北京師範大學
BEIJING NORMAL UNIVERSITY

China's Path to Achieving AIED: Policy and Practice

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Chinese Policy: Overall Aim

In November 2021, the Office of the Central Cyberspace Affairs Commission issued *the Action Plan for* ***Enhancing Digital Literacy and Skills of the Whole People***.



The Action Plan clearly identifies "**enriching the supply of high-quality digital resources**" and "**establishing a lifelong digital learning system**" as the critical tasks for enhancing the digital literacy and skills of the whole people. And it also set up six key projects, including the "**Integration of Digital Production and Digital Education**" and "**Cultivation of High-level Digital Talents**".

Chinese Policy: Specific Protection

The Cyberspace Administration of China and other four departments issued the *Regulations on the Administration of Algorithmic Recommendation of Internet Information Services*

2022.1

The provision aims to regulate the activities of algorithmic recommendation of Internet information services, which specifies the **information service norms** of algorithmic recommendation service providers as well as **the requirements for the protection of users' rights and interests**, and safeguards the citizens' **right to algorithmic knowledge and algorithmic choice**, etc.

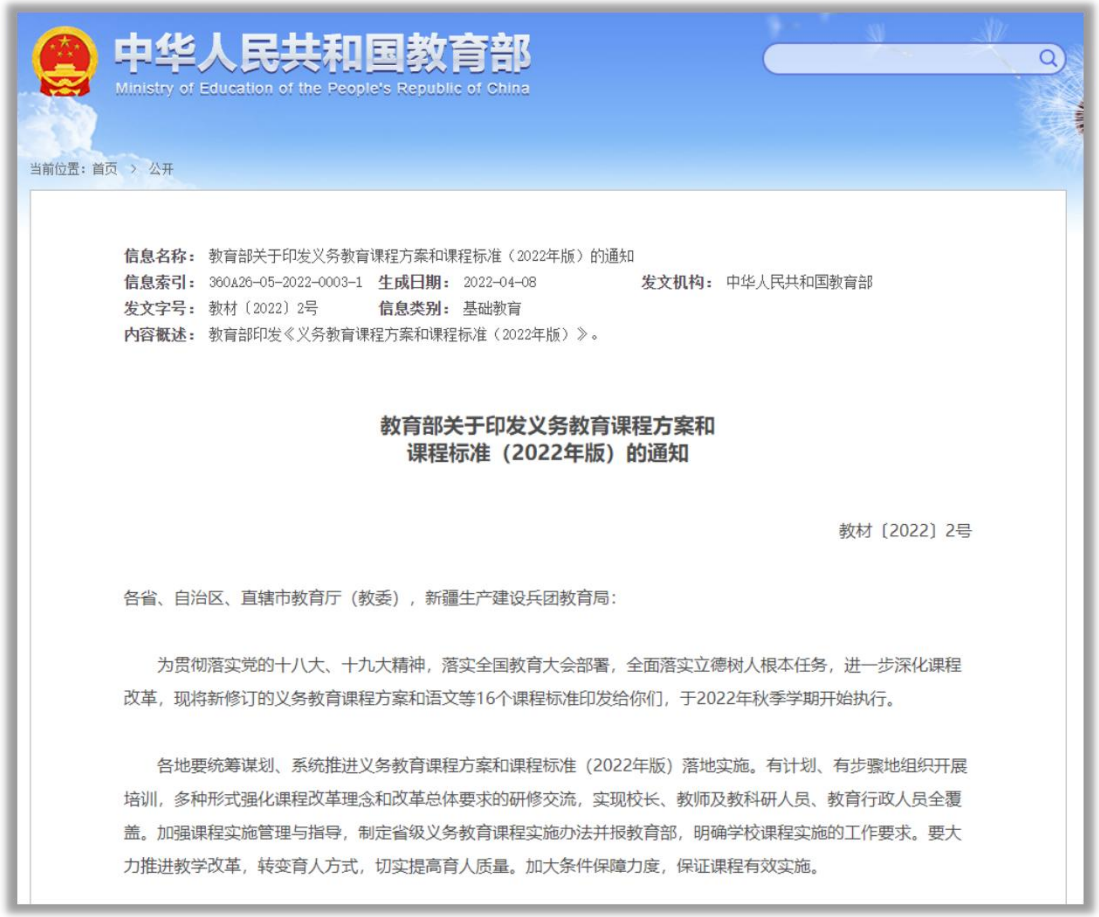
The Cyberspace Administration of China and seven other departments jointly announced the *Interim Measures for the Management of Generative Artificial Intelligence Services*

2023.7

The measures aim to promote the healthy development and standardized application of generative artificial intelligence, clarify the requirements for **training data processing activities and data labeling**, etc., and make it clear that generative AI service providers should take effective measures to **prevent underage users from overly relying on or becoming addicted to generative artificial intelligence services**.

Chinese Policy: AI in Education

The Chinese Ministry of Education issued the *Compulsory Education Curriculum Program and Curriculum Standards (2022 Edition)* in April 2022.



中华人民共和国教育部
Ministry of Education of the People's Republic of China

当前位置：首页 > 公开

信息名称：教育部关于印发义务教育课程方案和课程标准（2022年版）的通知
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教育部关于印发义务教育课程方案和课程标准（2022年版）的通知

教材〔2022〕2号

各省、自治区、直辖市教育厅（教委），新疆生产建设兵团教育局：

为贯彻落实党的十八大、十九大精神，落实全国教育大会部署，全面落实立德树人根本任务，进一步深化课程改革，现将新修订的义务教育课程方案和语文等16个课程标准印发给你们，于2022年秋季学期开始执行。

各地要统筹谋划、系统推进义务教育课程方案和课程标准（2022年版）落地实施。有计划、有步骤地组织开展培训，多种形式强化课程改革理念和改革总体要求的研修交流，实现校长、教师及教科研人员、教育行政人员全覆盖。加强课程实施管理与指导，制定省级义务教育课程实施办法并报教育部，明确学校课程实施的工作要求。要大力推进教学改革，转变育人方式，切实提高育人质量。加大条件保障力度，保证课程有效实施。

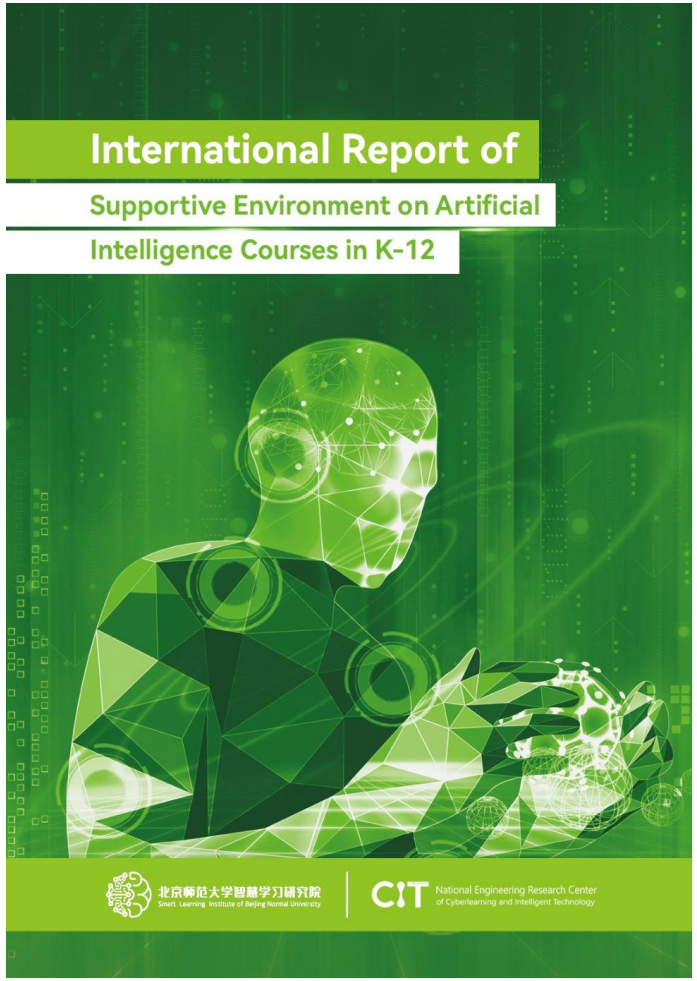
With the release of the new standards, the Ministry of Education officially **renamed "information technology" to "information science and technology"** as part of the national curriculum. It clearly indicates that the related curriculum needs to complete four major shifts which are from **"operation-oriented" to "science-oriented"**, from **"knowledge-oriented" to "literacy-oriented"**, from **"elite-oriented" to "public-oriented"**, and form "**urban-oriented" to "full-oriented"**.

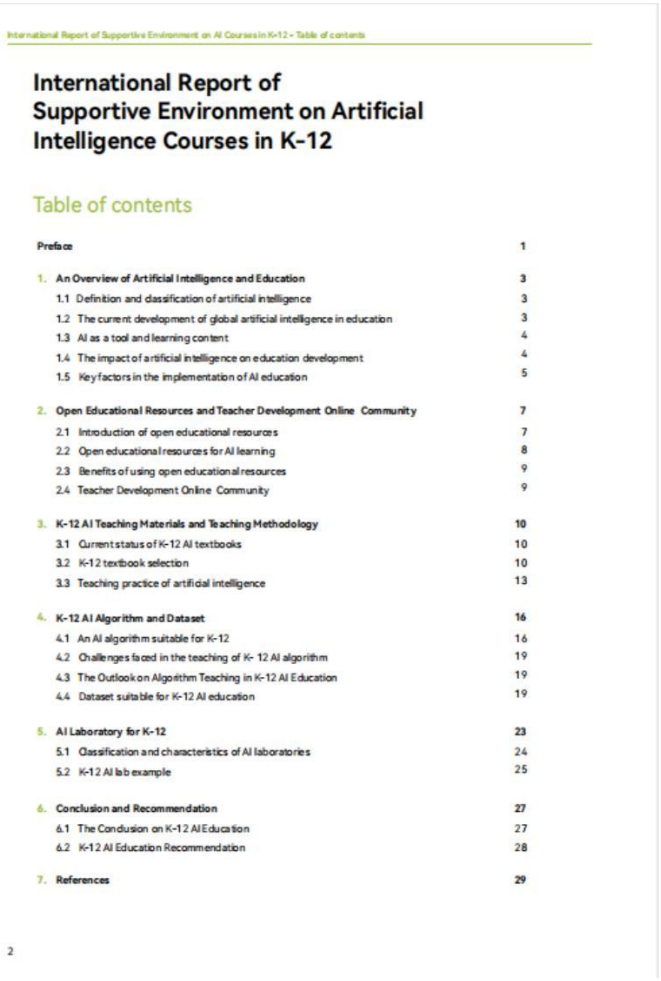
Chinese Policy: AI in Education

The curriculum is designed around six logical lines, namely **data, algorithm, network, information processing, information security and artificial intelligence**, with which to shape content modules for the whole period of compulsory education and to organize the curriculum content in such a way as to present **gradual progress** and **spiral development**.



Chinese Practice: The Supportive Environment of AIED





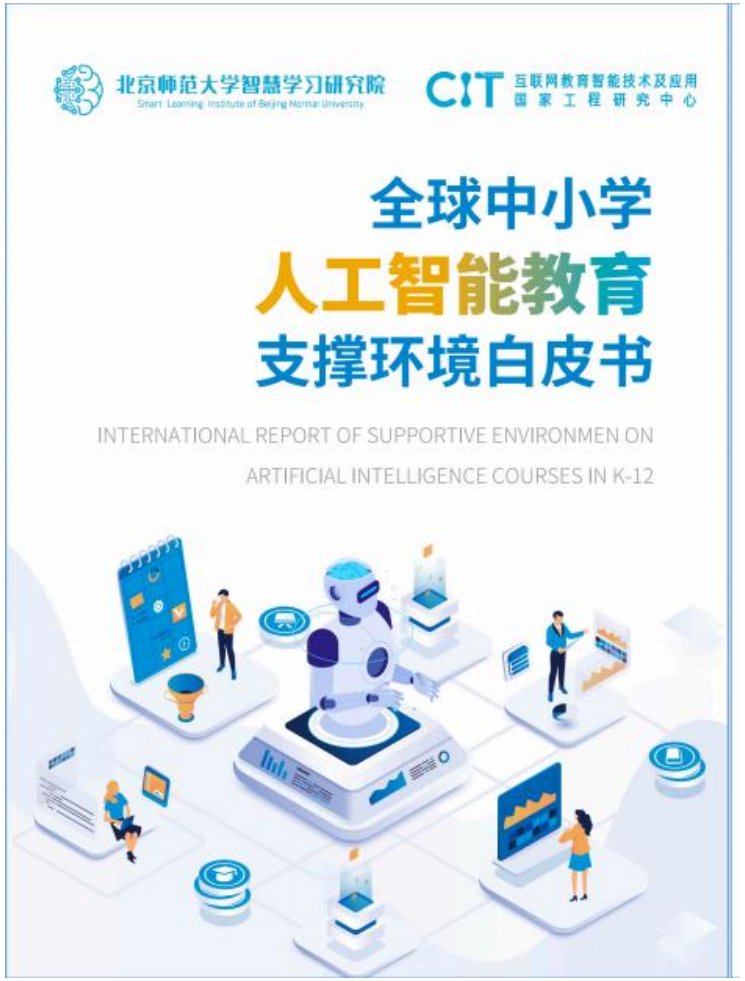
International Report of Supportive Environment on AI Courses in K-12 - Table of contents

International Report of Supportive Environment on Artificial Intelligence Courses in K-12

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2



Chinese Practice: Five Key Elements

AI Textbook

Open Educational Resources for AI



Open-source Algorithms, Tools, and Datasets

Teacher Development Online Community

AI Laboratory

AI Textbooks

Selection Principles for AI Textbooks

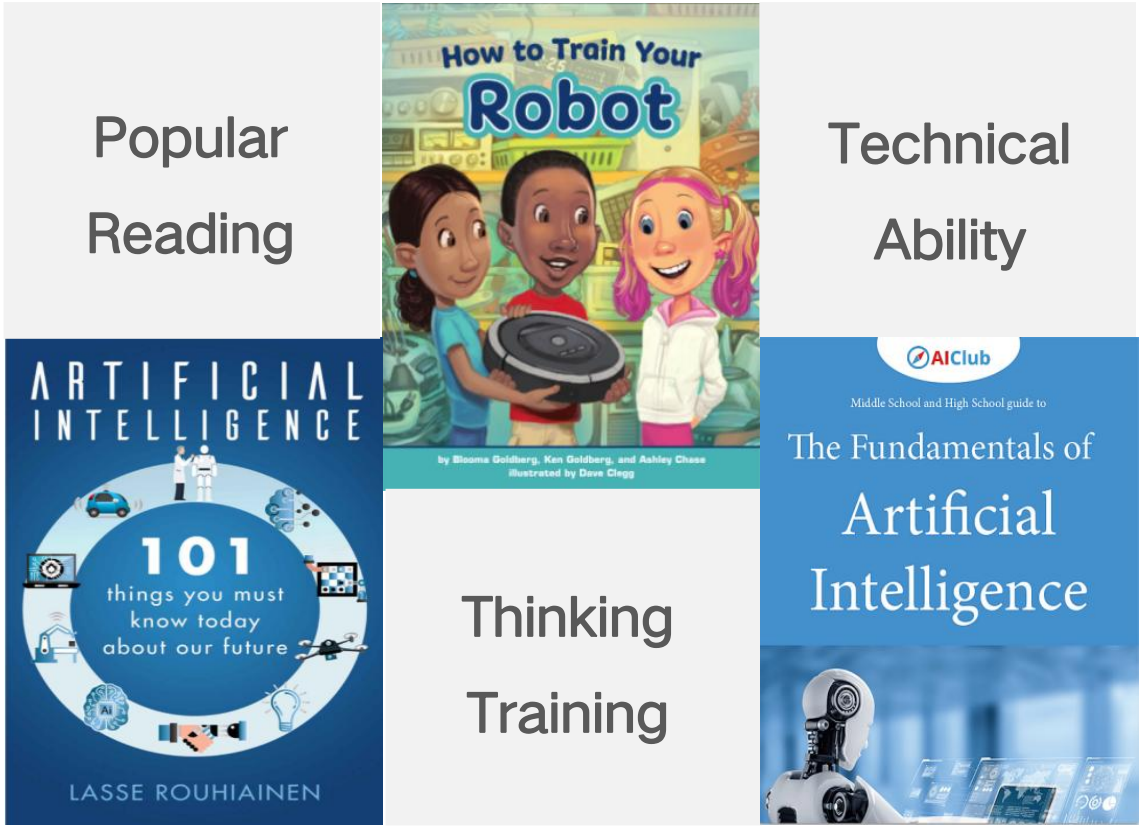
01 Cultivate children with good morality

02 Inspire AI thinking and creativity

03 Adapt to the children's age, development, and understanding

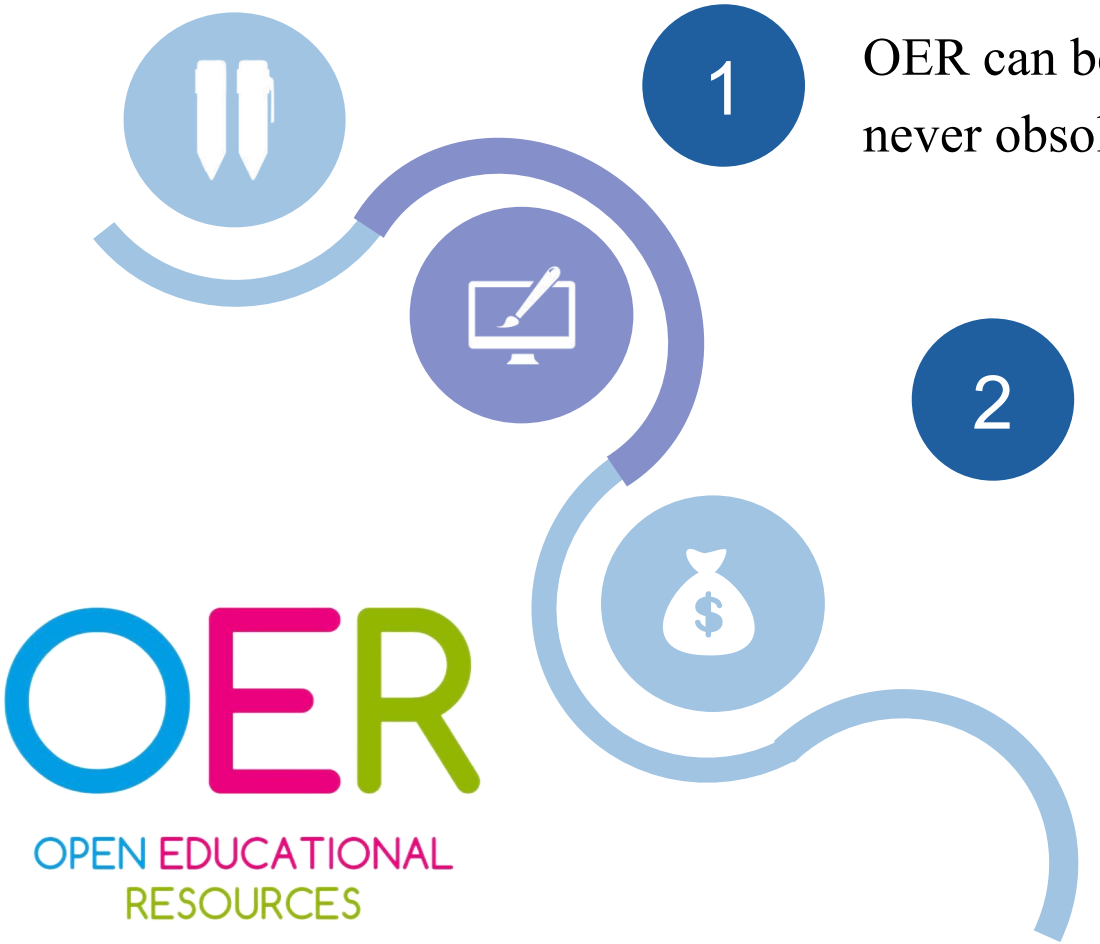
04 Provide useful information under the current trends

05 Suitable for repeated reading



The examples of AI Textbooks for the distinct age levels of children and teenagers.

Open Educational Resources for AI



1. OER can be constantly updated, adjusted and improved, which are never obsolete.

2. The cost of setting up AI workstations and learning materials is usually high. OER aims to make high-quality, free online materials that directly reply to the cost question.

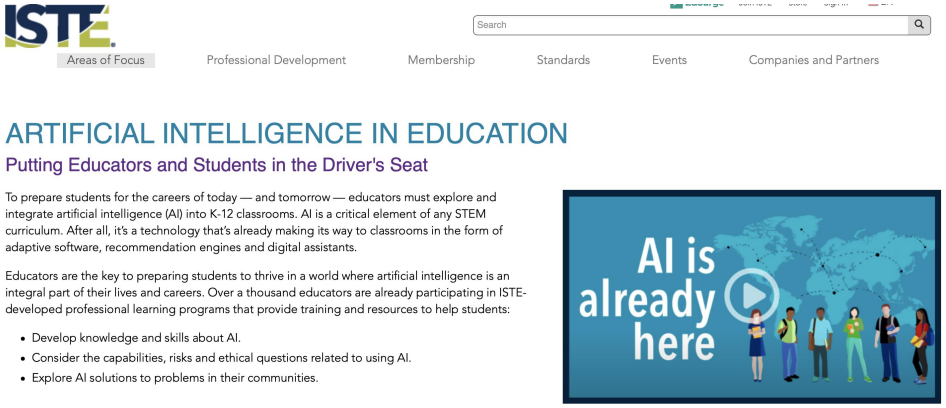
3. ORE are available at minimum (or no) costs, with minimal access barriers, which provide a playing field for students to prepare for future life.

Teacher Development Online Communities

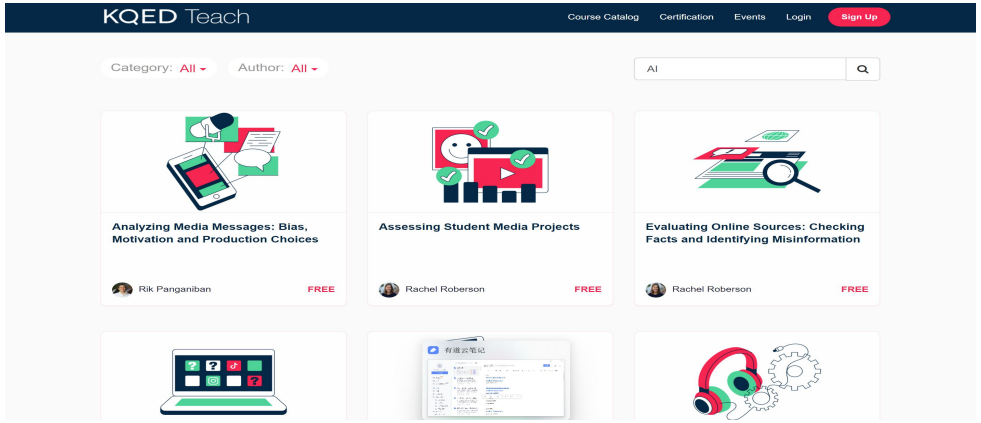
Youth AI Innovation Initiatives



International Society for Technology in Education (ISTE)



KQED Teach

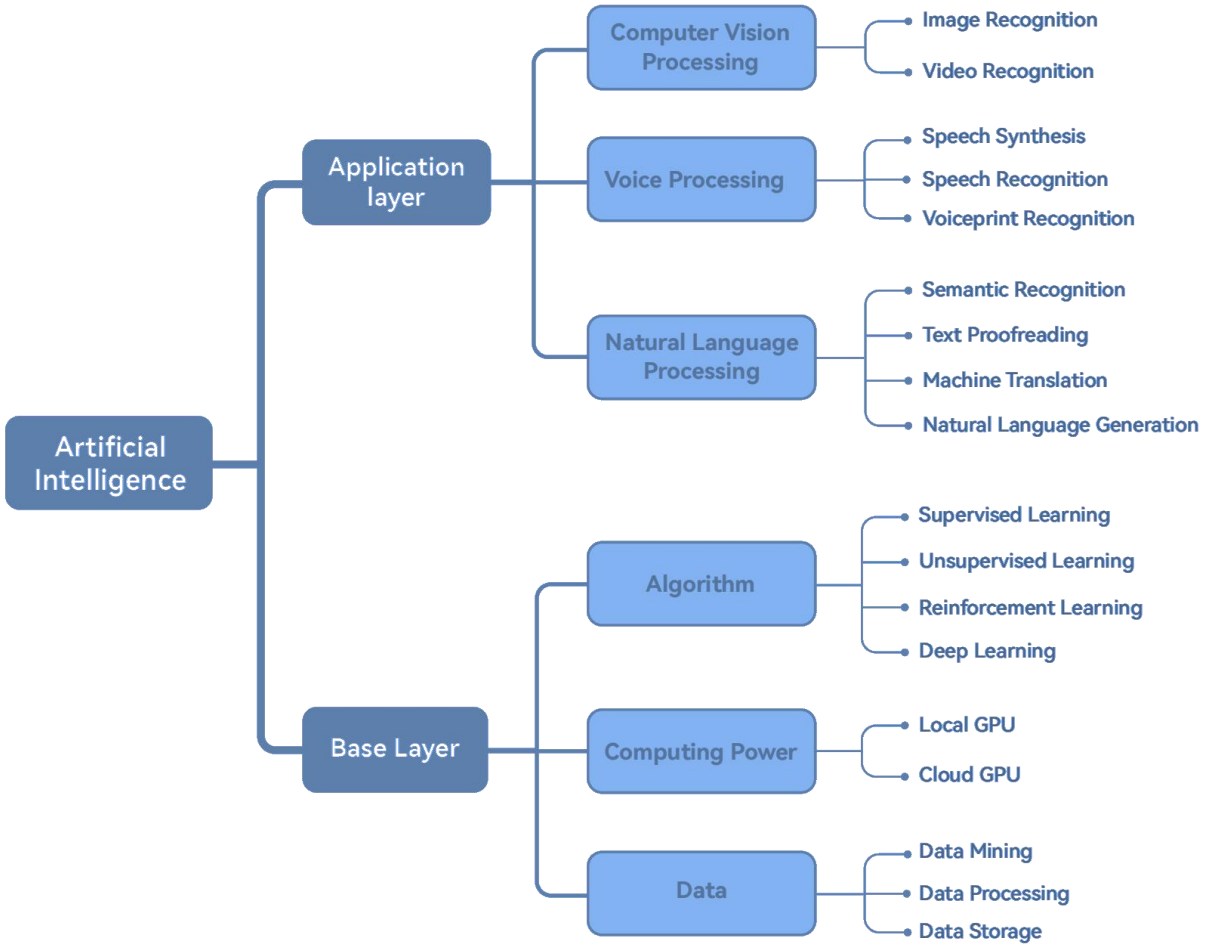


AI for Teachers

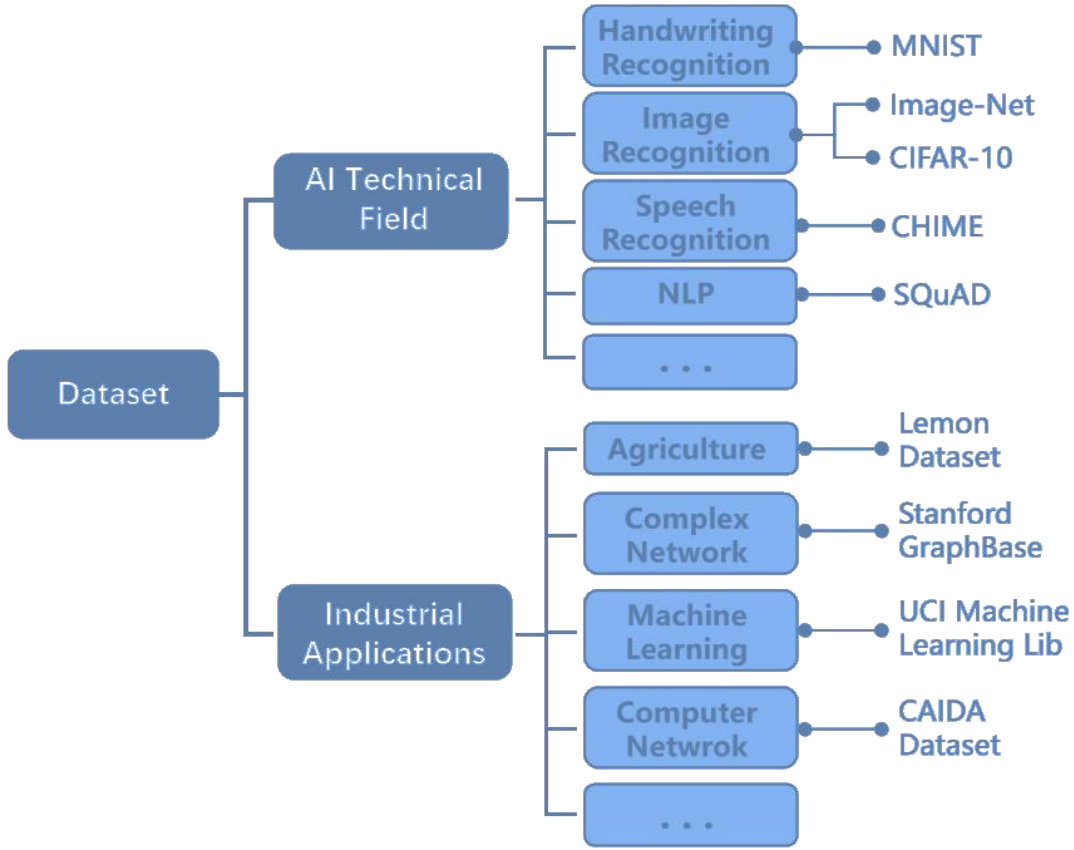


Algorithm and Dataset

Examples of core technologies and algorithms of AI.

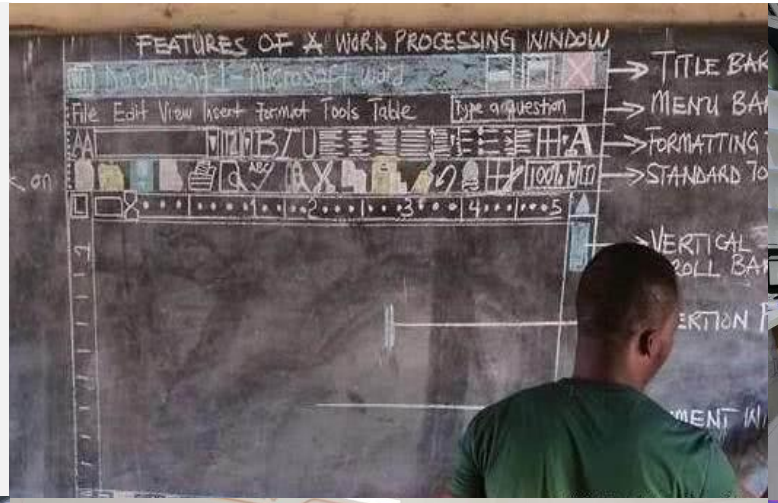


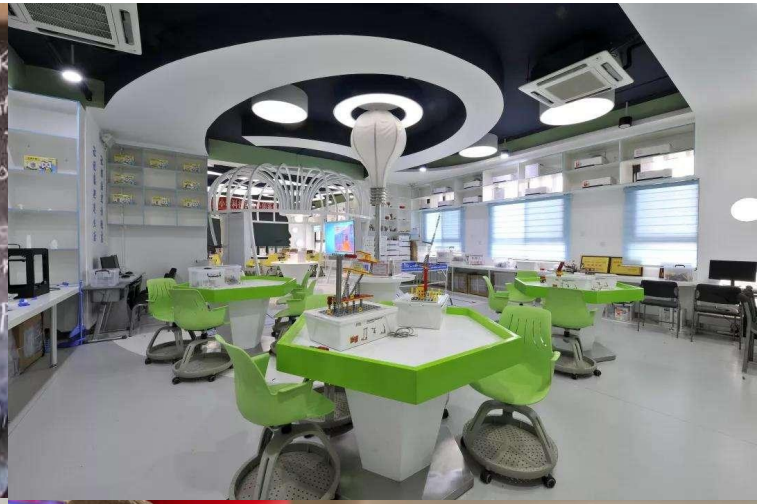
Typical datasets in AI education and development.



AI Laboratory for K12

AI experimental environment：economic, standard, and advanced. Different experimental environments correspond to distinct learning groups as needed.



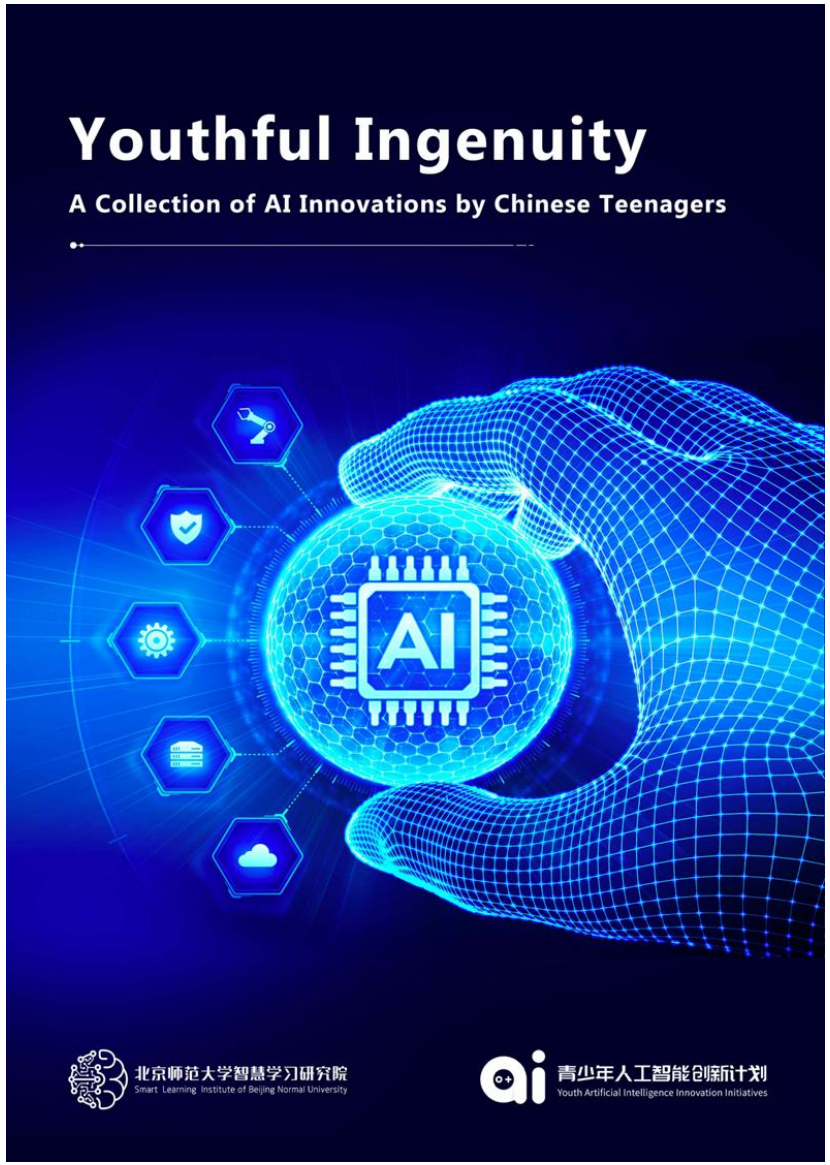








Chinese Practice: AI Program Cases for Youth



Scope

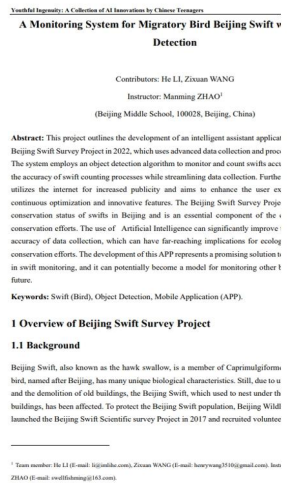
Students from all types and levels of secondary schools

Content

Youth projects that utilize artificial intelligence to originate and innovate algorithms to **solve real-world problems**

Cases

- A Monitoring System for Migratory Bird Beijing Swift with Object Detection
- A Rotor Fault Detection System Based on Nonlinear and Dynamic Response
- ……


Youthful Ingenuity: A Collection of AI Innovations by Chinese Teenagers

A Monitoring System for Migratory Bird Beijing Swift with Object Detection

Contributors: He LI, Zixuan WANG

Instructor: Manming ZHAO[1]

(Beijing Middle School, 100028, Beijing, China)

Abstract: This project outlines the development of an intelligent assistant applicat Beijing Swift Survey Project in 2022, which uses advanced data collection and proc The system employs an object detection algorithm to monitor and count swifts acc the accuracy of swift counting processes while streamlining data collection. Furthe utilizes the internet for increased publicity and aims to enhance the user ex continuous optimization and innovative features. The Beijing Swift Survey Proje conservation status of swifts in Beijing and is an essential component of the conservation efforts. The use of Artificial Intelligence can significantly improve accuracy of data collection, which can have far-reaching implications for ecolog conservation efforts. The development of this APP represents a promising solution in swift monitoring, and it can potentially become a model for monitoring other future.

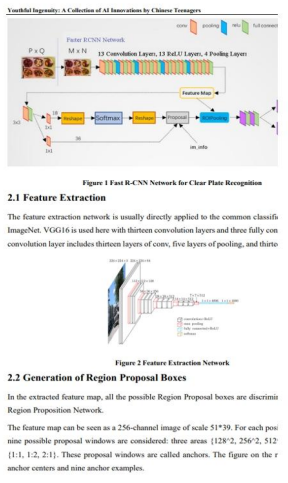
Keywords: Swift (Bird), Object Detection, Mobile Application (APP).

1 Overview of Beijing Swift Survey Project

1.1 Background

Beijing Swift, also known as the hawk swallow, is a member of Caprimulgiform bird, named after Beijing, has many unique biological characteristics. Still, due to u and the demolition of old buildings, the Beijing Swift, which used to nest under th buildings, has been affected. To protect the Beijing Swift population, Beijing Wildl launched the Beijing Swift Scientific survey Project in 2017 and recruited volunte

[1] Team member: He LI (E-mail: li@middle.com), Zixuan WANG (E-mail: honeywang3510@gmail.com). Inst ZHAO (E-mail: swiftfishming@163.com).


Youthful Ingenuity: A Collection of AI Innovations by Chinese Teenagers

Faster RCNN Network

13 Convolution Layers, 13 ReLU Layers, 4 Pooling Layers

Feature Map

Softmax

Figure 1 Fast R-CNN Network for Clear Plate Recognition

2.1 Feature Extraction

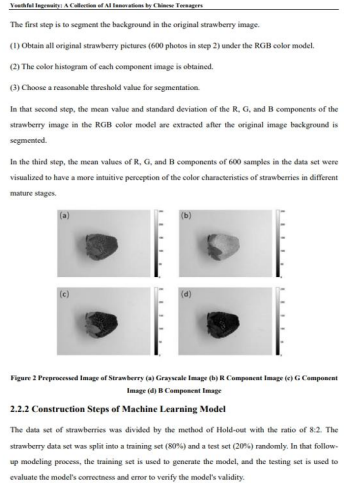
The feature extraction network is usually directly applied to the common classifi ImageNet, VGG16 is used here with thirteen convolution layers and three fully con convolution layer includes thirteen layers of conv, five layers of pooling, and thirte

Figure 2 Feature Extraction Network

2.2 Generation of Region Proposal Boxes

In the extracted feature map, all the possible Region Proposal boxes are discrimin Region Proposition Network.

The feature map can be seen as a 256-channel image of scale 51*39. For each pos nine possible proposal windows are considered: three areas {128^2, 256^2, 512 {1:1, 1:2, 2:1}. These proposal windows are called anchors. The figure on the r anchor centers and nine anchor examples.


Youthful Ingenuity: A Collection of AI Innovations by Chinese Teenagers

The first step is to segment the background in the original strawberry image.

(1) Obtain all original strawberry pictures (600 photos in step 2) under the RGB color model.

(2) The color histogram of each component image is obtained.

(3) Choose a reasonable threshold value for segmentation.

In that second step, the mean value and standard deviation of the R, G, and B components of the strawberry image in the RGB color model are extracted after the original image background is segmented.

In the third step, the mean values of R, G, and B components of 600 samples in the data set were visualized to have a more intuitive perception of the color characteristics of strawberries in different mature stages.

Figure 2 Preprocessed Image of Strawberry (a) Grayscale Image (b) R Component Image (c) G Component Image (d) B Component Image

2.2.2 Construction Steps of Machine Learning Model

The data set of strawberries was divided by the method of Hold-out with the ratio of 8:2. The strawberry data set was split into a training set (80%) and a test set (20%) randomly. In that follow-up modeling process, the training set is used to generate the model, and the testing set is used to evaluate the model's correctness and error to verify the model's validity.

Chinese Practice: Large Model Focus Group

Number	Company	Large Model	Type
1	Shanghai AI Laboratory	ShuSheng	General
2	Baidu	ERNIEbot	General
3	AliCloud	Tongyi Qianwen	General
4	iFLYTEK	IFlytek Spark	General
5	360	360Quake	General
6	Huawei	Pangu-Weather	Industrial
7	China Mobile	Jiutian	Communicational
…	…	…	…

On July 7, 2023, the *2023 World Conference on Artificial Intelligence* was held in Shanghai. At the meeting, the National Overall Group for Artificial Intelligence Standardization formally announced the establishment of the Large Model Focus Group, and the work on national standards for large models was officially launched.

Chinese Practice: Large Model of Education

Number	Company	Large Model	Province
1	TAL	MathGPT	Beijing
2	East China Normal University	EmoGPT, EduChat	Shanghai
3	Beijing Language and Culture University	Taoli	Beijing
4	Youdao	Hi Echo	Beijing
5	Qingrui Intelligent	ArynGPT	Suzhou, Jiangsu
6	Kidswant	KidsGPT	Nanjing, Jiangsu
7	Homework Help	Galaxy	Guangzhou, Guangdong
8	Wuhan University	CheeseChat	Wuhan, Hubei
…	…	…	…

Technical Assistance Project for Education in Cambodia

Development of Textbook and Resource System

Development of Cambodian senior high's Information Technology textbook and corresponding digital resource system.



Construction of the Educational Data Center

To build a national education data computing and storage center for Cambodia, and to build a comprehensive educational service platform integrating learning and resource sharing.



Development of the Digital Examination Resources

Development of digital resources to support knowledge learning in the five compulsory basic subjects of the Cambodian national examination, and to assist in the reform of Cambodian national examination.



Technical Assistance Project for Education in Cambodia

2022.11 — Analysis, investigation and sample chapter writing

2023.3 — Outline and first draft preparation stage

2023.7 — Streamlining, revision, review, translation

Main tasks:

- ✓ analysis of the curriculum, online research on the Cambodian situation, preparation for the first draft of lesson 1 and sample chapters for lesson 10, 11 and 12.
- ✓ complete the outline and first draft of the teaching materials, seek for the Cambodian revision opinions and convene a seminar.
- ✓ complete the final streamlining, revision, review, and translation job.





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Thanks

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