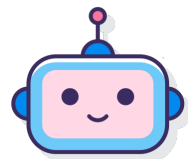**Stage 1**

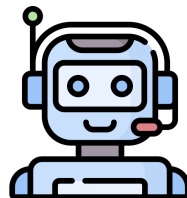SLM response

Reward Model

low reward → ⚠ Failure

high reward → ✓ Success

Stage 2

"Which skills did the model fail to leverage in its solution?"

LLM

*"The missing skills are:
(1) factorization
(2) prime number theory"*

AdaptMI+

Difficult question

Easy question

AdaptMI

Skill Bank

Skill 1
Skill 2
Skill 3

Adaptive Math Instructions

Difficult questions + Skill-based few-shot

+

Easy questions + Fixed few-shot