



Revolutionizing Personalized Learning: Introducing Squirrel Ai's Large Adaptive Model (LAM)

Squirrel Ai Learning since 2014

L5 Self-directed Learning
AI Intelligent Learning Hardware

Joleen Liang

Co-founder & President of North America, Squirrel Ai
Ph.D in Intelligent Science & Systems
Visiting Professor at UNIR iTED, Spain

Difficulties in Traditional Education

1 Unevenly distributed resources

- Scarce superior teachers
- Hard to purchase School Estate

2 Non-customized content

- Customized learning contents
- In fact, each child's learning situation is different

3 Uniform pace of learning

- Unified learning speed
- In fact, Each child's learning speed is different

4 Ignore core of learning

- Simply Focus on the training of child's knowledge acquisition
- Ignore the cultivation of Ability, Thinking, and methods

What will AI + education bring us?

- AI superior teacher
- Break the geographical and time constraints
- Integrating experience and wisdom of hundreds of superior teachers

- Personalized and customized learning
- Cater to students' individual needs, give every child a personalized education

- Tailor the learning plan to each child's learning speed
- Supplying personalized learning schemes for all kids

- Aiming to cultivate true thought of learning, ability and methods

Traditional

Pearson Education

acquisition

Collaboration

R&D

AI Adaptive Platform

Smart Sparrow

Knewton

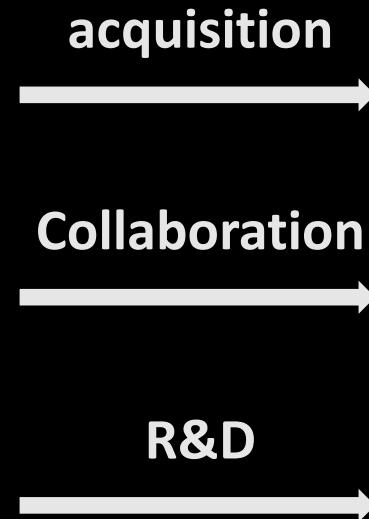
MyLab&Mastering

MERGERS AND ACQUISITIONS

Pearson Bets on Adaptive Learning (Again) With \$25M Acquisition of Smart Sparrow

Traditional

McGraw Hill
Education



AI Adaptive Platform

Area9 & ALEKS

Area9

SmartBook

Traditional



acquisition
→

AI Adaptive Platform

Knewton

R&D
→

Adaptive
Courseware

Calculus

Traditional

AI Adaptive Platform

Houghton Mifflin
Harcourt (HMH)

acquisition
→

Technology Dept. of
Scholastic, & Waggle

Khan Academy

Duolingo

Coursera

ABCmouse

Announced to transfer to Adaptive Learning

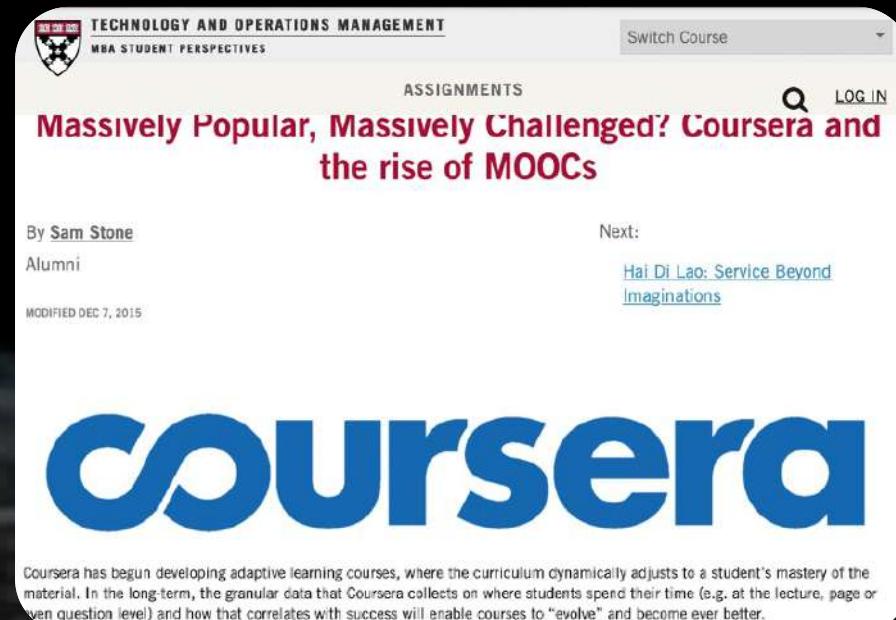
Adaptive Learning with Khan Academy

Khan Academy was my first adaptive platform. While many still think of it as a collection of videos, in 2015, KA introduced *Missions* for adaptive learning.

Khan Academy has a special place in my heart. It was the platform I used in my own classroom, and it helped my students succeed beyond my wildest expectations.

[Age of Learning](#) recently launched our new [ABCmouse Mastering Math app for iOS](#) and [ABCmouse Mastering Math app for Android devices](#).

The Mastering Math app offers a set of fun learning games that [personalize to your child](#). This adaptive game-based app helps preschool and prekindergarten children build a strong understanding of the most fundamental math concepts: the numbers one to ten and the quantities for which they stand. Having that foundation is a key milestone of kindergarten readiness.



TECHNOLOGY AND OPERATIONS MANAGEMENT
MBA STUDENT PERSPECTIVES

ASSIGNMENTS

Massively Popular, Massively Challenged? Coursera and the rise of MOOCs

By Sam Stone

Alumni

MODIFIED DEC 7, 2015

Switch Course

LOG IN

Next:
[Hai Di Lao: Service Beyond Imaginations](#)

coursera

Coursera has begun developing adaptive learning courses, where the curriculum dynamically adjusts to a student's mastery of the material. In the long-term, the granular data that Coursera collects on where students spend their time (e.g. at the lecture, page or even question level) and how that correlates with success will enable courses to "evolve" and become ever better.



22:59

X Duolingo Founder: Personalized, Adaptive Education Is More Efficient

Vox recode

Duolingo Founder: Personalized, Adaptive Education Is More Efficient

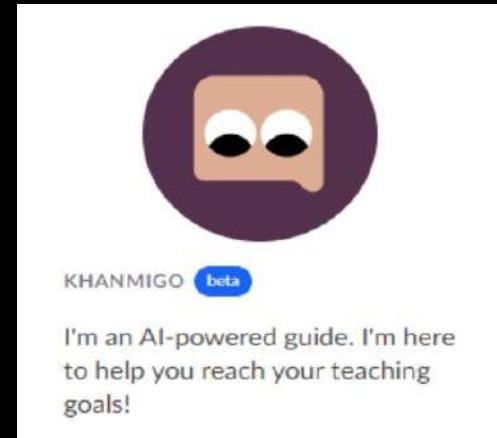
At [Code/Mobile](#), Duolingo explains how it can do a better job at the current education system.

By [Bonnie Cha](#) | Oct 27, 2014, 7:55pm EDT

SHARE

Aza Rafei

With LLMs and AIGC



Squirrel Ai Learning

Large Adaptive Model

The world's first all-subject Multimodel Large Adaptive Model (LAM)

IEEE: The World's Largest Technical Professional Organization Comprised of 430,000 Scientists

IEEE SA STANDARDS ASSOCIATION

P3428

Type of Project: New IEEE Standard
 Project Request Type: Initiation / New
 PAR Request Date: 11 Sep 2023
 PAR Approval Date: 06 Dec 2023
 PAR Expiration Date: 31 Dec 2027
 PAR Status: Active

1.1 Project Number: P3428
 1.2 Type of Document: Standard
 1.3 Life Cycle: Full Use

2.1 Project Title: Standard for Large Language Model Agents for AI-powered Education

3.1 Working Group: Standard for Large Language Model Agents for AI Education(C/AISC/LLM-4EDU)
 3.1.1 Contact Information for Working Group Chair:
 Name: Derek Li
 Email Address: derekli@squirreli.com
 3.1.2 Contact Information for Working Group Vice Chair:
 None

3.2 Society and Committee: IEEE Computer Society/Artificial Intelligence Standards Committee(C/AISC)
 3.2.1 Contact Information for Standards Committee Chair:
 Name: Richard Tong
 Email Address: richard.tong@ieee.org
 3.2.2 Contact Information for Standards Committee Vice Chair:
 Name: Jeanine DeFalco
 Email Address: jad2234@tc.columbia.edu
 3.2.3 Contact Information for Standards Representative:
 None

4.1 Type of Ballot: Individual
 4.2 Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot:
 Jan 2025
 4.3 Projected Completion Date for Submittal to RevCom: Sep 2025

5.1 Approximate number of people expected to be actively involved in the development of this project: 30
 5.2 Scope of proposed standard: This standard provides:

- Agent Components: The building blocks and architectural elements that constitute an educational Large Language Model (LLM) agent.
- Agent Interoperability Protocols: A communication protocol for interaction between different LLM agents and other components in the educational ecosystem.
- Agent Life Cycle and States: Definitions of and standardized stages of deployment, operation, and retirement of educational LLM agents.
- Foundation Models and LLM Embedding Mechanisms: Guidelines for embedding and customizing foundation models within educational environments.
- Evaluation of Education LLM Agents: Metrics and benchmarks for assessing the effectiveness, efficiency, and ethical considerations of LLM agents in educational settings.



Derek Li, Founder of Squirrel Ai was approved as the Chairman of the IEEE P3428 Standard Working Group

Google - Future of Education Report



Trend Forecast Report 2022

1 | Preparing for a new future

Future of Education

Google for Education

Advancements in artificial intelligence (AI) and adaptive technologies enable educators to meet learners where they are, with experiences tailored to their needs.



Part 2: Evolving how we teach and learn

How will educators use technology to address the individual needs of learners?

In the 2016 book, *The End of Average*, director of the Mind, Brain, and Education program at Harvard University, Todd Rose, argued that a major problem with schooling around the world is that it is designed around an “average learner” – a person that doesn’t exist. This point hits at a central concern that educators have wrestled with for decades: how do we make the process of learning more personal for each student?

Personalized learning experiences also have the potential to close equity gaps in education.



07 Trend 1: Making learning personal

Part 2: Evolving how we teach and learn

Personalization aims to increase student engagement and performance by creating responsive learning experiences that take into account each individual learner’s needs and interests.¹ By designing education that meets students where they are, personalized learning experiences also have the potential to close equity gaps in education. This means ensuring that all learners have the appropriate and targeted support and materials that they need to learn – regardless of their ability and background.



Three ways to make education more personal

1 Differentiation

Instruction that is tailored to the learning preferences of different learners. Learning goals are the same for all students, but the method or approach of instruction varies according to the preferences of each student or what research has found works best for students like them.²

2 Individualization

Instruction that is paced to the learning needs of different learners. Learning goals are the same for all students, but students can progress through the material at different speeds according to their learning needs. For example, students might take longer to progress through a given topic, skip topics that cover information they already know, or repeat topics they need more help on.³

3 Personalization

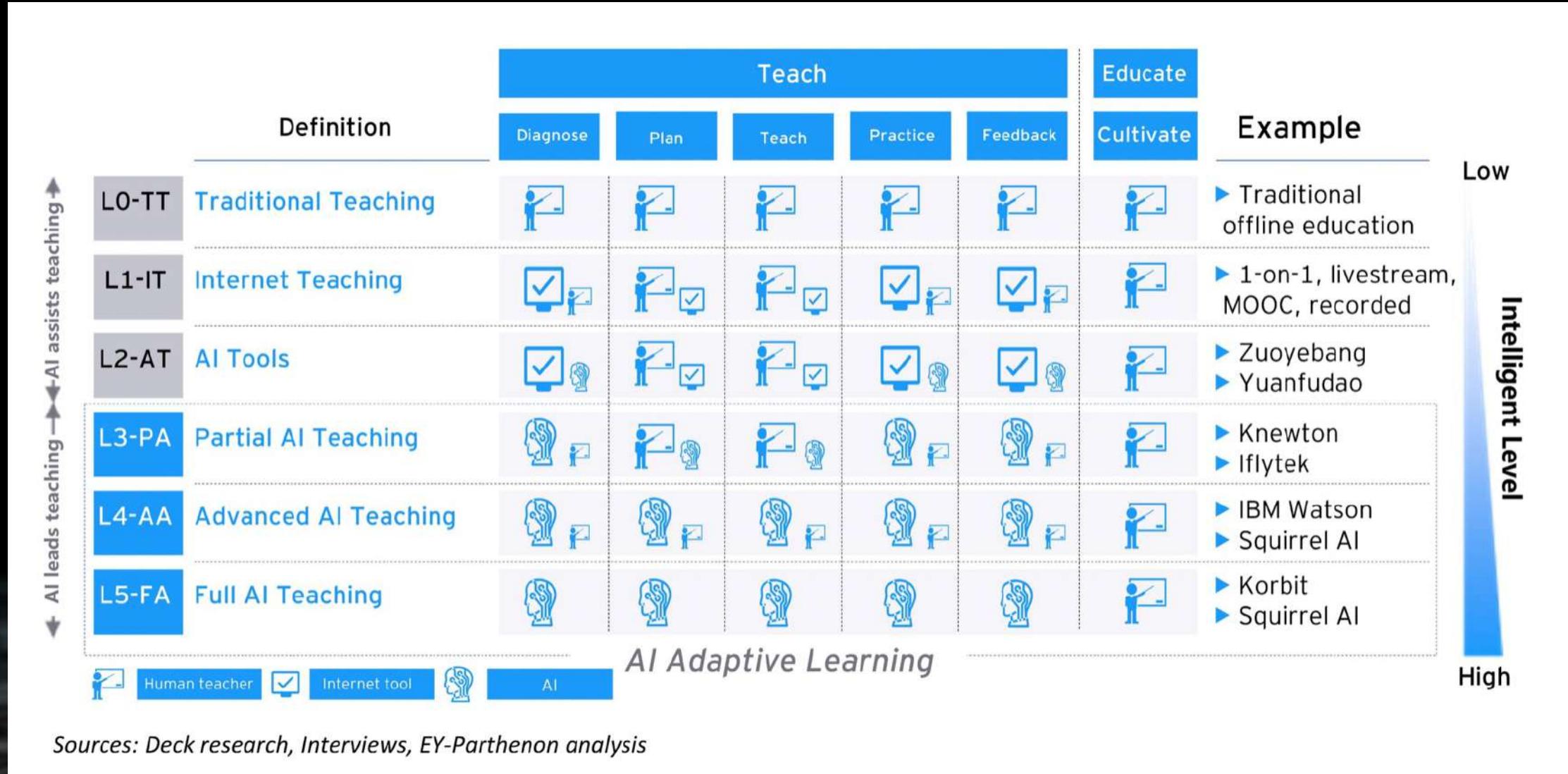
Instruction that is paced to learning needs, tailored to learning preferences, and tailored to the specific interests of different learners. In an environment that is fully personalized, the learning objectives and content as well as the method and pace may all vary (personalization encompasses differentiation and individualization).⁴

Google - Future of Education

Google's Perspective:

At Google, we're optimistic about the potential for AI and other advanced technologies to empower people, benefit current and future generations, and serve the common good. In education, AI has the potential to make learning personal, by providing learners with 1:1 support and real-time feedback.

L0-L5 AI Adaptive Learning - Intelligent Level



Sources: Deck research, Interviews, EY-Parthenon analysis

Four Human-Machine Competitions



Between Squirrel AI teaching robot and human teachers



- Oct. 2017** Zhengzhou The first ever human-machine competition in Asian-Pacific competition. Squirrel AI teaching robot gets 9 scores higher than that gotten by the senior teacher with 17 years teaching experience.
- Apr. 2018** chengdu Defeated members of high School Test Programming Group.
- Jun. 2018** Shandong Better than the 1:3 teaching efficiency by 17 human teachers.
Outperformed 17 teachers in 1:3 teaching competition
- Aug. 2018** 100+ cities Defeated lots of human teachers in more than 100 teachers in China.

Fifth Human vs. AI Teaching Competition

AI virtual tutor performed better in the Chinese teaching competition compared with the specially-honored teacher. The average score of the students from AI teaching group increased from 56% to 89%.

@TV program AI Mission on CCTV-1



AI Adaptive Education Whitepaper

Human vs. AI Teaching Competition



研究结果

本次试验的样本量为...，使用中等学习水平，通过系统对每位学生的个性化学习路径进行持续跟踪和评价。

研究结果（一）：通过智适应系统学习初中数学的部分数据，显著优于真人老师的授课效果。

同日对世界范围内不同地区的课堂进行了分析，对某班级（学生数约100人）的数据进行了分析。结果显示，真人老师的授课效果打了及格分（60分），而智适应系统的授课效果打出了90分。分析得知，学生对智适应系统的接受程度较高。

家长了解到，真人老师的教学方法过于传统，不能有效吸引学生。而智适应系统则能够根据学生的实际情况进行个性化教学，帮助学生提高成绩。同时，智适应系统的教学效果显著优于真人老师。

真人老师	智适应系统	
及格率（标准差）	37.1(9)	82.1(2)
及格率（标准差）	87.2(8)	89.1(2)
提升（标准差）	39.1(12)	38.1(4)
提升（标准差）	34.1(3.1)	33.8(0.1)

结论

综上所述，通过智适应系统进行个性化教学，能够很好地满足不同层次学生的需求，从而提高整体教学质量。同时，智适应系统能够更好地满足个性化需求，提高学习效率。因此，我们建议学校和教育机构在未来的教学过程中，尽可能地引入智适应系统，以实现更加高效、个性化的教学效果。

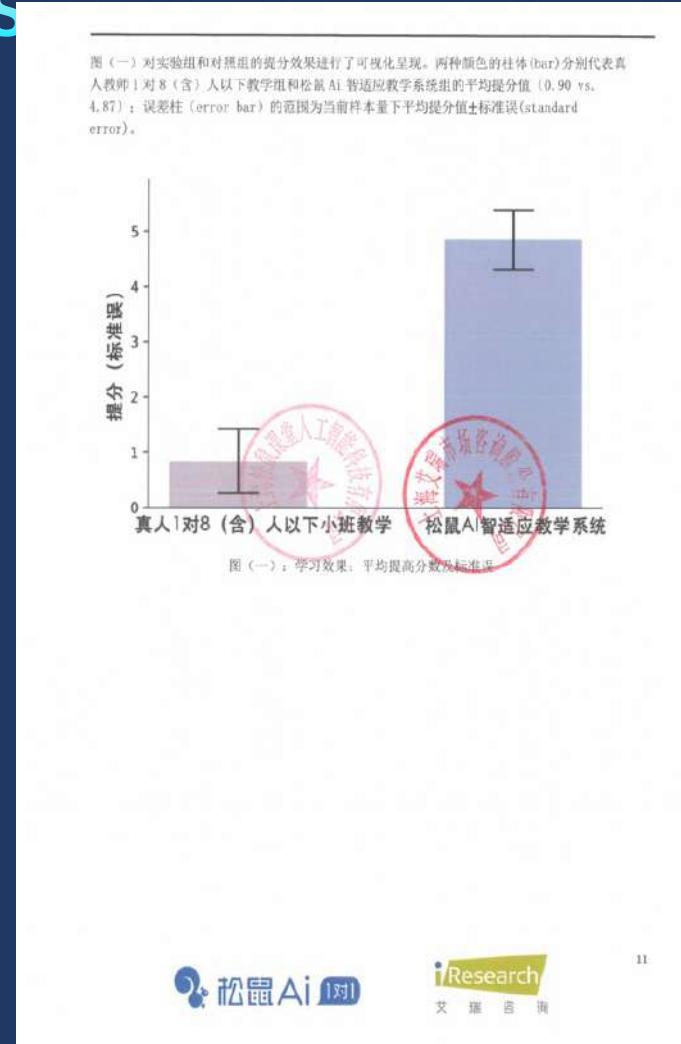
感谢各位领导、专家和同仁对本次研究的支持和指导！

报告人：王博士
报告日期：2017年10月

报告单位：乂学智适应（北京）有限公司
上海乂学智适应教育有限公司

Sixth Human vs. AI Teaching Competition - 100 cities

In 2018, Squirrel Ai organized human teaching (including 1teacher vs. 8students small group teaching) vs. AI adaptive learning system competition cross 100 cities at the same time. AI learning won the competitions cross all 100 cities.



结论

这次实证研究项目通过严格设计的对比试验，综合统计分析客观全面深入地对比学生通过松鼠AI智适应教学系统和传统真人老师授课两个不同学习方式的学习过程和结果。研究结果显示，在初中数学二次根式、特殊的平行四边形、一次函数专题学习中，松鼠AI智适应教学系统组的提分效果比真人教师1对8(含)人以下教学组显著更好，提分平均超过真人教师1对8(含)人以下教学组3.97分。同时，松鼠AI智适应教学系统的知识点掌握情况提升效果，显著优于真人教师1对8(含)人以下教学组的知识点掌握情况提升效果。在学生通过学习掌握的知识点数量上，松鼠AI智适应教学系统组比真人教师1对8(含)人以下教学组平均高0.81个。权威的第三方独立研究机构（艾瑞咨询）对研究设计、试验现场执行、试验数据收集、数据分析与研究报告的全过程进行审核，以确保研究结论的科学性、客观性和可靠性。总之，松鼠AI智适应教学系统相对于真人教师1对8(含)人以下授课在学习效果上的优势是显著且可靠的。

15

iResearch
艾瑞咨询

Seventh Competition at Guangzhou LuoDingLong Middle School,Sichuan MianYang TongChuan Middle School, Sichuan SanTai No.1 Secondary School (May 2021)



Squirrel Ai Human vs. AI learning competitions were reported by over 40 media internationally



CCTV“First Time” Interview



CNBC Interview



**2000+ National
wide
Distributors**

**60000+
Public Schools**

**24,000,000 +
Students**

**200,000 +
Intelligent Devices sold**





Squirrel Ai – Printer



Squirrel Ai
Ai Intelligent Learning Pen



Squirrel Ai
Ai Intelligent Watch



Squirrel Ai
Ai Intelligent Speaker Concept



Squirrel Ai
Ai Intelligent Robot Concept



Squirrel Ai – Ai Intelligent Learning Pad



Squirrel Ai – Ai Intelligent Vocabulary Machine

Squirrel Ai Intelligent Hardware Products

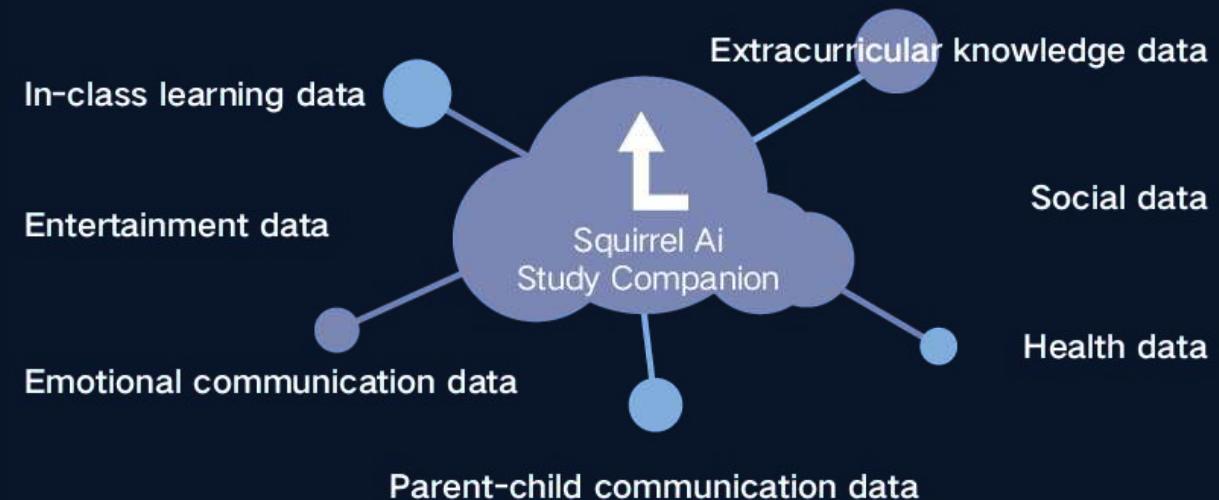
Display in stores and counters



智能万物互联



Recommendation logic based on scenario



To create a complete set of intelligent study companion hardware exclusively for students, and form a comprehensive and reliable growth management system through data collection and analysis from multiple product channels, recommending not only knowledge-based.

MIT Technology Review

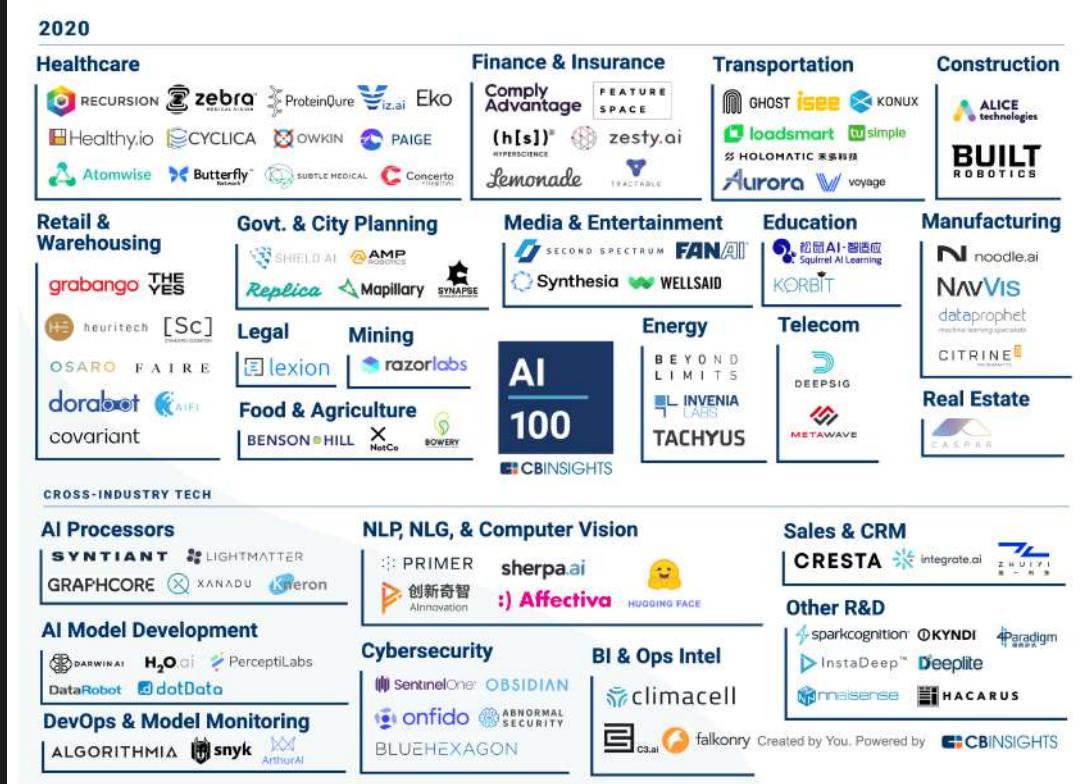


HUAWEI
Tesla
TSMC
Alibaba Cloud
Bosch
Tencent
iSpace

ByteDance
Baidu
Qualcomm
DJI
PING AN
Johnson & Jonson
Meituan
Sensetime

Squirrel AI Learning
Microsoft
Intel
NVIDIA
Ant Financial
MEGVII

Winner of UNESCO AI Innovation & CB Insights AI 100





2018 IJCAI (International Joint Conference
on Artificial Intelligence)
Sweden



AIAED (AI Adaptive Education
International Conference)
Beijing



ACM SIGKDD (Conference on
Knowledge Discovery and Data Mining)
London, U.K



2019 IJCAI (International Joint
Conference on Artificial
Intelligence)
Macao



IEEE/RSJ International Conference
on Intelligent Robots and Systems)

IEEE ICDM (IEEE International
Conference on Data Mining)

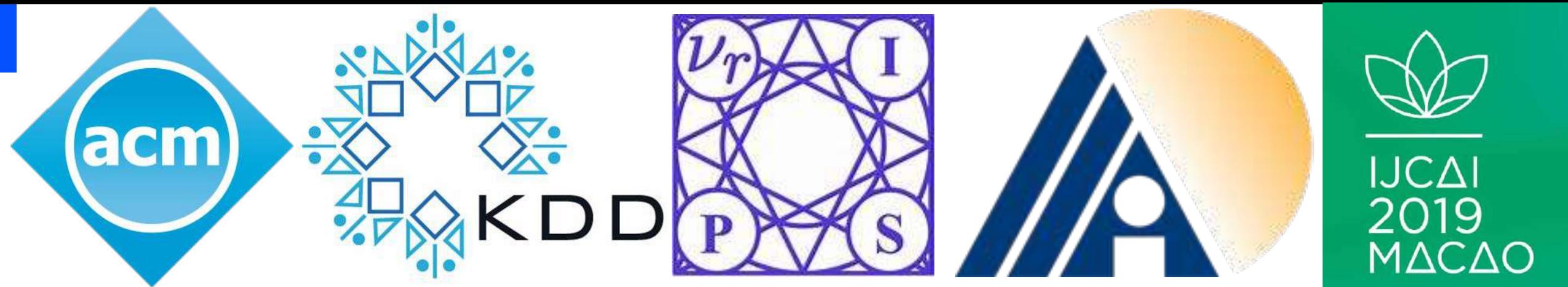
2019 CSEDU (International Conference
on Computer Supported Education)
Greece



2019 AIED (International
Conference on Artificial
Intelligence in Education)
Chicago, U.S.A

Squirrel Ai Learning's Research over 60 papers

- Research papers and workshops have been accepted and awarded at different top AI and educational conferences such as: IJCAI, AERA, SIGKDD, AIED, CSEDU, AAAI, NeurIPS and HCII.





松鼠AI 卡内基梅隆大学实验室

Squirrel AI Learning Lab at CMU
上海乂学教育科技有限公司



CMU Squirrel AI Research Lab for Personalized Learning at Scale is established in Pittsburgh, U. S. A from 2019 - 2020

Yixue AI Lab with SRI as the primary research partner

斯坦福研究中心 + 乂学松鼠AI实验室

联合技术开发



Squirrel AI Learning by Yixue Group
松鼠 AI· 上海乂学教育科技有限公司



Stanford Research Institute International
斯坦福国际研究院

Yixue AI Lab with SRI as the primary research partner 2015 - 2021



Squirrel AI Learning - Chinese Academy of Sciences Automation Society Joint Lab of AI Adaptive Learning 2018 - 2019

Founded “Squirrel Ai Award” for Artificial Intelligence for the Benefit of Humanity with AAAI & EurAI in 2020&2021



AAAI Squirrel AI Award

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From Wikipedia, the free encyclopedia

The **AAAI Squirrel AI Award for Artificial Intelligence for the Benefit of Humanity** is an annual prize of US \$1 million given by the [Association for the Advancement of Artificial Intelligence](#) to recognize the positive impacts of AI to meaningfully improve, protect, and enhance human life. The award is presented annually at the [AAAI](#) conference in February.^[1]

The first recipient, in 2021, was [Regina Barzilay](#) of MIT for her work developing machine learning models to address drug synthesis and early-stage breast cancer diagnosis.^[2]

Recipients [edit]

Year	Recipient	Photo	Rationale
2021	Regina Barzilay		For her work developing machine learning models to address drug synthesis and early-stage breast cancer diagnosis. ^[2]
2022	Cynthia Rudin		For pioneering scientific work in the area of interpretable and transparent AI systems in real-world deployments, the advocacy for these features in highly sensitive areas such as social justice and medical diagnosis, and serving as a role model for researchers and practitioners. ^[3]

See also [edit]

- [AAAI Awards](#)
- [List of computer science awards](#)
- [Association for the Advancement of Artificial Intelligence](#)
- [Squirrel AI](#)
- [Turing Award](#)
- [Nobel Prize](#)

AAAI Squirrel AI Award for Artificial Intelligence for the Benefit of Humanity

Awarded for Recognizing positive impacts of artificial intelligence to protect, enhance, and improve human life^[1]

Country United States

Presented by Association for the Advancement of Artificial Intelligence (AAAI) and Squirrel AI

Reward(s) US \$1,000,000^[1]

First awarded February 2021; 2 years ago

Last awarded February 2021

Website aaai.org/Awards/squirrel-ai-award.php^[2]

Stanford MBA Case study

STANFORD BUSINESS SCHOOL

DATE: 01/12/19

INTERVIEW QUESTIONS FOR DEREK HAOYANG LI

1-Background/profile

- 1- Where did you grow up in China?
- 2- Do you have brothers or sisters?
- 3- What did your parents do for work?
- 4- Who was your favorite teacher growing up?
- 5- What profession did you want to be when you grew up as a kid?
- 6- How / why did you start to mentor and teach your peers in school? How did you develop a love for teaching?
- 7- What did you study in university?
- 8- Talk briefly about your prior company, Only International, how you founded and grew it, and the path to the eventual IPO
 - a. What business concepts and learnings about business building and the education sector in China did you bring with you to Squirrel AI?
 - b. What is your current view on MOOC's? Do you think they are still a valid learning tool when combined with adaptive learning?
 - c. Do you still have ownership in or any connection to the business? Is it still operating?

2-Starting up the business

- 1- What was the original product concept you had when you founded Squirrel AI? How did it change/morph when you and your team started working?
- 2- Who were your first hires?
- 3- What aspects of the learning platform did you build first?
- 4- What were your fears and doubts early on? What specific technological problems / barriers did you identify and how did you tackle them?
- 5- What were some early mistakes that you made? It can be anything – hires, development roadmap or product launches?
 - a. Why didn't they work? What did you learn from those mistakes?

3-Product-market fit

- 1- Can you talk a bit about designing the hybrid (in person + online) education delivery model? How did you test the concept with students and with teachers?
- 2- What concepts /operating methods have you borrowed from other existing after school programs?

- Interview Questions for Derek Haoyang Li – Squirrel AI**
- 3- Scaling – When did you know that your business was ready to scale? What quantitative metrics on student performance were you looking for / analyzing?**
- 4- Why did you name it Squirrel?
 - 5- Can you talk about the company's stated mission and purpose – how did you come up with it?
- 4- Scaling – Steve wants this to be the focus of the case**
- 1- Talk about how you've scaled your organization over the past 4 years – how would you define the separate phases of the company's growth?
 - a. How did your management style and focus change based upon the organization's growth phase?
 - 2- Can you give us a sense of the current organizational structure and how it has transformed since you founded the business?
 - a. Do you have any strong organizational preference or philosophy?
 - 3- Can you talk about how you have scaled these different aspects of the business?
 - a. Product / engineering teams
 - b. Teaching teams
 - c. Content development teams
 - d. Company-run locations
 - e. Franchise model
 - 4- Can you talk about your relationship with the Province education ministries
 - a. Have your government partnerships helped or hindered the growth and success of your business? How so?
 - b. When is the relationship collaborative? When has it been contentious?
- 5- Fundraising**
- 1- Did you self-fund the business to start? When did you bring in other investors?
 - 2- Can you talk about what factored into your decision to raise the capital you have raised in the separate rounds to date?
 - 3- Can you talk about your relationship with your strategic investors – how have they helped you grow?
- 6- Strategy going forward**
- 1- What are the main strategic decisions you're evaluating moving forward?
 - 2- Who are the key competitors? How are you positioning your product vis a vis the other large after school education companies in china? How does it complicate things that some of your competitors are your investors?
 - 3- What is your key sustainable competitive advantage? IP? data? team? How is your team continuing to innovate in terms of subjects and products
 - a. EQ
 - b. Creativity
 - c. Voice rec
 - d. Facial rec / emotion tracking
 - 4- Can you speak about your potential expansion into other geographies – Viet Nam to start?

UNESCO's Digital Learning Week for plenary talk - with Ministers



Digital Learning Week 2023		
Steering technology for education 4-7 September 2023 - Paris, France		
11:30 – 13:00	Plenary session 1 DIGITAL FUTURES AND THE PLATFORM SOCIETY Implications for education Moderator: Mr Quentin Wodon, Director, UNESCO International Institute for Capacity Building in Africa (IICBA) Keynote address: <ul style="list-style-type: none"> • Mr Tshilidzi Marwala, Rector of the United Nations University and Under-Secretary-General of the United Nations Discussants: <ul style="list-style-type: none"> • Mr Tawfik Jelassi, Assistant Director-General for Communication and Information, UNESCO • Ms Annika Bergviken Rensfeldt, Senior Lecturer, Associate Professor at the Department of Applied IT, University of Gothenburg, Sweden • H.E. Ms Anna-Maja Henriksson, Minister of Education, Finland • H.E. Mr Cheikh Oumar Anne, Minister of Education, Senegal • H.E. Mr Jie CHEN, Vice Minister of Education, Chairperson of the National Commission to UNESCO, People's Republic of China • Mr Derek Haoyang LI, Founder and Chief Education Technology Scientist, Squirrel Ai 	Room I <u>Webcast link</u> (EN and FR interpretation)



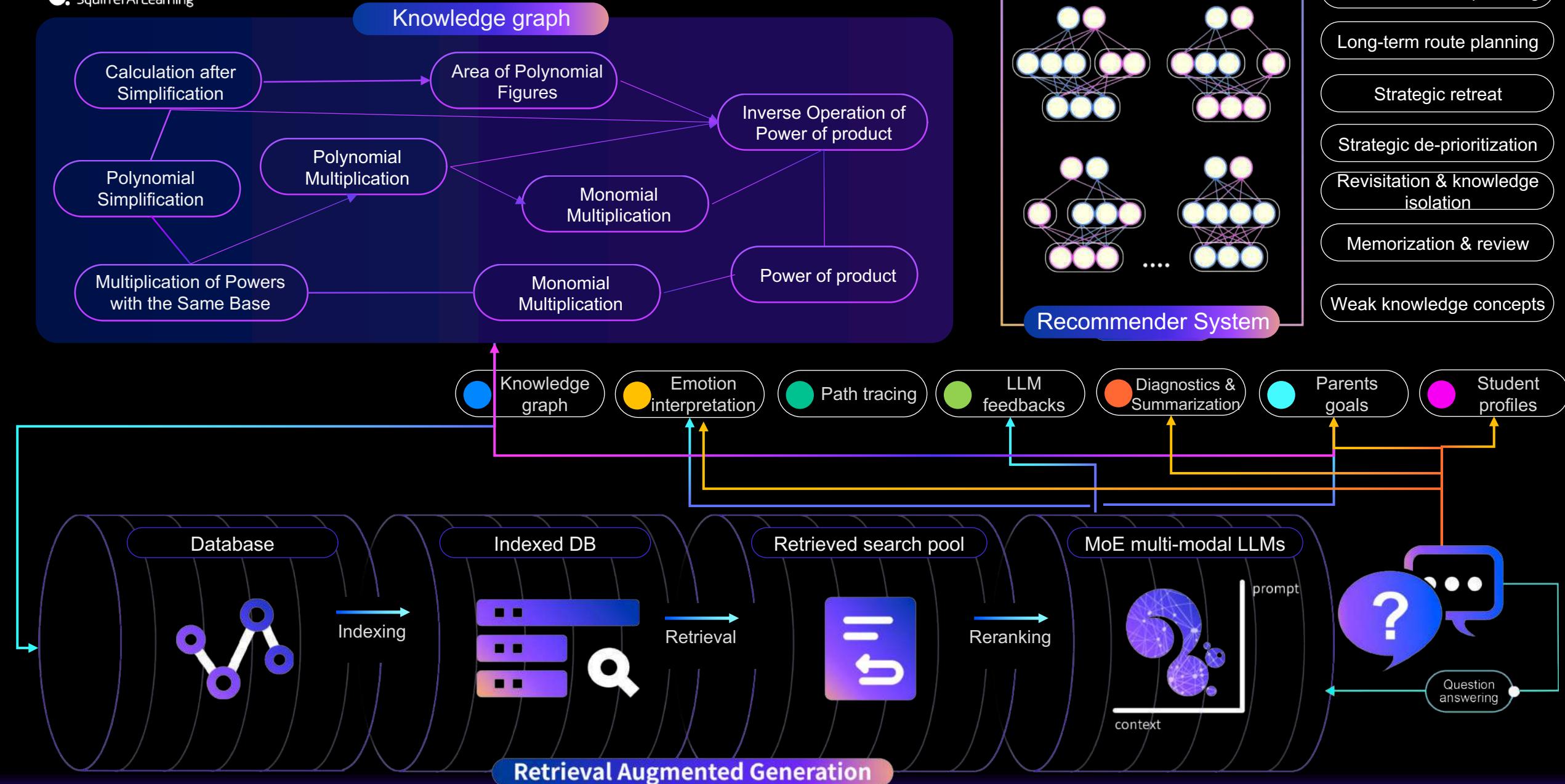
Squirrel Ai
Learning

Large Adaptive Model

The world's first all-subject Multimodel Large Adaptive Model
(LAM)



Squirrel Ai Large Adaptive Model: Model Layer (2/3)

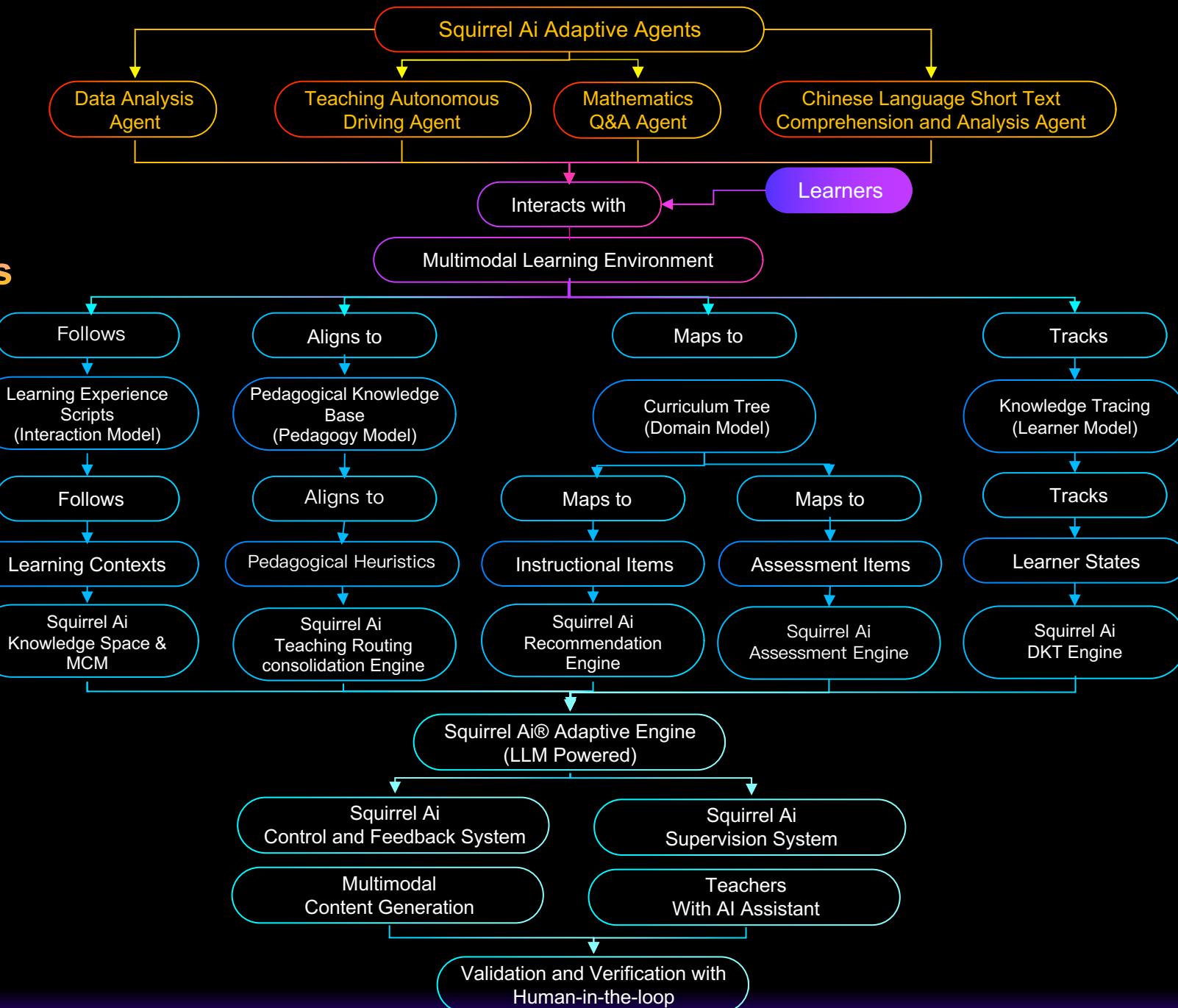


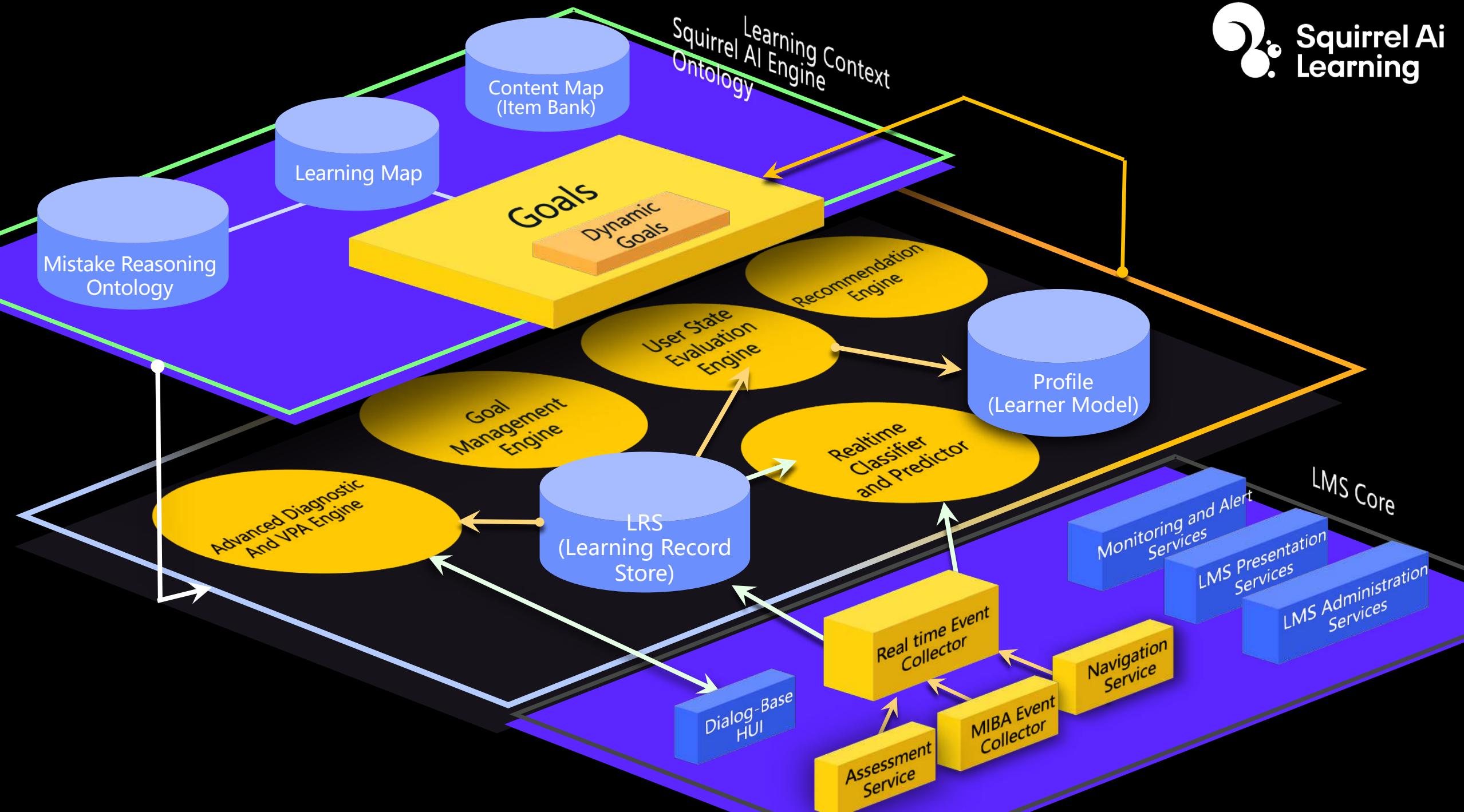
Squirrel Ai Large Adaptive Model: Model Layer (3/3)



Squirrel Ai Large Adaptive Model Agents

- > Collaborative AI agents
- > Personalized learning contents recommendation
- ✓ Analytical agent
- ✓ Teaching agent
- ✓ Reasoning agent
- ✓ Reading comprehension agent
- ✓





Nano-level Breakdown of Knowledge Components(NKC)

The Worldwide First
Technique



The image features a dark blue background with a subtle radial gradient. Overlaid on this are several layers of text in white and light blue. At the top, the word 'fraction' is partially visible in white. Below it, the words 'Solve for the unknown' are written in large, bold blue letters. To the right, a blue box contains the text 'Two-step formula for fractions with different denominators'. In the center, the words 'Addition and subtraction' are displayed in large, bold white letters. Below that, the word 'Subtraction' is shown in large blue letters. At the bottom, the word 'Fractions' is partially visible in white.

With known
addition number
and sum to find the
other one

Calculate
subtrahend
from minuend
and difference

Simplifying fraction-related formulas fraction calculation

Calculate minuend
from known
Subtrahend and
Subtract difference
of Fractions

Addition of Fractions

Solve for the known term
in fractions

Subtraction of fractions of different denominators. **step Fraction calculation**

Calculate
subtrahend
from
minuend and
difference

With known
addition number
and sum to find
the other

Mixed calculation of fractions

Two-step formulas for fractions of different denominators

Calculate minuend
from known
Subtrahend and
difference-
different
denominators

Addition of Fractions of Different Denominators

Solve for the unknown in
same denominator fractions

**Two-step formula for fractions-
unknown is the addition
number**

Collect Students' Learning Data at Real Time



Results of tests for students



Time for students to finish test



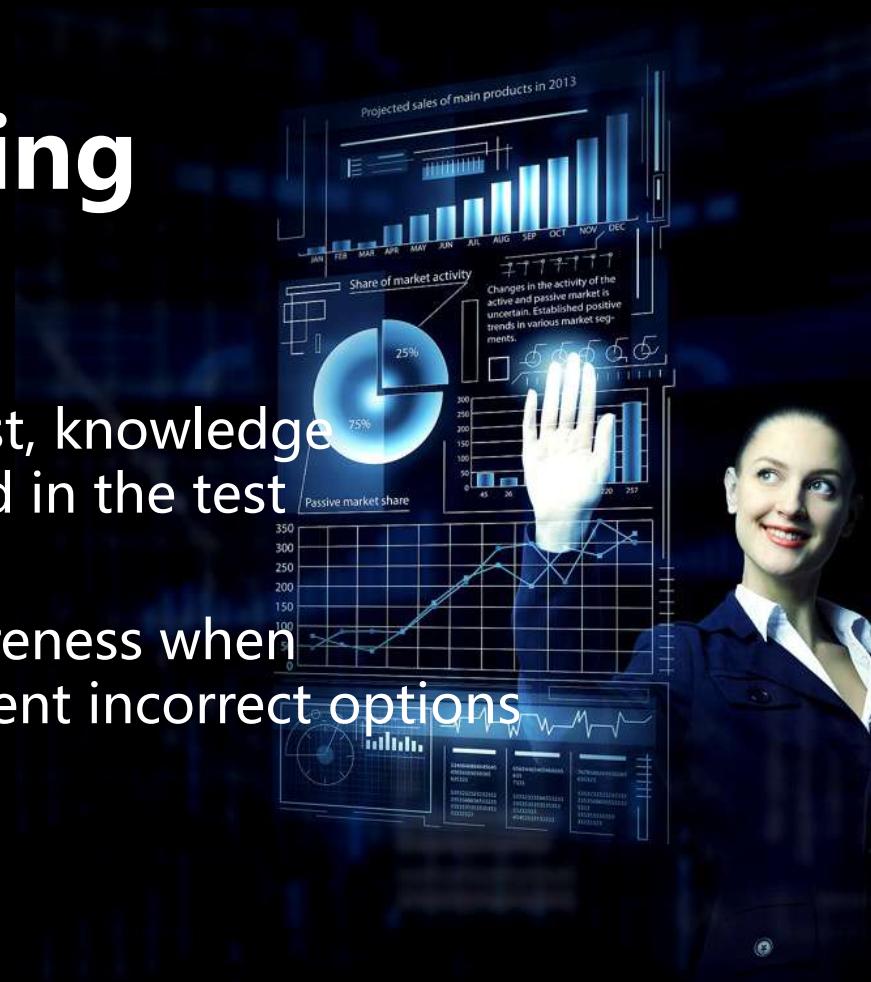
Sliding of mouse reflecting student's cognitive state



Difficulty of test, knowledge points included in the test



Reflecting awareness when selecting different incorrect options



We adjust all algorithms in accordance with student's real-time response.

Prediction Engine

- Predict students' ability level on knowledge points which they have not learned
- Predict learning time needed by students to achieve their learning goals



Recommendation Engine

Based on

- Student' s current knowledge state;
- Student' s current ability level;
- Student' s learning rate in the past;
- Student' s personal learning goal in the past;
- Characteristics such as difficulty level and importance of the knowledge point that students are about to learn .



Dynamic Goals

Goal can be overall and can also be individually customized so that each student can achieve optimally

Goals and Dynamic Goals

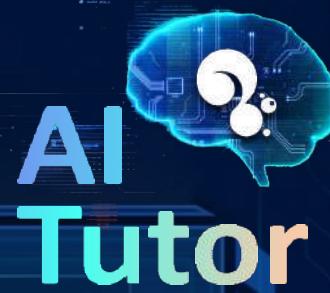
Goals

Goals are the contexts for the recommendation system to optimize learning navigation and resource selection



Division of plural

Fill the gap and target the root problem



GRADE 10

Square relationship of sine and cosine

Quadratic inequality solution with discriminant greater than 0

Parametric quadratic function evaluation domain

Simple function do difference judgment monotonicity

GRADE 9

Determining the image of the quadratic function by solving the quadratic equation

Special trigonometric function value

The concept of acute angle trigonometric functions

GRADE 8

Formula method for solving quadratic equation

A quadratic equation of Method

Fractional addition, subtraction, multiplication and division mixing

Denominator rationalization

Geometric meaning of absolute value

GRADE 7

Cross multiplication -- the coefficient of the quadratic term is 1

The absolute value is used to represent the distance between two points on the number axis.

Yu * Ying 80% Mastered

- Information Theory, Bayesian Theory and Knowledge Space Theory
- With fewer and shorter assessments, we can accurately and efficiently diagnose students' knowledge loop hole



浮力的应用之轮船问题	光的折射规律的应用	温度的概念	平面镜成像的特点	验电器	力的三要素	判断机械能的变化	探究电流与电压、电阻的关系	阿基米德原理的综合计算	力的作用效果
功的简单计算(二)	影响摩擦力大小的因素	声音是由物体振动产生的	凸透镜成像作图	功的定义	力的表示	增大和减小摩擦力的方法	三种常见容器	比热容的定义	入射角与反射角的计算
行程问题	古诗中的参照物	小孔成像	平面镜成像作图	光的折射现象辨析	力的作用是相互的	电压表的使用	连通器的定义及其特点	放大镜原理	影响物体的平衡条件
光的折射作图	阿基米德原理的简单计算	原子结构	凸透镜成像计算	不做功的三种情况	弹力大小(胡克定律)	影响摩擦力大小因素的应用	生活中的连通器	日食	镜面反射和漫反射
电压的概念、单位及换算	液体压强的产生原因	电路构成及元件作用	阿基米德原理(实验验证)	功的简单计算(一)	弹簧测力计的原理	利用二力平衡求摩擦力	分子动理论	浮力定义及方向	区别平衡力和相互作用力
电路的三种状态	利用浮沉条件比较浮力大小	电路图和实物图的相互转化	电压的概念辨析	功率的简单计算	重力的定义	光的折射	分子动理论的辨析	探究浮力的大小跟哪些因素有关	功率的定义
电阻的概念，常见物体的电阻	液体压强的计算	电压表的测量对象	对阿基米德原理的理解	功率的公式变形	重力的方向、作图及应用	压力的概念	扩散现象	物体运动情况的判断	二力平衡的计算
光源	物体的浮沉条件	影响电阻大小的因素	利用浮沉条件求浮力	参照物	影响电阻大小因素的实验	探究压力作用效果的影响因素	内能的概念及影响因素	物距等于像距的简单计算	摩擦起电
光的反射作图	探究物质的吸热能力的实验	光在均匀介质中沿直线传播	浮力的应用之潜水艇	惯性及其大小	探究重力的大小与质量的关系	压强的定义、公式、单位、估算	内能的改变方式	力的概念	探究液体压强的特点
电荷与电荷间的相互作用	热机的分类及能量转化	探究光的反射规律	光的折射作图(进阶多次折射)	增大和减小固体压强的方法	质量和密度的概念	固体压强计算——知二求一	内能改变方式的辨析	功率公式	力的概念

Mode of thinking

Capacity

Methodology

MCM

MCM

Analysis of Different Careers

English Hand-writing Ability
Language Analysis Ability
Summary and generalization ability
Ability to Explore Laws

Language Imitation Ability
3D Graphic Analysis Capability
Image Observation Ability
Standard Expression Ability
Artistic Conception Analysis Ability

Rigorous Thinking
Conservation Thought
Equivalent Thought
Transformation Thought

Information Screening Capability
Communication Skills
Language Aesthetic Ability
English Reading Comprehension Ability
Logical Analysis Ability
Algorithm Construction and Implementation Capability
Graphic Splicing and Reorganization Capability
Imagination of Sports Situation Ability
Planning capability
Language Subtlety Analysis Ability
Data Analysis Capability
Verbal Comprehension Ability

Ingenious Thought
Inverse deduction

MCM Analysis

of Language

Divergent thinking Graphic thinking Integrated thinking
Ability to understand characters
Converse thinking Thinking in images
Ability to move from shallow to deep
Ability to select information
Ability to integrate information
Method of summarizing
Method of analogical relation
Method of word construction
Detail description Comparative ideology
Method of combining virtual and real
Critical thinking Theory to practical thinking

Overall thinking

Ability to summarize
Ability to analyze the context
Ability to analyze the grammar

Method of seeing the big from the small

Method of structural analysis
Method of contextual analysis

Method of grammar judgement

Method of first and last sentence
Method of stating one by one
Method of DAT
Method of similar location

Method of describing slow actions

Method of personality comparison and analysis

Ability to transform image and text
Ability to imagine and create

Ability of memorizing

Ability to analyze a graph

Ability to inquire

Ability to express normatively

Method of grammatical analysis

Modeling thinking

Method of logical reasoning

Ability to interpret pictures

Method of memorizing

Decomposition and synthesis thinking

Antithesis thinking

Method of understanding the meaning of the sentence

Ability to express and apply

Ability to gain linguistic aesthetics

Ability to gain effective information

Method of Counter-evidence

Method of main word structure

Method of finding the key words

Ability of analyzing the artistic conception

Ability of communication

Ability to analyze and integrate

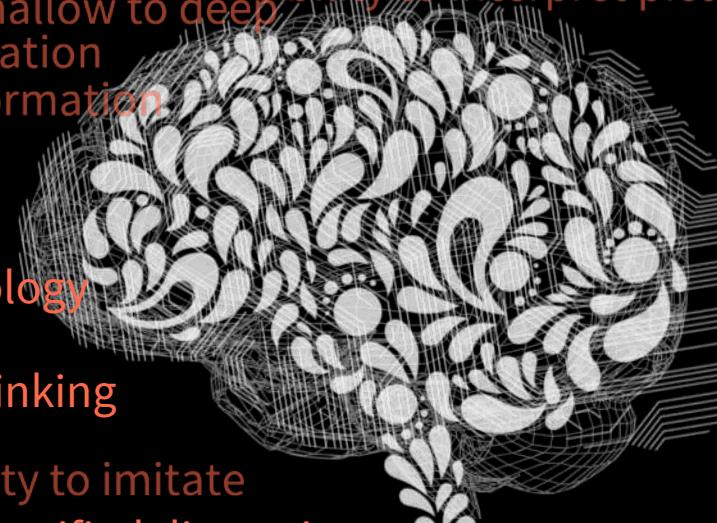
Ability to appreciate and evaluate

Analogy relationship

Judging of cognitive level

Law of contradiction

Special and general thinking



MCM Analysis

of Physics

Transformation Thought

Thoughts of Classified Discussion

The thought of Combination of Number and Shape

Model Thinking

Modeling Thought

Comparative Analysis Approach

Systematic Analysis Method

Experimental Operation Ability

Mathematical Calculation Skill

Holistic Thinking

Graphic Capability

Qualitative Analysis Ability

Ability to Design Experimental Scheme

Data Processing

Estimation

Spatial Imagining Ability

Number Combination Ability

Cause and Effect

Comparative Analysis

Meta Process Analysis

Function and Equation Theory

Contradiction Analysis

5 Why Analysis

Ability to Highlight the Main Contradiction

Ability to Apply Physical Laws

Concentration ability
Comprehensive Ability

Memorizing Ability
Inductive Ability

Analogy
Reverse Thinking
Equivalent Thinking

Scientific induction
Simple enumeration
Full induction

Incomplete Induction

Three-stage Method
Hypothetical Reasoning

Quantitative Analysis

Ability to Summarize

Deductive Ability
Judging Ability

Analogy

Observation
Guess Ability
Inquiry Ability
Reasoning Ability

Access to Effective Information

Affirmative
Negative

Symmetrical Thinking
Divergent Thought

Choice Reasoning
Positive Negative

Model Application Ability

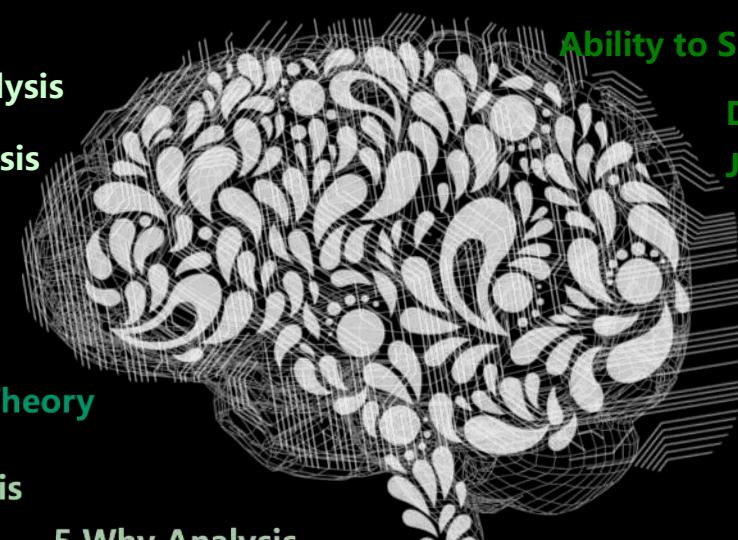
Language Skills

Negative Affirmation

Rigorous Thinking
Deductive Reasoning Ability

Innovative Thinking
Introspection

Formula Deformation Ability
Qualitative Analysis



MCM Analysis

of Mathematics

Number-Shape Combination Thinking

Wholistic Thinking

Modeling Thinking

Transformation Thinking

Classification Discussion Thinking

Introspection Thinking

Thinking Of The Extremes

Symbolic Thinking

Optimization Thinking

Special & General Thinking

Observation Ability



Number-Shape Combination Ability

Modeling Ability

Logical Thinking Ability

Data Processing Ability

Qualitative Analysis Ability

Intuition ability of the Simplest Result

Graph Counting Ability

Graphic Evolution Imagination Ability

Geometric Intuition Ability

Imagination Ability on Expended Graphs

Imaging Method

Exhaustive Method

Iterative Method

Induction Method

Formula Method Translation Method

Parameter Method Elimination Method

Computing Ability

Model Application Ability

Effective Information Acquisition Ability

Language Expression Ability

Function & Equation Thinking



The World's Biggest Education Technology Companies Traditional Education Companies

Chinese AI Unicorns:

Huawei Alibaba Baidu iFlytek

Chinese Traditional Education Companies:

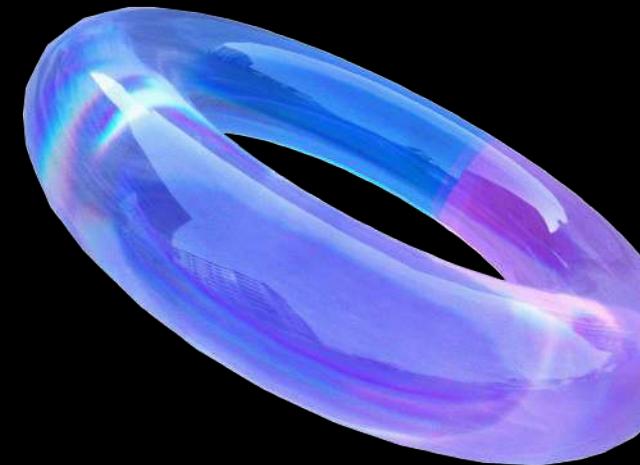
TAL Zuoyebang Yuanfudao NetEase Gaotu Techedu Zhangmen

All flooding
into the sector

All ministries of education, authoritative educational organizations, as well as science and technology and business communities around the world

Expect AI to revolutionize education

Disadvantages of Large-scale Foundation Models



No **user portraits** No **historical data**

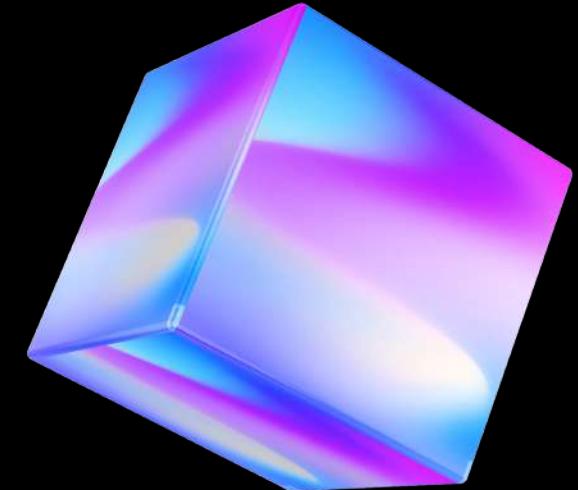
No technology that comprehensively and efficiently diagnoses and assesses, **only solves individual problems**, rather than designing a study plan

No **timeline**, unable to quantify learning efficiency and evaluate learning ability



Squirrel Ai
The world's only

Large Adaptive Model LAM





**Everything is based on
Large Adaptive Model **LAM****



LLM = Someone who knows how to speak

LAM = The most qualified instructor



松鼠AI

**LAM = Become addicted
to learning**



New business model: AI smart learning tablet + AI data supervisor

Chinese Market

Smart learning tablets only: Industry average

3131 (10% retention rate after 3 months)

Squirrel Ai smart learning tablet + AI data supervisor:

3939 (90% retention rate after 3 months)

An educator's responsibility should shift from simply teaching, in the traditional sense to using AI systems, to help students learn through big data



The **Squirrel Ai** system is **free**
for children from families in
the bottom **20%** of the income
distribution



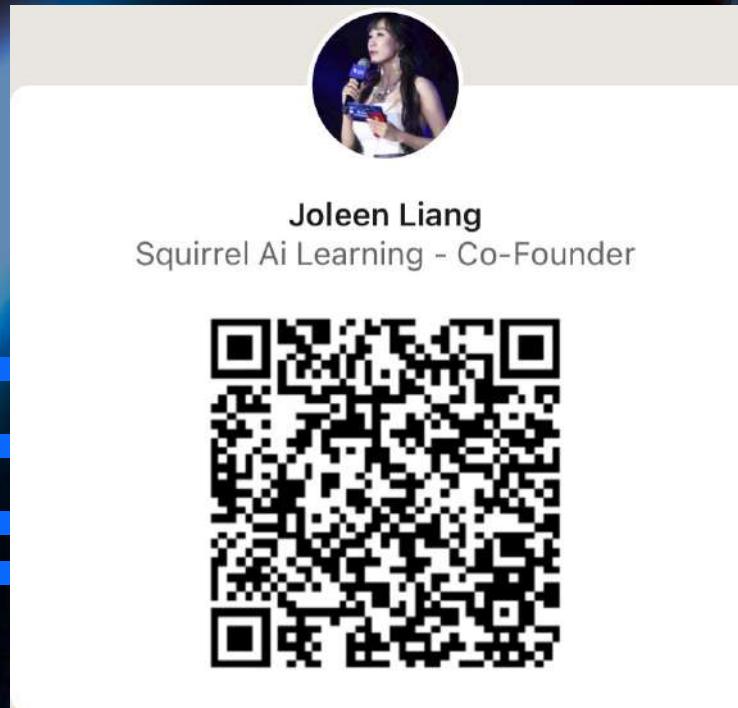
10

years of



Squirrel Ai
Learning

Resolute in our pursuit of
intelligent education by Large Adaptive Model
Resolute in our goal of
providing every child with the best AI virtual teacher



Every Kid deserves a one- to- one AI superior teacher