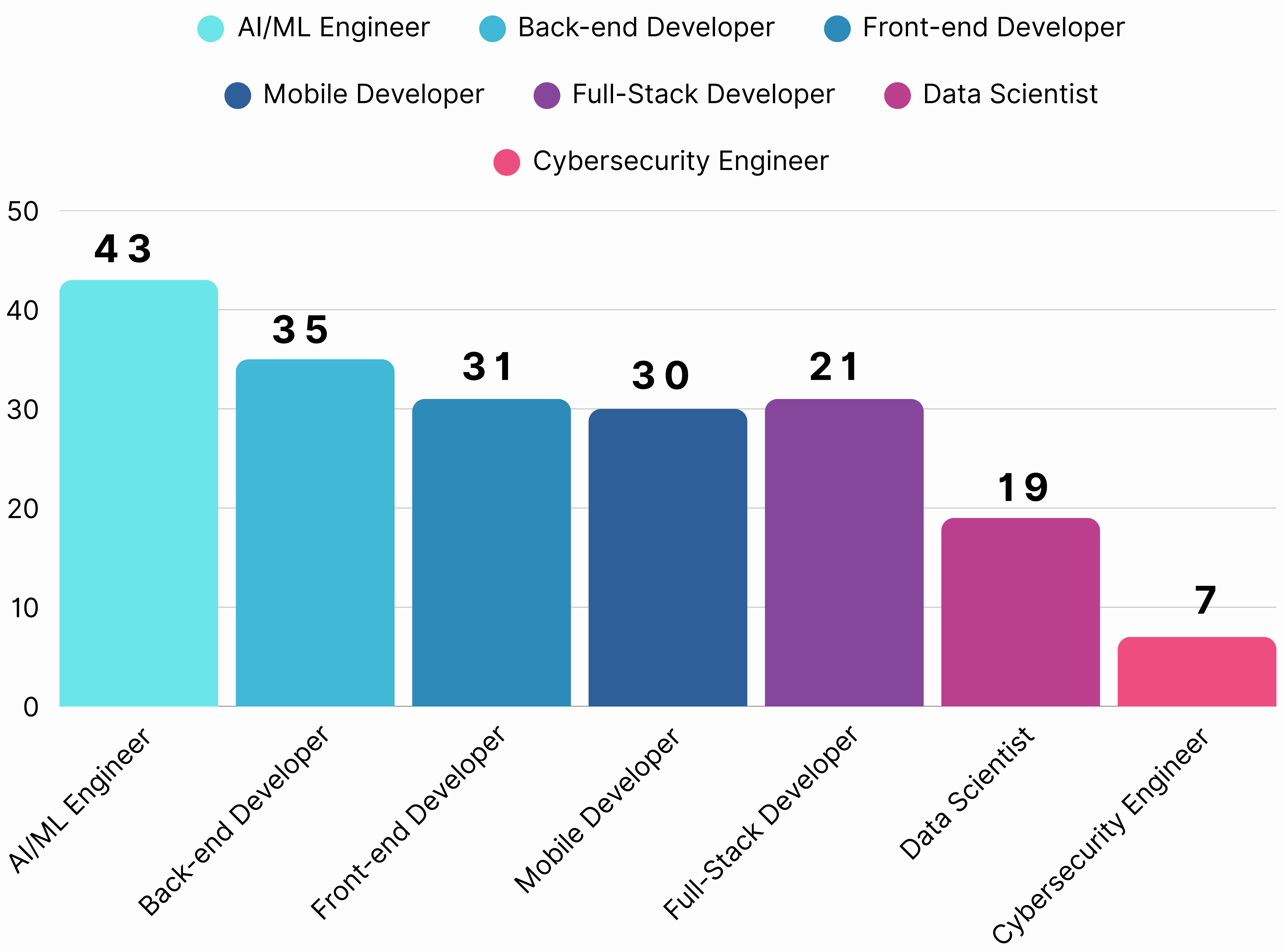
ALEPPO DEVELOPERS COMMUNITY

AI MEETUP - AUG 2025

OPENNING WORD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Back-end Developer
Front-end Developer
Mobile Developer
Full-Stack Developer
Data Scientist
Cybersecurity Engineer
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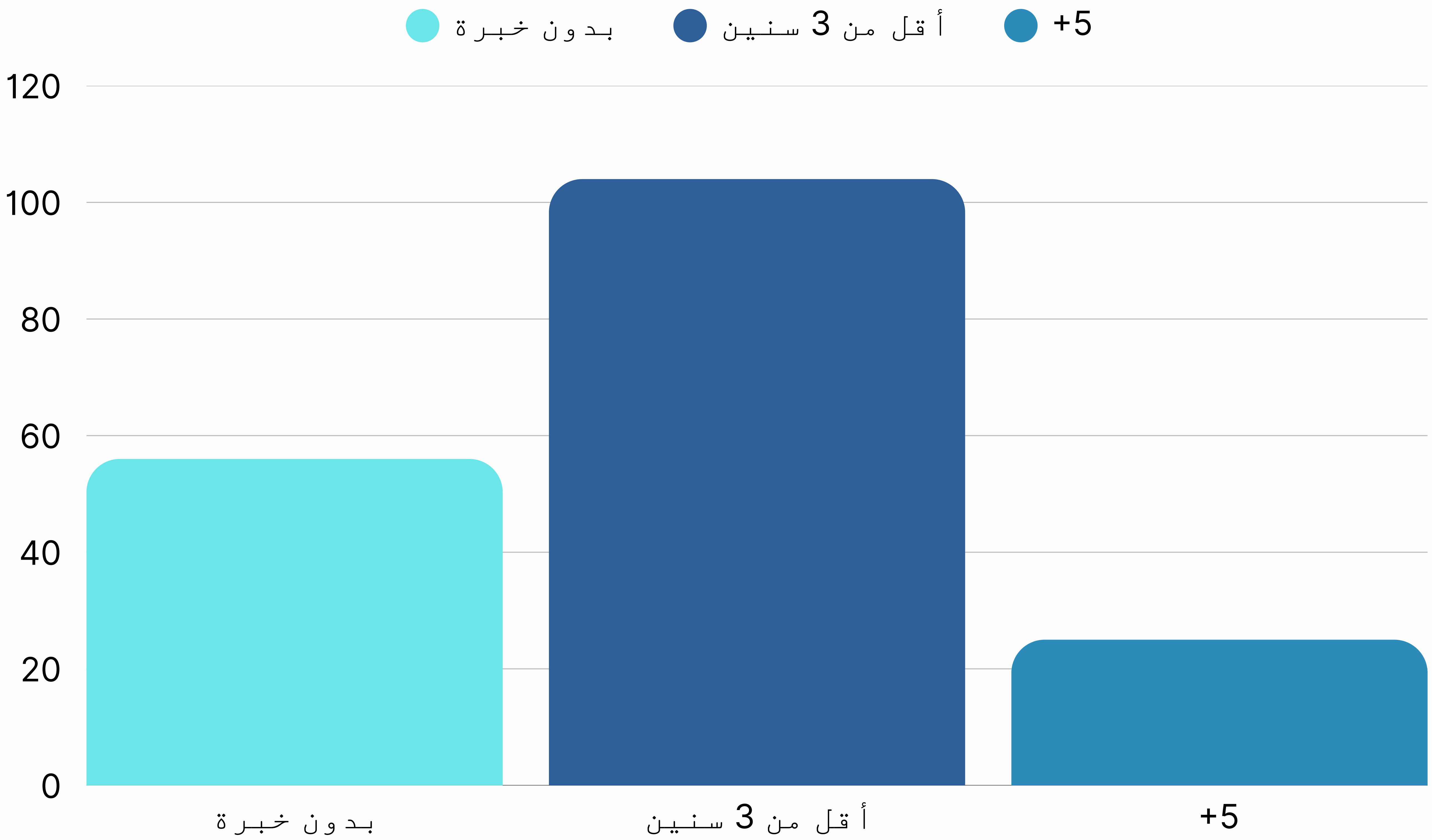

بدون خبرة
أقل من 3 سنين
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بدون خبرة
أقل من 3 سنين
+5

ALAA ALDIN HAJJAR

PHD MATHEMATICAL MODELING & SOFTWARE SYSTEMS

"CRAFTING AI SOLUTIONS WITH REAL BUSINESS VALUE"

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NETWORKING BREAK

ABD ULFATAH ESPER

AI ENGINEER, DATA SCIENTIST

“SELF-ADAPTING LANGUAGE MODELS”

Let’s Build the Future of Aleppo’s Tech Scene Together!

STAY CONNECTED!

Crafting AI Solutions with Real Business Values

Alaa Aldin Hajjar

Aleppo Developers Community
Second Meetup

August 9, 2025

Contents

Overview

Overview

- Introduction to CRISP-DM
- Phases and Tasks
- Summary

CRISP-DM

CRoss-Industry Standard Process for Data Mining

Why a Standard Process?

Why Should There Be a Standard Process?

The data mining process must be reliable and repeatable by people with little data mining background.

Why a Standard Process?

- Framework for recording experience
- Allows projects to be replicated
- Aid to project planning and management
- “Comfort factor” for new adopters
- Demonstrates maturity of Data Mining
- Reduces dependency on “stars”

Process Standardization

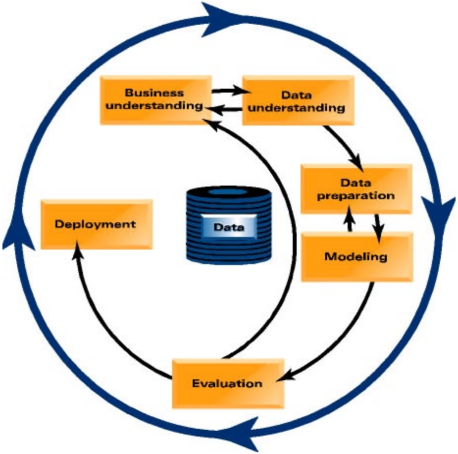
- Initiative launched in late 1996 by Daimler-Chrysler, SPSS, NCR
- Refined via workshops (1997–1999), $>$ 300 organizations
- Published CRISP-DM 1.0 in 1999
- CRISP-DM SIG: $>$ 200 members worldwide (vendors, consultants, end-users)

Key Characteristics of CRISP-DM

- Non-proprietary, tool-neutral, industry-neutral
- Focus on business as well as technical analysis
- Provides framework, templates and an experience base

CRISP-DM: Phases

- Business Understanding
- Data Understanding
- Data Preparation
- Modeling
- Evaluation
- Deployment



Phase 1: Business Understanding

Phase 1: Business Understanding

Main Tasks

- Determine business objectives
- Assess situation
- Determine data mining goals
- Produce project plan

Converts business needs into a well-defined data mining problem and plan.

Phase 1: Business Understanding

Determine business objectives

- What does the client really want?
- Prevent solving the wrong problem

Assess situation

- Resources, constraints and assumptions
- Detailed fact-finding

Phase 1: Business Understanding

Data mining goals

- Business goal in business terms
- Data mining goal in technical terms

Project plan

- Steps, tools, techniques and schedule

Phase 2: Data Understanding

Phase 2: Data Understanding

- Collect initial data
- Describe data
- Explore data
- Verify data quality

Get familiar with the data, identify quality issues, and generate initial insights.

Phase 2 Details

Collect / Describe Data

- Load data, integrate sources
- Examine "surface" properties

Explore / Verify Quality

- Visualize distributions, correlations
- Detect missing values, outliers

Phase 3: Data Preparation

Phase 3: Data Preparation

- Select data (tables, records, attributes)
- Clean data (missing, outliers)
- Construct derived attributes
- Integrate and format for modeling

Typically > 90 % of project effort.

Phase 3 Details

Select & Clean

- Relevance, quality, volume constraints
- Impute or remove bad data

Construct & Integrate

- Derive new features
- Join tables, synthesize records

Phase 4: Modeling

Phase 4: Modeling

- Select modeling techniques
- Generate test design
- Build models
- Assess and compare models

Iteration with data preparation is common.

Phase 4 Details

Select / Test Design

- Decision trees, neural nets, etc.
- Train / test split, cross-validation

Build / Assess

- Calibrate parameters
- Rank by accuracy, ROC, business criteria

Phase 5: Evaluation

Phase 5: Evaluation

- Evaluate results against business objectives
- Review the entire process for gaps
- Decide next steps: deploy or iterate

Ensure the model solves the right problem before deploying.

Phase 5 Details

Evaluate Results

- Technical metrics and business impact
- Test in real applications if possible

Review Process

- QA steps, overlooked issues

Next Steps

- Deployment or further iterations

Phase 6: Deployment

Phase 6: Deployment

- Plan deployment and monitoring
- Produce final report
- Review project lessons

Turn your data mining results into day-to-day business practice.

Phase 6 Details

Deployment Plan

- Who uses results, how often, by what mechanism?

Monitoring & Maintenance

- Ensure continued validity

Reporting & Review

- Summarize findings, capture lessons learned

Summary

Summary

Why CRISP-DM?

- Reliable, repeatable process for all skill levels
- Uniform framework: guidelines + experience base
- Flexible to different businesses and data

Thank you!

Questions?

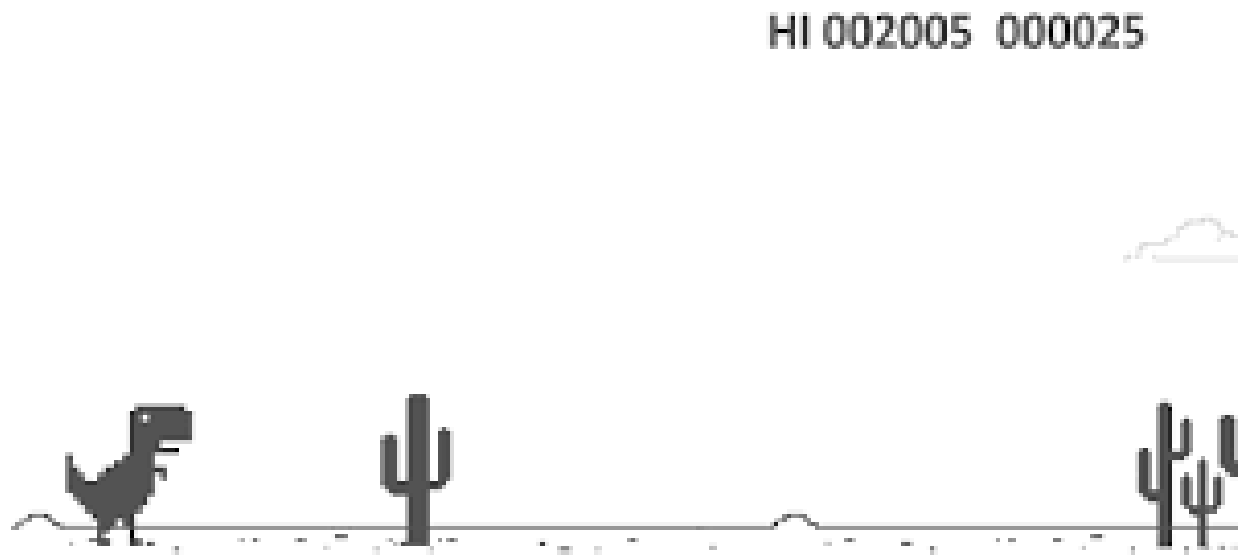
SELF ADAPTIVE LANGUAGE MODELS- SEAL

LANGUAGE MODELS THAT TEACH THEMSELVES

REINFORCEMENT LEARNING

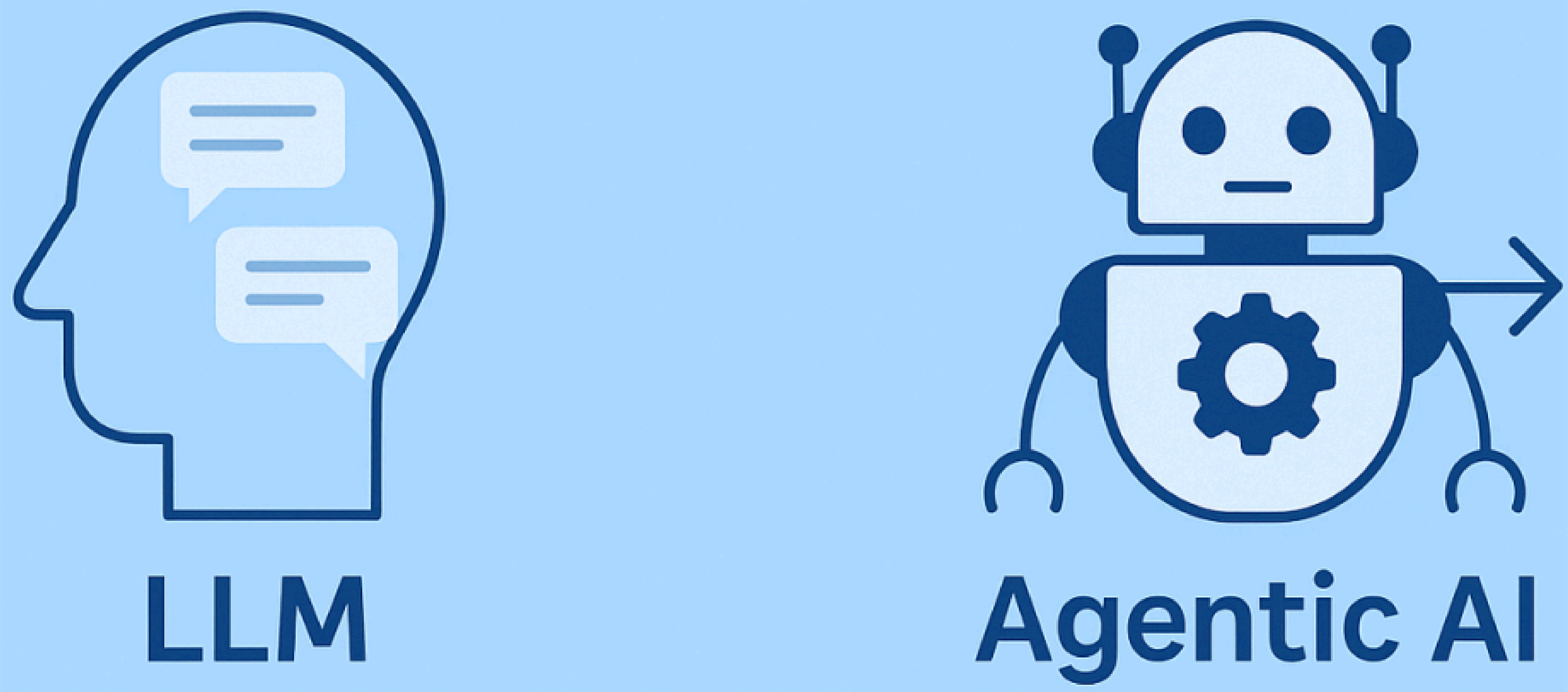
REINFORCEMENT LEARNING IS A TYPE OF MACHINE LEARNING WHERE AN AGENT LEARNS TO MAKE DECISIONS BY INTERACTING WITH AN ENVIRONMENT AND RECEIVING REWARDS OR PENALTIES.

OVER TIME, IT IMPROVES ITS STRATEGY TO MAXIMIZE LONG-TERM REWARDS.



LLMS VS AI AGENTS

ARE THEY THE SAME OR WORLDS APART?



THE PROBLEM

TRADITIONAL LLMS ARE **STATIC** AFTER TRAINING

HUMAN-CURATED FINE-TUNING **DOES NOT SCALE**

LIMITED ABILITY TO INCORPORATE **NEW KNOWLEDGE**

APPROACHING **DATA QUALITY CEILING**

adc

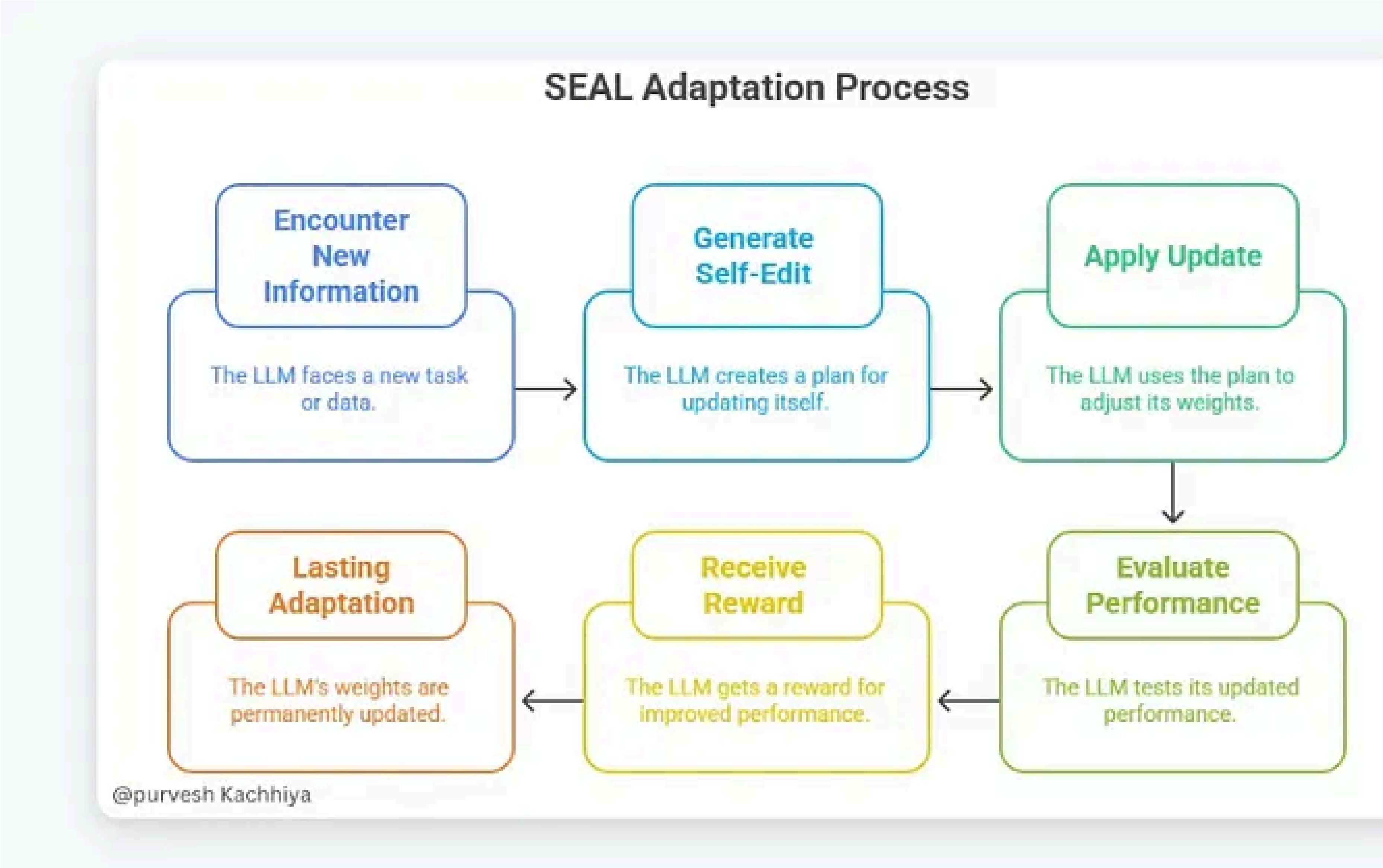
INTRODUCING SEAL

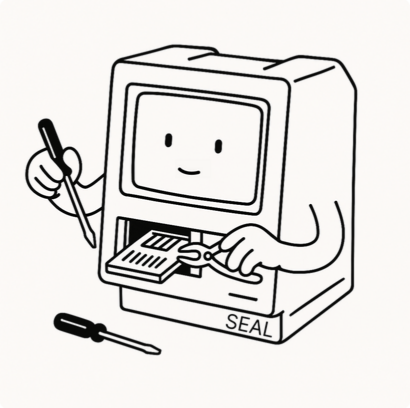
SELF ADAPTIVE LANGUAGE MODELS

MODELS THAT **WRITE THEIR OWN** TRAINING DATA

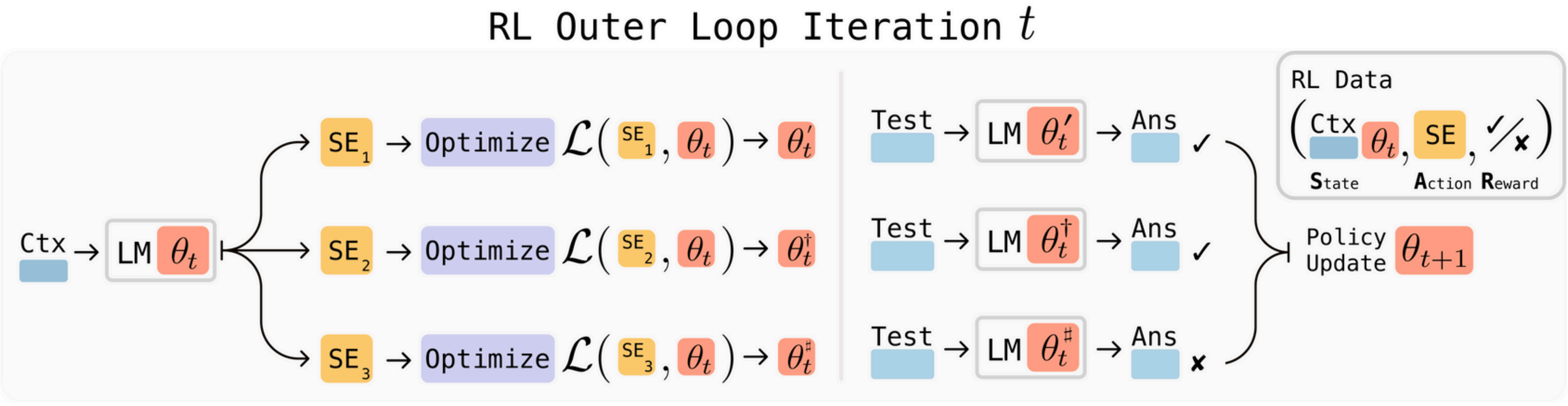
MODELS THAT **DECIDE HOW** TO UPDATE THEIR WEIGHTS

FRAMEWORK FOR **AUTONOMOUS** MODEL EVOLUTION





HOW SEAL WORKS



1. INPUT
MODELS RECEIVES CONTEXT

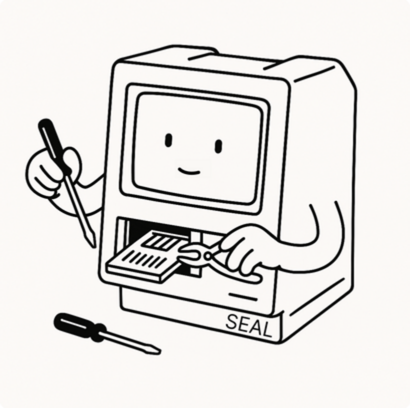
2. SELF-EDIT
TRANSFORMS DATA

3. FINE-TUNE
UPDATES OWN WEIGHTS

4. EVALUATE
TESTS PERFORMANCE

5. REWARD
REINFORCES SUCCESS

6. TRAIN
IMPROVES POLICY



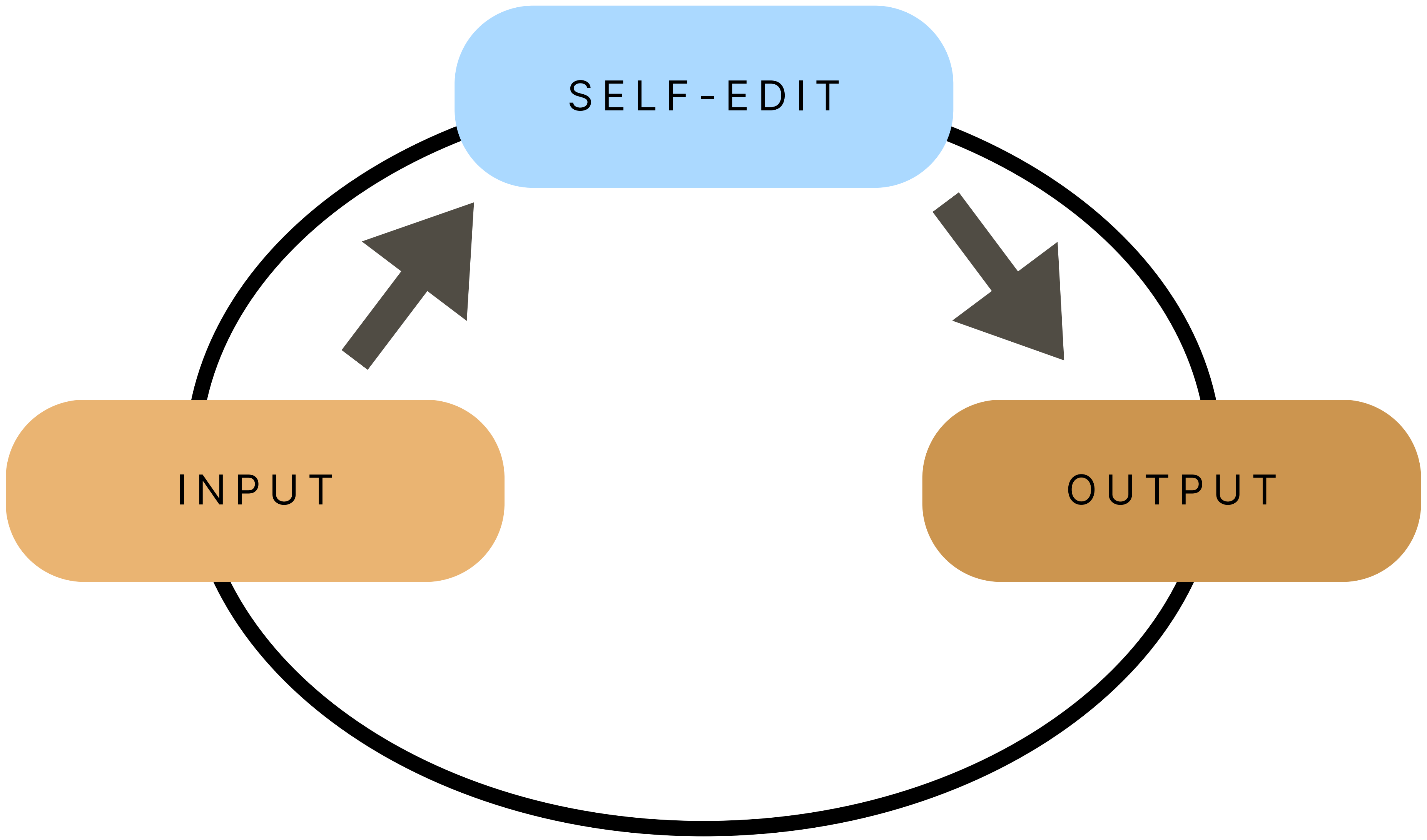
SELF-EDIT MECHANISM

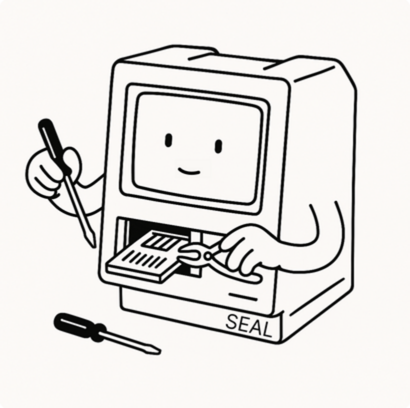
WHAT IS A SELF-EDIT?

TRANSFORMATIONS OF INPUT DATA

SELECTION OF **HYPERPARAMETERS**

DIRECTING THE LEARNING PROCESS

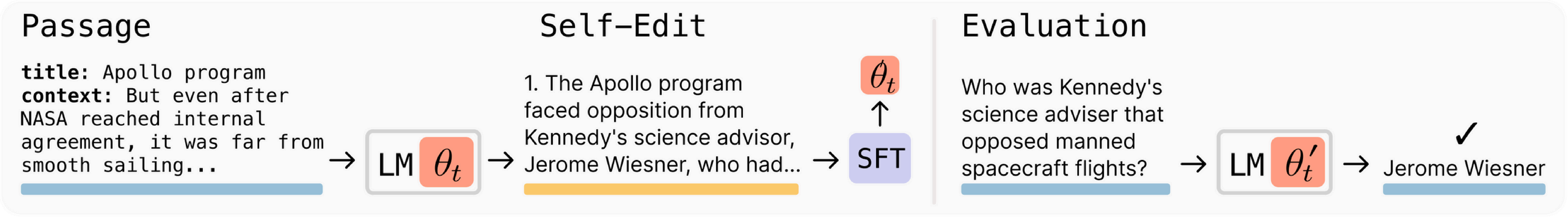


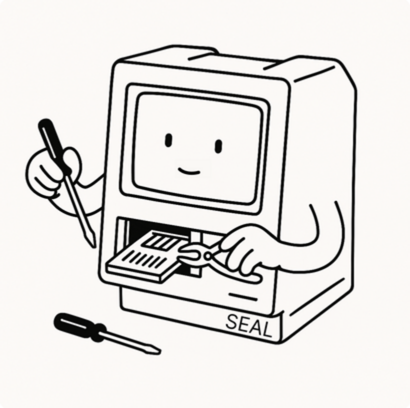


DOMAIN INSTANTIATIONS

1.KNOWLEDGE INCORPORATION

Knowledge Incorporation Setup



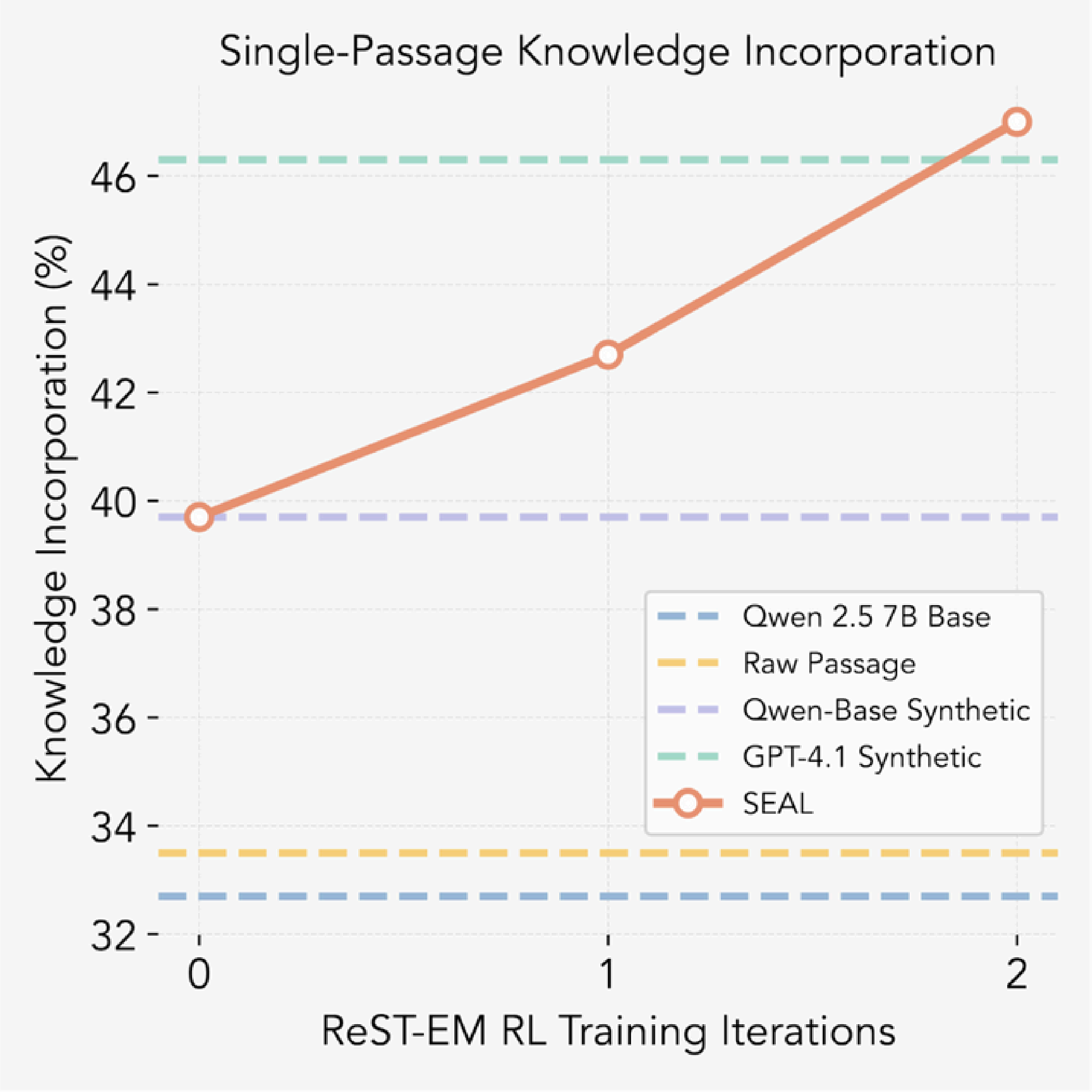


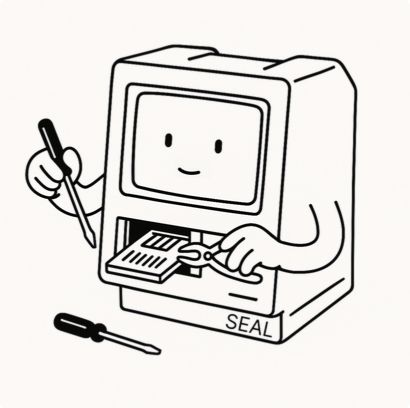
DOMAIN INSTANTIATIONS

1.KNOWLEDGE INCORPORATION

Method	Single Passage (n = 1)	Continued Pretraining (n = 200)
Base model	32.7	32.7
Train on Passage	33.5	32.2
Train on Passage + Synthetic	39.7	41.0
Train on Passage + GPT-4.1 Synthetic	46.3	39.4
SEAL	**47.0**	**43.8**

Table 2: Knowledge Incorporation Performance across Passage Settings

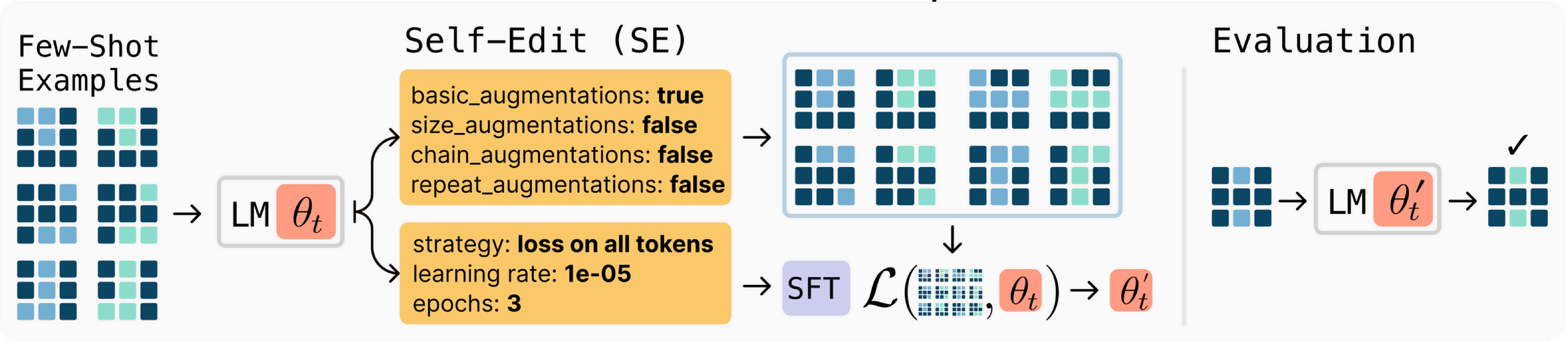


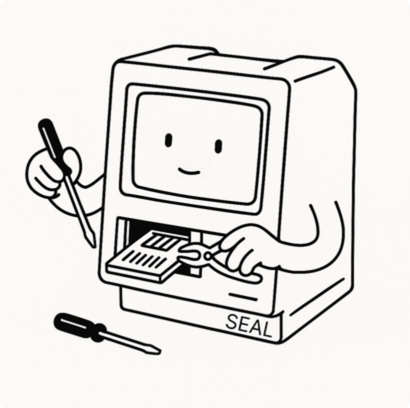


DOMAIN INSTANTIATIONS

2.FEW-SHOT LEARNING

Few–Shot Setup



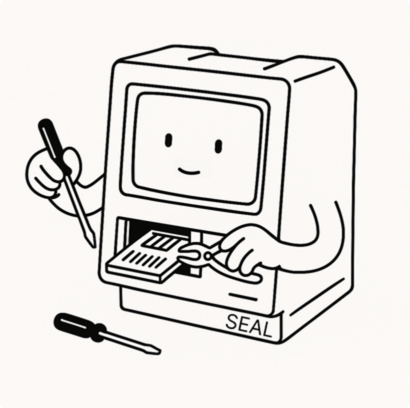


DOMAIN INSTANTIATIONS

2.FEW-SHOT LEARNING

Method	Success Rate (%)
ICL	0
TTT + Self-Edit (w/o prior RL)	20
SEAL	72.5
Oracle TTT	100

Table 1: Few-shot Abstract Reasoning



DOMAIN INSTANTIATIONS

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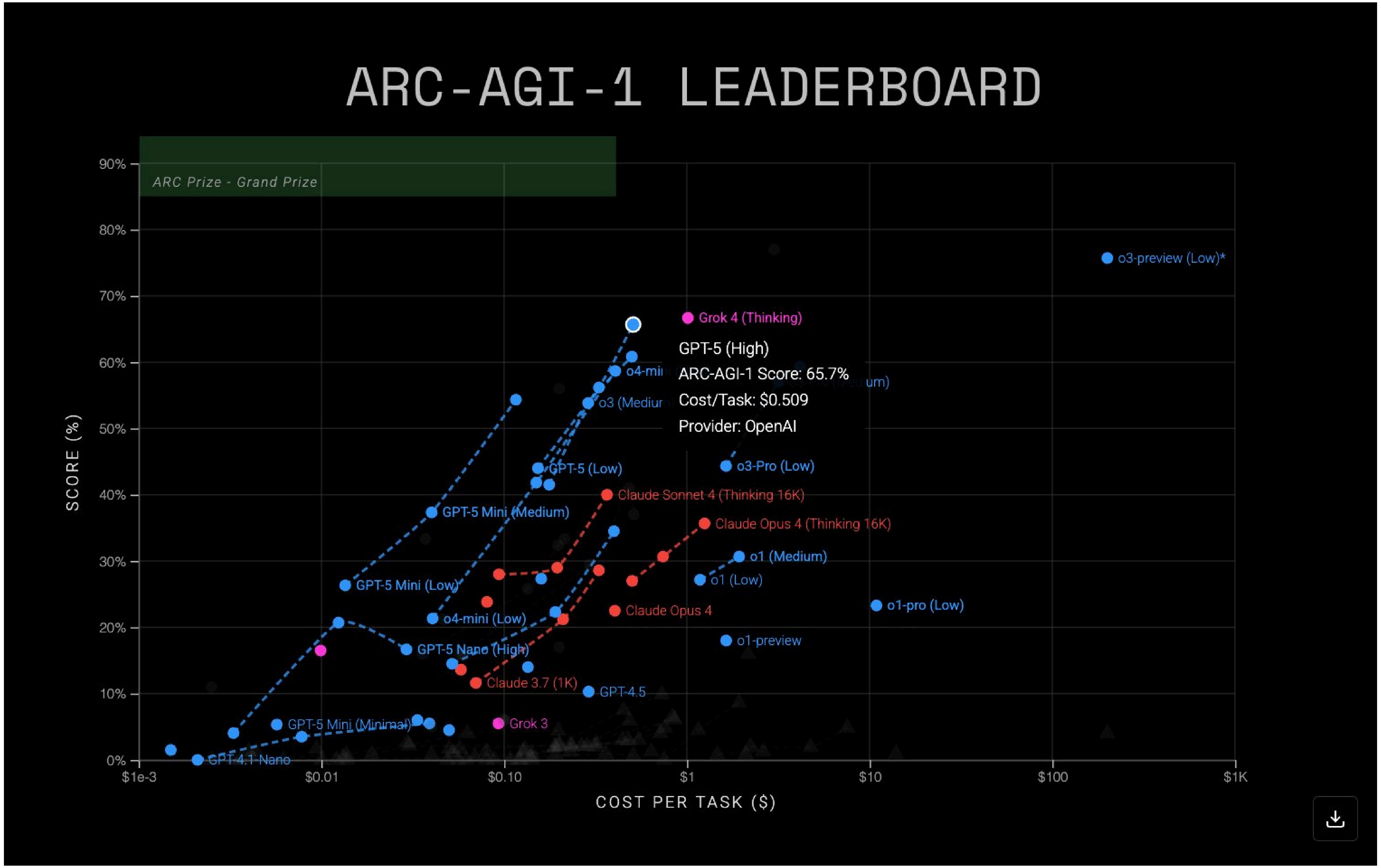

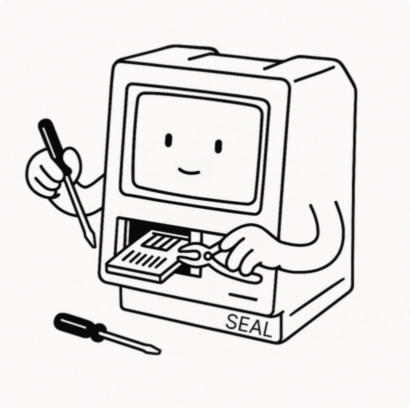

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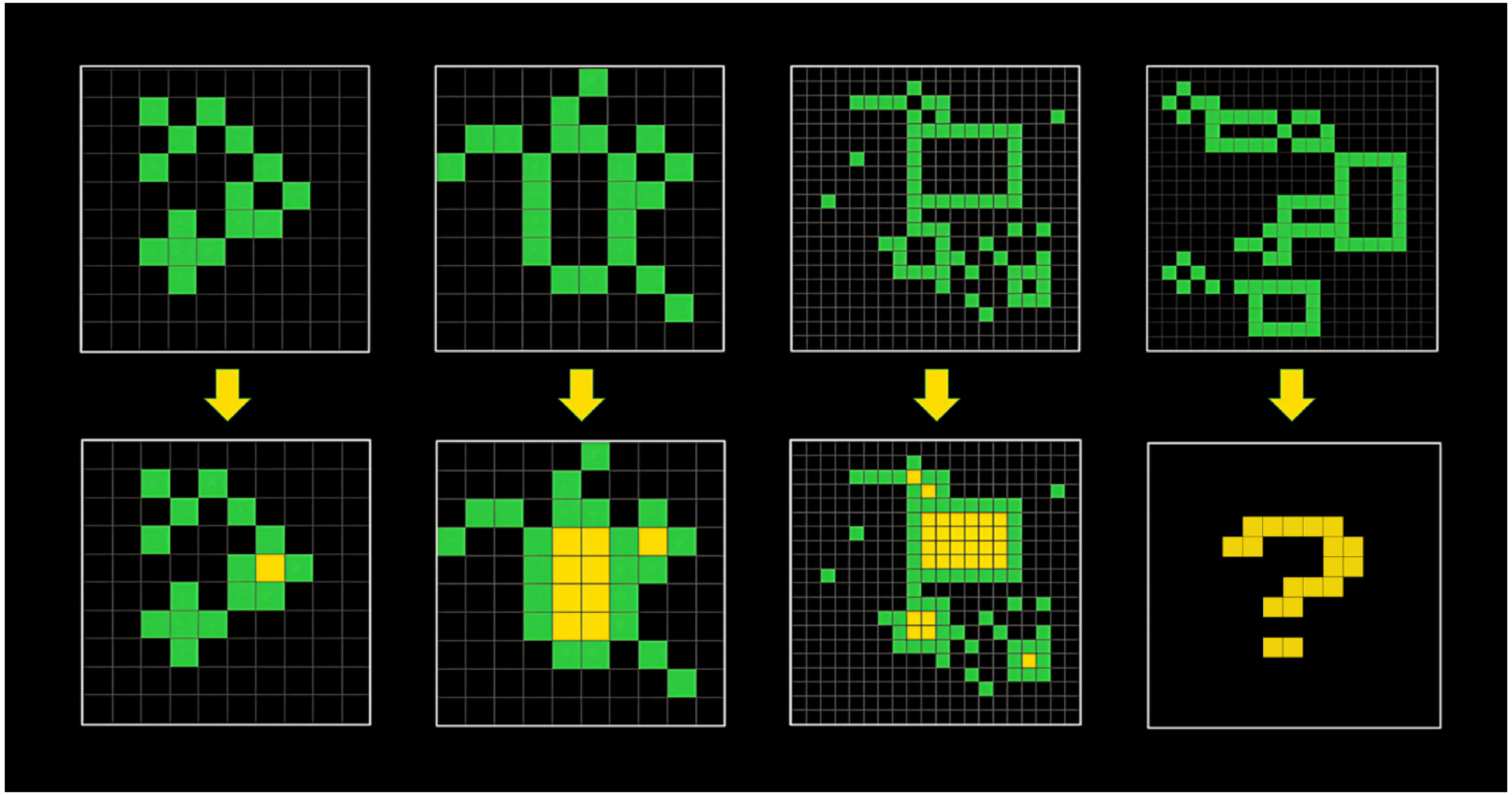

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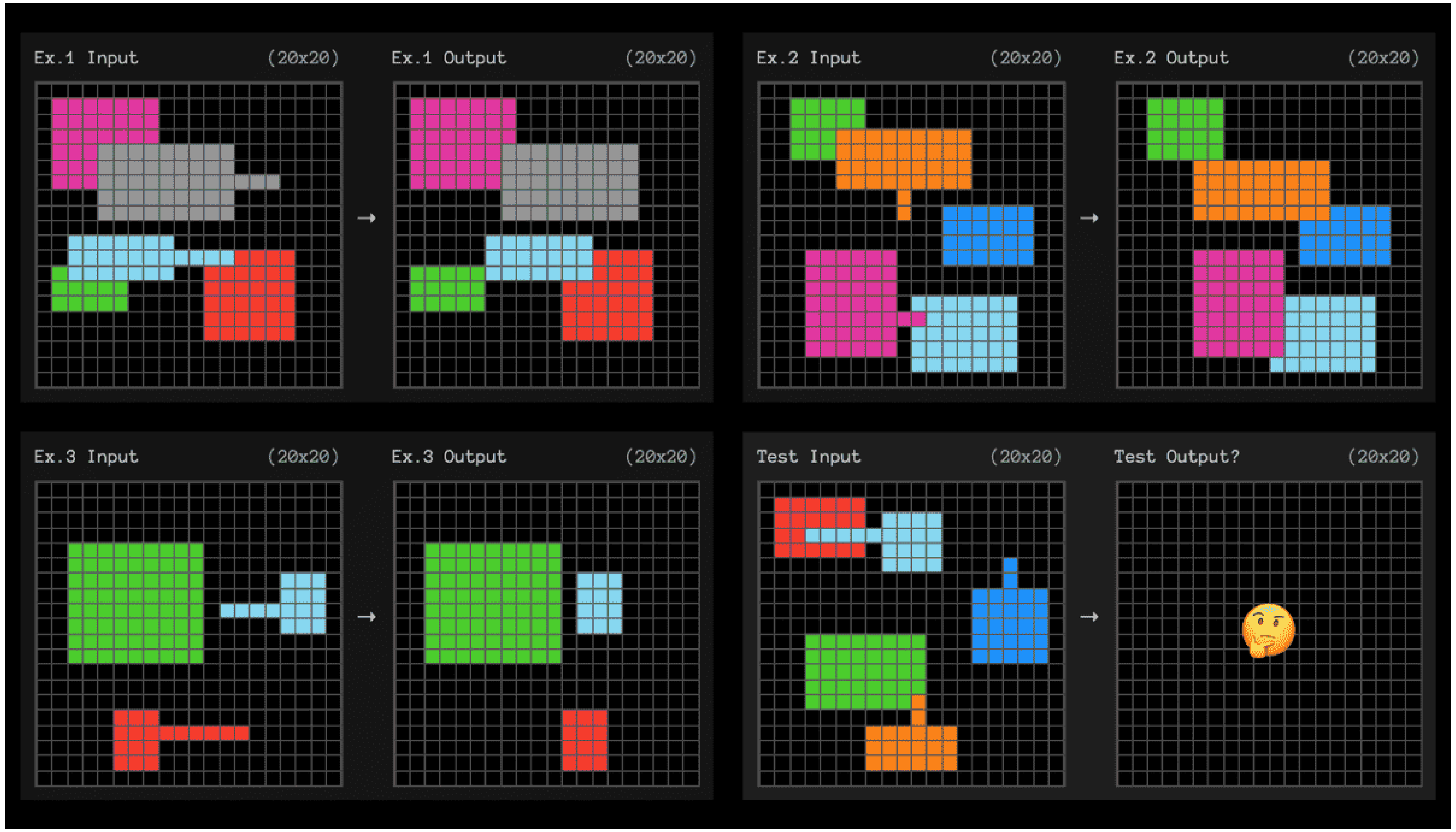

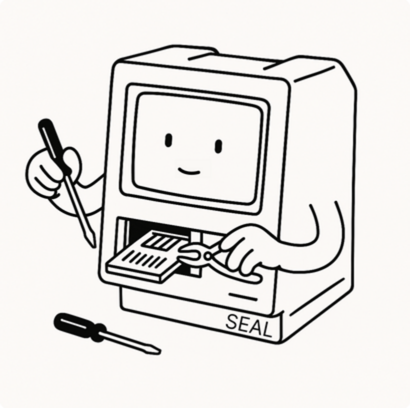

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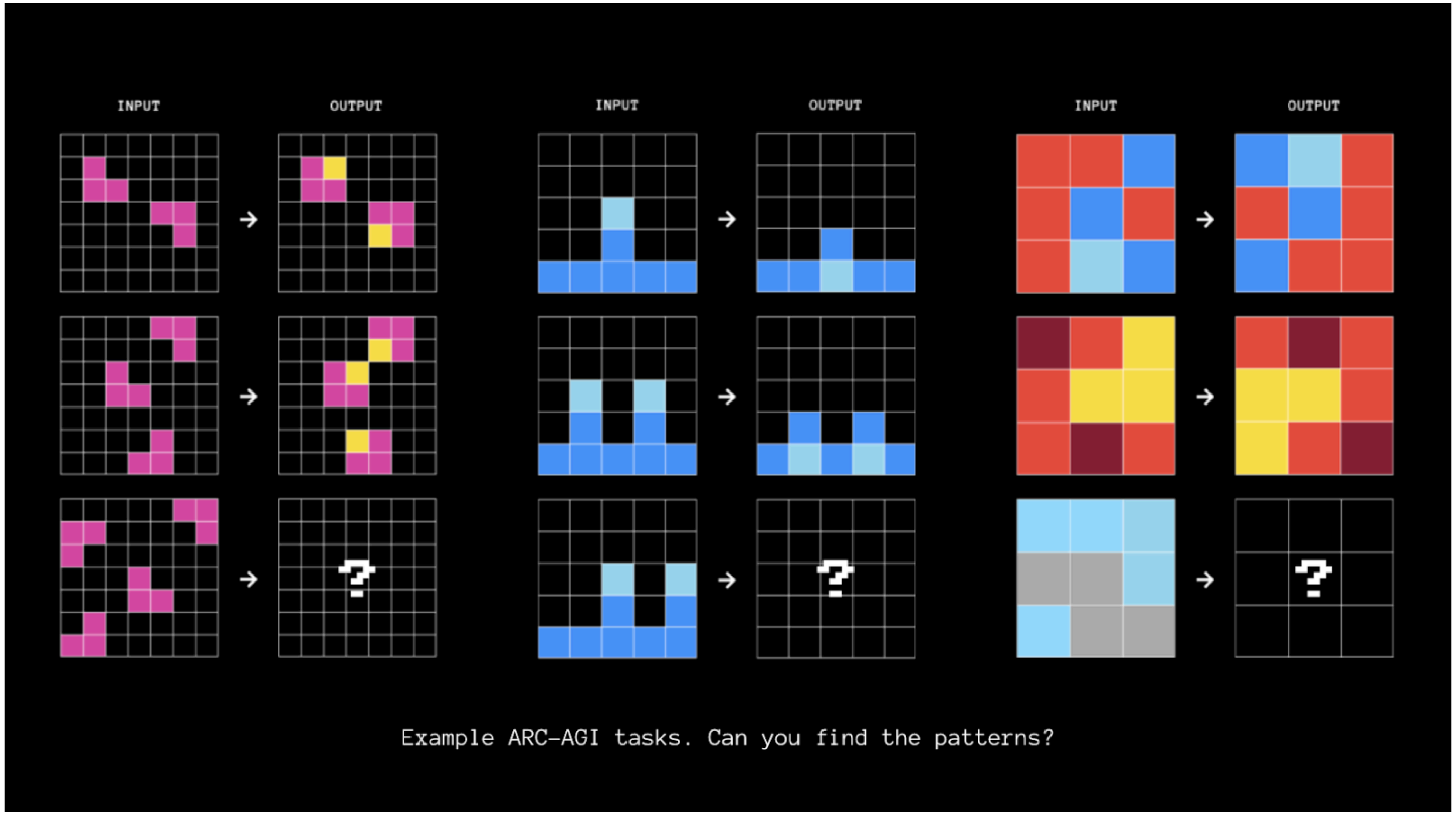

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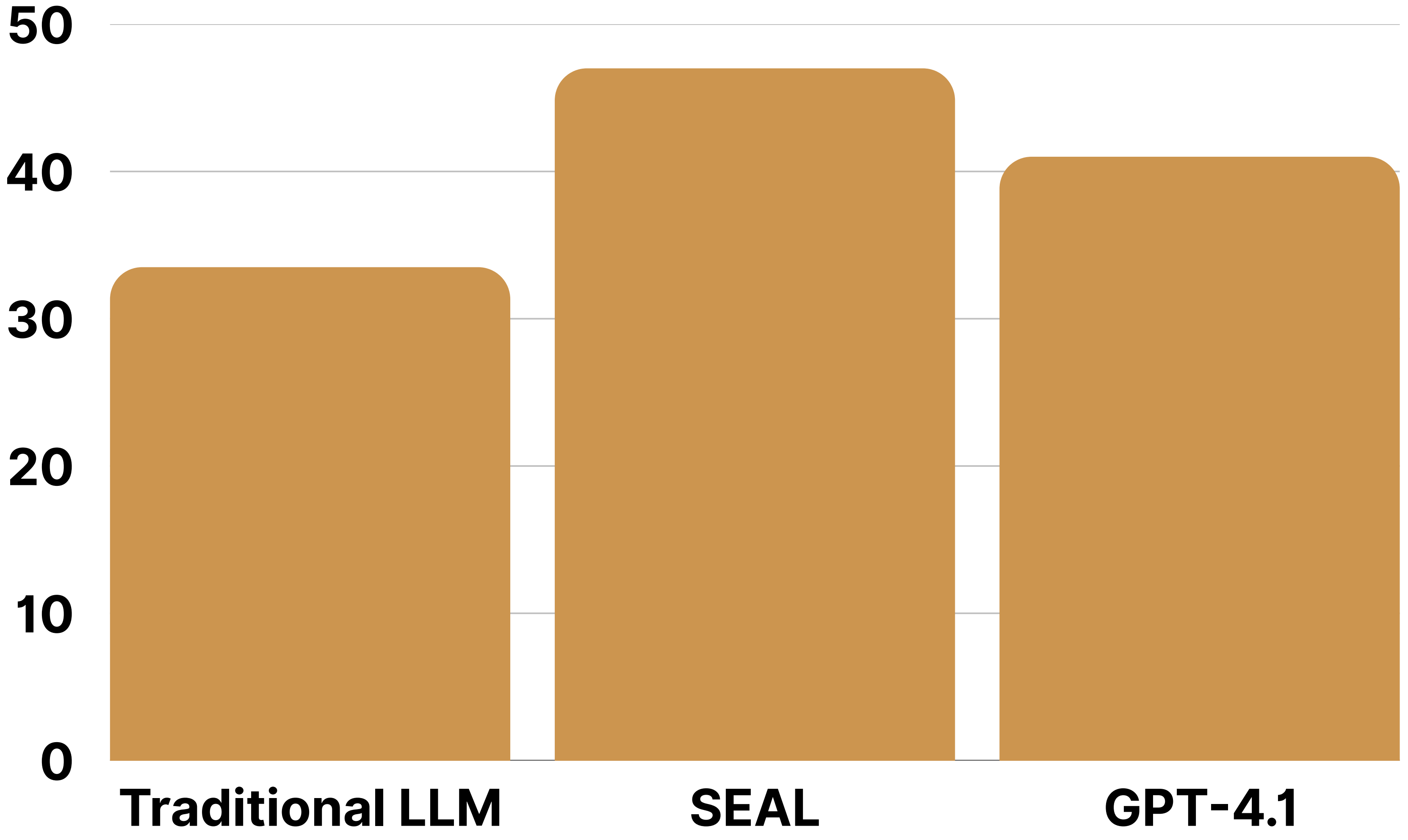
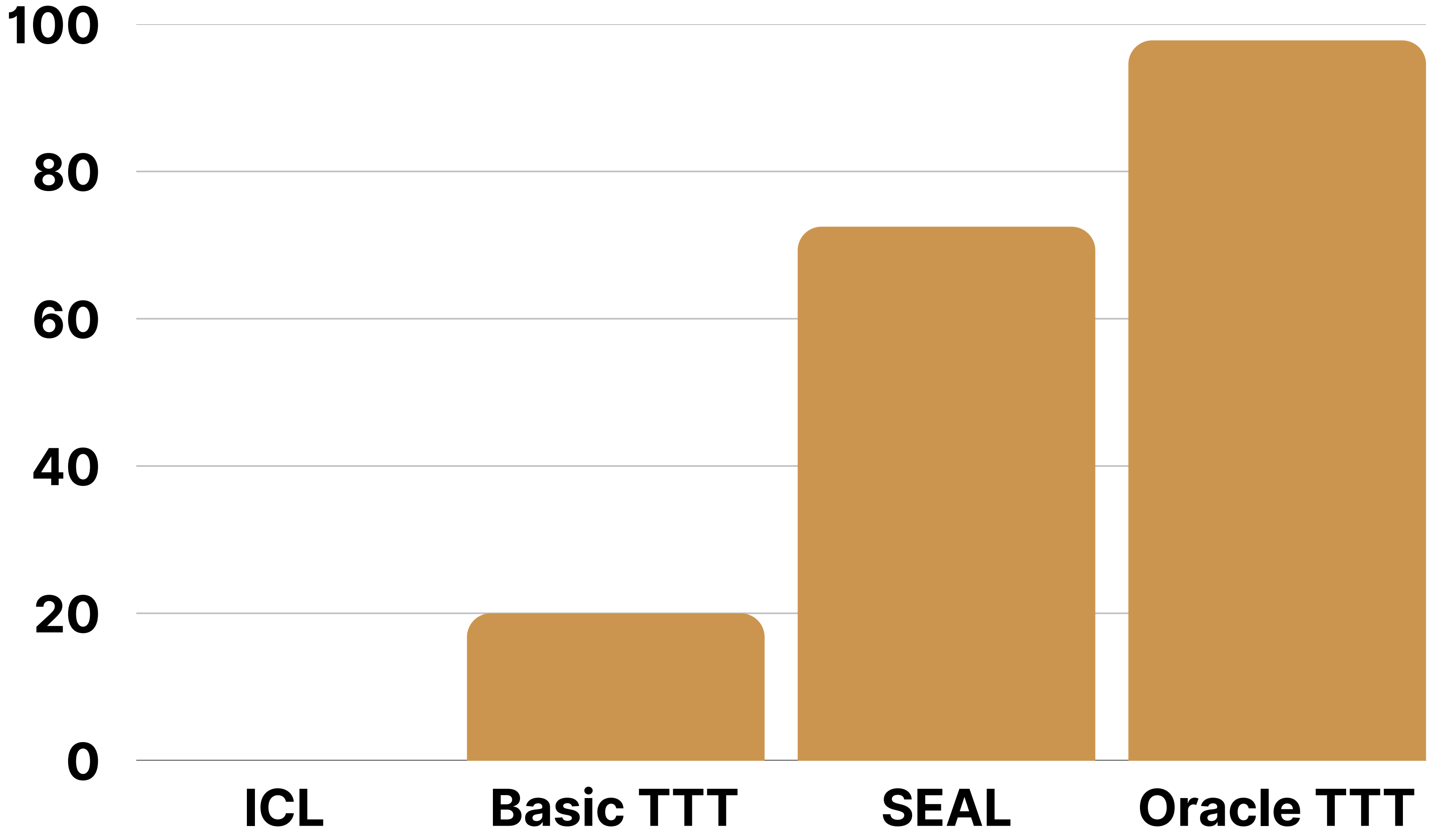
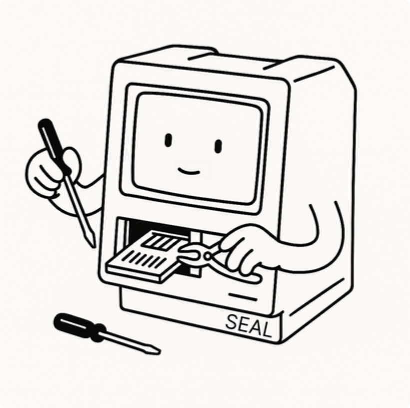
EXPIRMENTALS RESULTS

KNOWLEDGE INCORPORATION



FEW-SHOT GENERALIZATION





WHY THIS MATTERS

BREAKING THE DATA CEILING

MODELS WILL SOON EXHAUST ALL HIGH-QUALITY HUMAN TEXT

SCALING BEYOND HUMANS

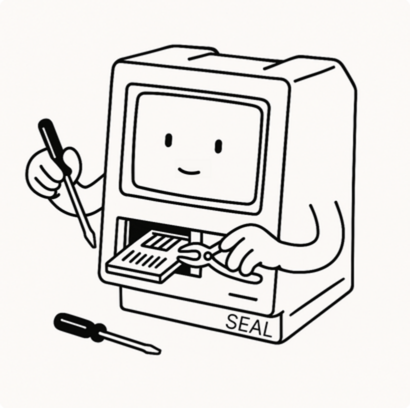
HUMAN-CURATED FINE-TUNING DOES NOT SCALE

ENABLING AGENTIC SYSTEMS

SYSTEMS THAT LIVE AND ACT IN THE WORLD MUST LEARN FROM EXPERIENCE

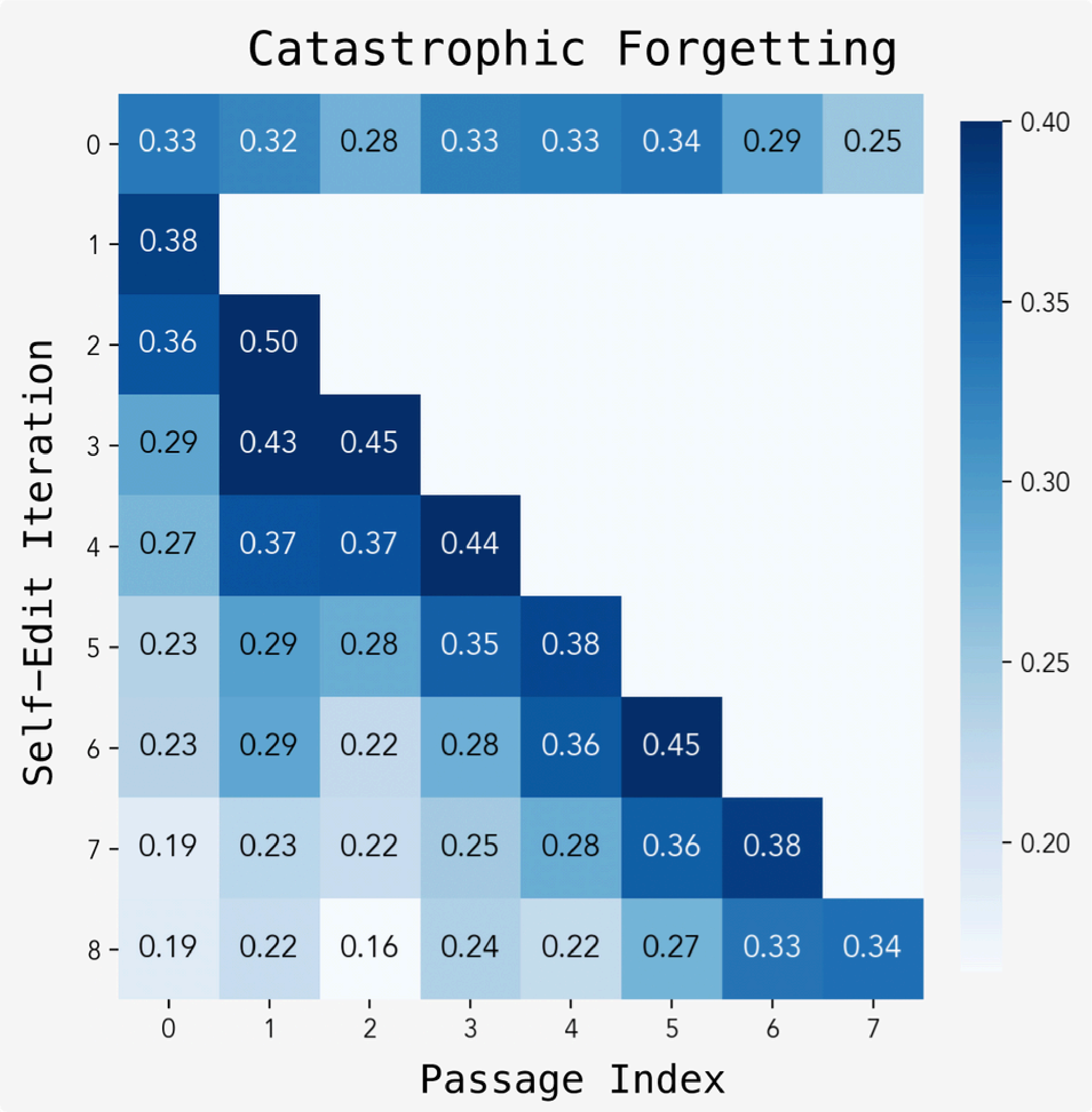
PATH TO SELF-EVOLOVING AI

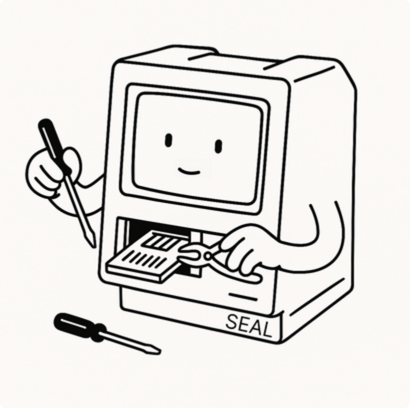
MODELS THAT DO NOT JUST USE DATA--THAY MAKE IT



LIMITATIONS

CATASTROPHIC FORGETTING





FUTURE DIRECTIONS

CATASTROPHIC FORGETTING

PREVENTING NEW LEARNING FROM OVERWRITING OLD KNOWLEDGE

DOMAIN EXPANSION

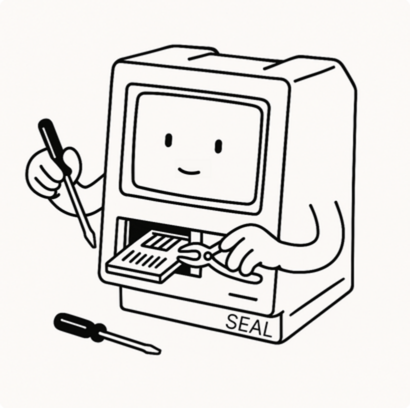
APPLYING SEAL TO MOREDIVERSE TASKS AND DOMAINS

COMPUTATIONALEFFICIENCY

REDUCING RESOURCE REQUIREMENTS FOR SELF-ADAPTATION

AI DEVELOPMENT

BROADER IMPLICATIONS FOR AUTONOMOUS AI SYSTEMS



THANKS!!

adc