nervous System. Central NS (Brain, Spine). Peripheral ... | 0.675 | 1.000 | $0.0155 |
| prompt_25 | A Biological Taxonomy. Domain Eukarya -> Kingdom Animalia ->... | 0.718 | 1.000 | $0.0058 |
| prompt_26 | A Corporate Org Chart. CEO leads VP Eng, VP Sales, VP HR. VP... | 0.673 | 1.000 | $0.0100 |

| | | | | |
|---|---|---|---|---|
| prompt_27 | A Decision Tree for Loan Approval. Credit Score > 700? Yes -... | 0.606 | 1.000 | $0.0056 |
| prompt_3 | An email subscription process. User submits email, System ad... | 0.749 | 1.000 | $0.0044 |
| prompt_4 | A gravity-fed water filtration system. Rainwater to Gutter, ... | 0.739 | 0.976 | $0.0074 |
| prompt_5 | A manufacturing assembly line. Raw material enters Conveyor,... | 0.672 | 1.000 | $0.0072 |
| prompt_6 | A traffic light sequence. Green light stays for 60s, turns Y... | 0.614 | 1.000 | $0.0052 |
| prompt_7 | A logical syllogism chain. Premise A implies B. B implies C.... | 0.677 | 0.981 | $0.0047 |
| prompt_8 | A historical timeline of 3 events. Event A causes Event B. E... | 0.703 | 1.000 | $0.0039 |
| prompt_9 | An algebraic derivation. Start with Equation 1, substitute V... | 0.632 | 0.983 | $0.0049 |

## 4. Detailed Experiment Log

### prompt_1

**Initial Prompt:**

> *A simple user authentication flow. User inputs credentials, System validates hash, returns Token or Error.*

- **Cost:** $0.0052
- **Data:** trajectory.json, metrics.json

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### prompt_10

**Initial Prompt:**

> *A CI/CD pipeline with rollback. Commit -> Test. Fail? Notify Dev (Loop). Pass? Deploy. Monitor Health. bad? Rollback (Loop).*

- **Cost:** $0.0106
- **Data:** trajectory.json, metrics.json

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### prompt_11

**Initial Prompt:**

> *An event sourcing loop. User Action -> Event Bus -> Consumer updates View DB. View reflects new state to User.*

- **Cost:** $0.0085
- **Data:** trajectory.json, metrics.json

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### prompt_12

**Initial Prompt:**

> *A garbage collection mark-and-sweep. Scanner traces roots, marks reachable, sweeps unreachable, frees memory, waits for next cycle.*

- **Cost:** $0.0087
- **Data:** trajectory.json, metrics.json

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### prompt_13

**Initial Prompt:**

> *A home thermostat. Sensor reads Temp. If Low, Heater On. Temp Rises. If High, Heater Off. Temp Falls.*

- **Cost:** $0.0067
- **Data:** trajectory.json, metrics.json

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### prompt_14

**Initial Prompt:**

> *The hydrological water cycle. Ocean water Evaporates into Clouds. Clouds Condense into Rain. Rain flows into Rivers. Rivers return to Ocean.*

- **Cost:** $0.0072
- **Data:** trajectory.json, metrics.json

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### prompt_15

**Initial Prompt:**

> *An engine combustion cycle. Intake valve opens, Piston moves down. Valve closes, Piston compresses. Spark plug fires (Combustion). Piston driven down. Exhaust valve opens.*

- **Cost:** $0.0109
- **Data:** trajectory.json, metrics.json

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### prompt_16

**Initial Prompt:**

> *The Hero's Journey. Ordinary World -> Call to Adventure -> Ordeal -> Reward -> Return to Ordinary World (Changed).*

- **Cost:** $0.0083
- **Data:** trajectory.json, metrics.json

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### prompt_17

**Initial Prompt:**

> *The Scientific Method. Observe -> Hypothesize -> Experiment -> Analyze. Data supports? Theory. Data rejects? New Hypothesis (Loop).*

- **Cost:** $0.0088
- **Data:** trajectory.json, metrics.json

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### prompt_18

**Initial Prompt:**

> *The Design Thinking process. Empathize -> Define -> Ideate -> Prototype -> Test. Test fails? Ideate again (Loop).*

- **Cost:** $0.0074
- **Data:** trajectory.json, metrics.json

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### prompt_19

**Initial Prompt:**

> *E-commerce Microservices. API Gateway routes to Product Service (Product DB), Order Service (Order DB), User Service (User DB).*

- **Cost:** $0.0107
- **Data:** trajectory.json, metrics.json

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### prompt_2

**Initial Prompt:**

> *A password reset flow. User requests reset, System sends Email, User clicks Link, enters New Password.*

- **Cost:** $0.0079
- **Data:** trajectory.json, metrics.json

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### prompt_20

**Initial Prompt:**

> *A Kubernetes Cluster Architecture. Control Plane manages Nodes. Nodes contain Pods. Pods contain Containers.*

- **Cost:** $0.0067
- **Data:** trajectory.json, metrics.json

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### prompt_21

**Initial Prompt:**

> *A React Component Tree. App Component holds Header, Main, Footer. Main holds Sidebar and Content Area. Content Area holds Article List.*

- **Cost:** $0.0103
- **Data:** trajectory.json, metrics.json

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### prompt_22

**Initial Prompt:**

> *The Solar System. Sun at center. Inner Planets (Mercury, Venus, Earth) orbit Sun. Earth has Moon. Outer Planets (Jupiter, Saturn) orbit Sun. Jupiter has many Moons.*

- **Cost:** $0.0102
- **Data:** trajectory.json, metrics.json

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### prompt_23

**Initial Prompt:**

> *A Biological Trophic Pyramid. Producers (Plants) at base. Primary Consumers (Herbivores) eat Producers. Secondary Consumers (Carnivores) eat Primary. Decomposers recycle all.*

- **Cost:** $0.0087
- **Data:** trajectory.json, metrics.json

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### prompt_24

**Initial Prompt:**

> *Human Nervous System. Central NS (Brain, Spine). Peripheral NS splits into Somatic and Autonomic. Autonomic splits into Sympathetic and Parasympathetic.*

- **Cost:** $0.0155
- **Data:** trajectory.json, metrics.json

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### prompt_25

**Initial Prompt:**

> *A Biological Taxonomy. Domain Eukarya -> Kingdom Animalia -> Phylum Chordata -> Class Mammalia.*

- **Cost:** $0.0058
- **Data:** trajectory.json, metrics.json

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### prompt_26

**Initial Prompt:**

> *A Corporate Org Chart. CEO leads VP Eng, VP Sales, VP HR. VP Eng leads Backend, Frontend, QA Teams.*

- **Cost:** $0.0100
- **Data:** trajectory.json, metrics.json

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### prompt_27

**Initial Prompt:**

> *A Decision Tree for Loan Approval. Credit Score > 700? Yes -> Income > 50k? Yes -> Approve. No -> Deny.*

- **Cost:** $0.0056
- **Data:** trajectory.json, metrics.json

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### prompt_3

**Initial Prompt:**

> *An email subscription process. User submits email, System adds to DB, System sends Welcome Email.*

- **Cost:** $0.0044
- **Data:** trajectory.json, metrics.json

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### prompt_4

**Initial Prompt:**

> *A gravity-fed water filtration system. Rainwater to Gutter, Gutter to Pipe, Pipe to Filter, Filter to Tank.*

- **Cost:** $0.0074
- **Data:** trajectory.json, metrics.json

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### prompt_5

**Initial Prompt:**

> *A manufacturing assembly line. Raw material enters Conveyor, Stamping Machine shapes it, Painting Station colors it, Packaging wraps it.*

- **Cost:** $0.0072
- **Data:** trajectory.json, metrics.json

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### prompt_6

**Initial Prompt:**

> *A traffic light sequence. Green light stays for 60s, turns Yellow for 5s, turns Red for 60s.*

- **Cost:** $0.0052
- **Data:** trajectory.json, metrics.json

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### prompt_7

**Initial Prompt:**

> *A logical syllogism chain. Premise A implies B. B implies C. Therefore A implies C.*

- **Cost:** $0.0047
- **Data:** trajectory.json, metrics.json

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### prompt_8

**Initial Prompt:**

> *A historical timeline of 3 events. Event A causes Event B. Event B triggers Reaction C.*

- **Cost:** $0.0039
- **Data:** trajectory.json, metrics.json

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### prompt_9

**Initial Prompt:**

> *An algebraic derivation. Start with Equation 1, substitute Variable X, simplify to Result Y.*

- **Cost:** $0.0049
- **Data:** trajectory.json, metrics.json

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