

# Team Ikigai (Team 44) — Deterministic Competitive Answering Engine

## Team Members:

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Our solution redefines competitive AI answering, focusing on engineering precision and predictable performance. We've built a system that consistently delivers high-quality responses with unparalleled reliability.



# Engineered for Reproducibility and Speed

## Key Engineering Decisions

- Deterministic greedy decoding (`do_sample = False`) eliminates randomness.
- Zero stochastic variance across all inference runs ensures consistent output.
- Strict single-letter answer normalization (A/B/C/D) simplifies processing.
- Regex-driven JSON extraction provides robust data handling.
- Optimized inference path for low-latency execution.

## Impact & Performance

- Reproducible outputs across all runs, every time.
- Sub-second average response latency (~2.2s).
- High operational reliability for critical tasks.
- Consistent competitive behavior in dynamic environments.



# Tournament-Grade Format Reliability



Our system design prioritizes format integrity and stability, crucial for competitive environments where adherence to specific output structures is paramount.

## System Design Features

- Hard JSON schema enforcement and token-budget aligned output generation.
- Answer schema validation and uppercase answer standardization.
- Batch consistency checks ensure data integrity.
- Streamlined inference without recursive retries prevents operational bottlenecks.

## Competitive Advantages

- High format survival under strict evaluators and predictable runtime characteristics.
- Strong compatibility with automated scoring systems.
- Minimal failure surface during critical evaluation periods.

# Structured Reasoning via Embedded Domain Logic

Unlike generic Chain-of-Thought approaches, our system embeds domain-specific reasoning protocols directly, ensuring precision and reducing hallucination.

## Syllogisms

Formal logical deduction rules for precise inferences.

## Seating Arrangements

Constraint propagation logic for complex spatial problems.

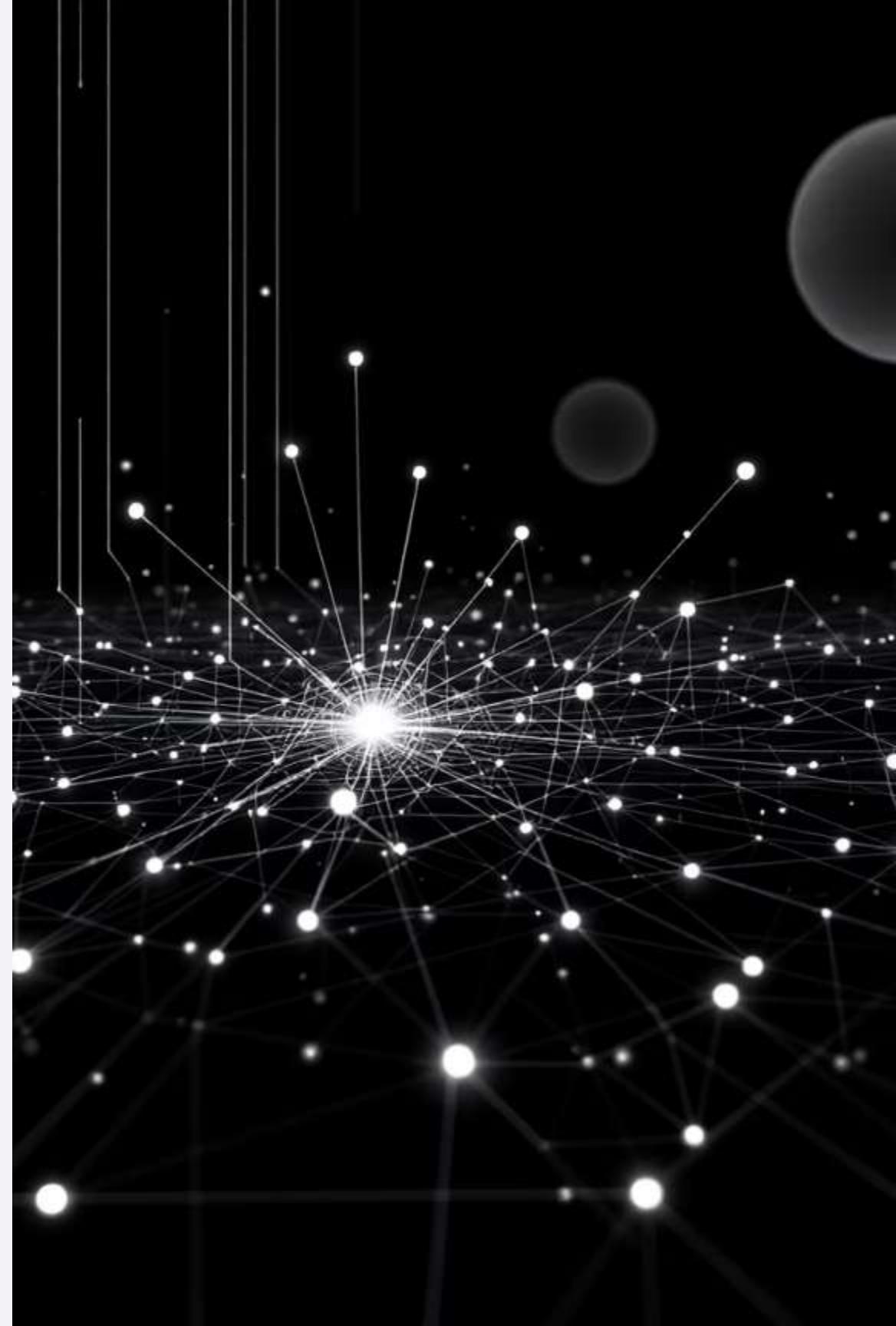
## Family Trees

Efficient graph traversal logic for relational queries.

## Series Analysis

Pattern and difference analysis for numerical and sequence tasks.

- ❑ All domains are continuously optimized via a self-play calibration engine, constantly refining our models.





# Self-Play Calibration & Tournament Strategy

## Optimization for Competitive Win Probability

01

### Automated Question Generation

Internal engine creates diverse, challenging questions.

02

### Continuous A-Agent Evaluation

Constant assessment of response quality and accuracy.

03

### Adaptive Difficulty Calibration

Adjusting challenge levels for optimal learning.

## Tournament-Ready Strategic Focus

- Prioritize deterministic stability in seeding rounds.
- Calibrate Q-Agent difficulty to maximize opponent error rate.
- Balance question difficulty with format reliability.
- Optimize for differential scoring advantage.

✓ Deterministic stability

✓ Controlled reasoning

✓ Format survival

✓ Calibration precision

✓ Tournament-readiness

A controlled, competition-engineered AI system designed for reliable high-performance under adversarial evaluation.