LEAPER IB-AI Tools

## Realistic Feature Generation

Low-requirement high-quality feature-generation for industrial needs

LEAPER IntelliBlink™-AI (IB-AI) is comprehensive and reliable deep learning system, integrating efficient and fast feature generation. It does not rely on a large volume of feature samples nor require continuous investment. Focusing on the complex and urgent application scenarios of industrial clients, and quickly provides defect detection solutions.

Integrate Intelliblink™ Vision Tools for Complete Solutions

LEAPER IB-AI strengthens the integration of deep learning and traditional vision algorithms, establishing a smooth data path. Without extensive sample collection and annotation, it can quickly adapt to changing detection standards and occasional detection issues. It eliminates the need for long-term custom development, reducing research and development costs while improving the cost-effectiveness of products.

Cold Start from One Image
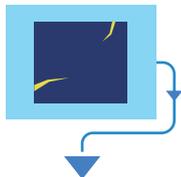
Generate a massive amount of trainable features with only a few original samples.

Suitable for Multiple Industrial Sectors

The breakthrough feature generation algorithm can be applied in various industrial products.

Significantly Improve Accuracy

Generated results are realistic, leading to higher accuracy of deep learning models.

Seamless Algorithm Integration
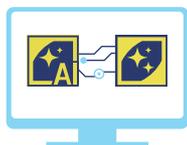
Flexibly combines deep learning with traditional algorithms, aggregating efforts to facilitate solution implementation.

User   **unique source for generation**

High-quality model   **Training**

Massive Feature Generation
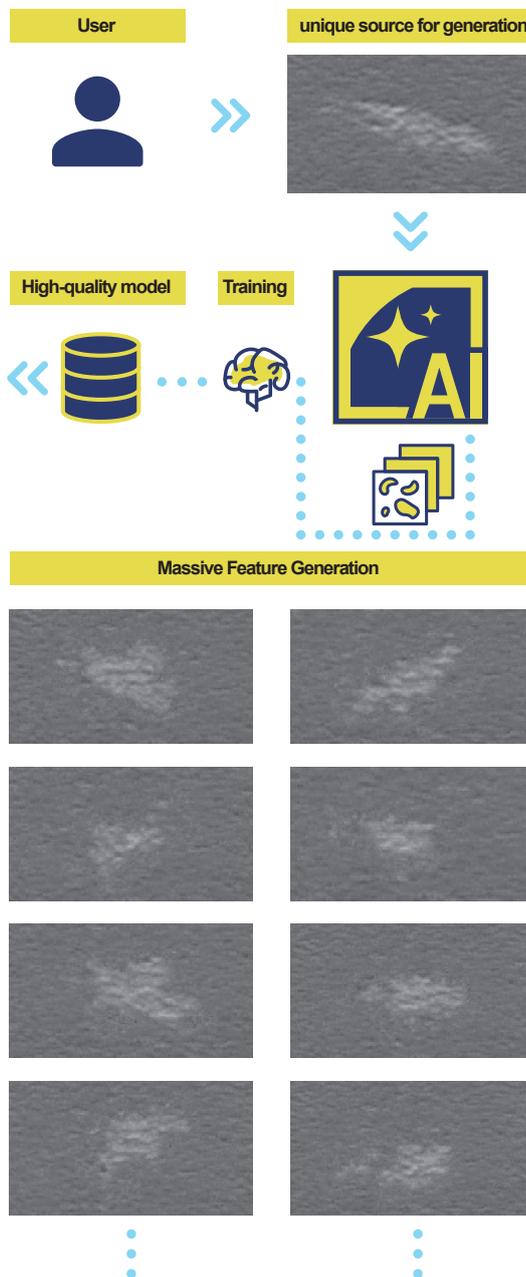
Technology Comparison

	Leaper Feature Generation	Traditional Data Augmentation	Pre-training Data Augmentation
Description	Only a very small number of samples are needed.It takes into account the specificity of industrial products and product defects, generates results with high realistic appearance.	Basic image operations: panning, scaling, cropping, distortion, brightness, flipping, etc. Images do not change intrinsically and are of limited use for the training results.	Sample generation using adversarial neural networks. The images need to be pre-trained with a public gallery such as Microsoft Coco.Generated results are not suitable for industrial use.
Reality	High	Low	Meaningless
Increment	10,000*	10*	1,000*

Diversity of Generated Results
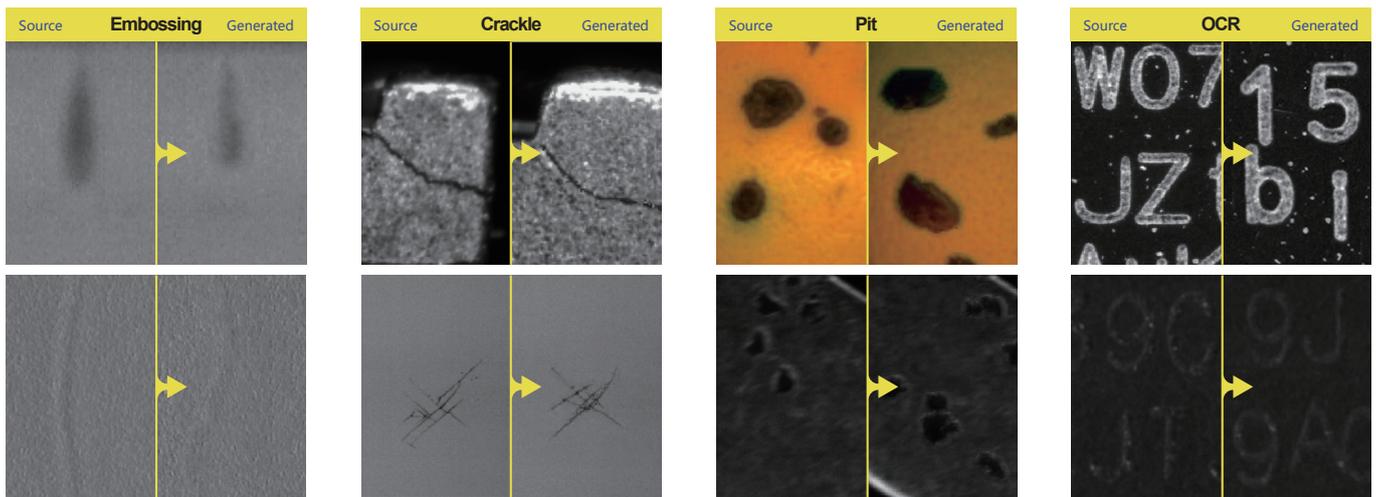
Authenticity of Feature Generation

Sources	Generated	Accuracy			
			Accuracy	Miss Detection	False Detection	Total
		Total	99.98%		12	10032
		Characters	99.989%	10	5	141120
		N	100%	0	0	10032
		D	100%	0	0	10032
		0	99.9918%	0	3	36566
		1	99.9919%	0	2	24599
		2	100%	0	0	16820
		3	99.9664%	5	0	14887
		4	100%	0	0	4441
		5	99.9271%	2	0	2743
		6	99.9082%	3	0	3266
		7	100%	0	0	3003
		8	100%	0	0	2487
		9	100%	0	0	12207

Augmentation： Use what you see

1. Further increasing the diversity of training samples based on feature generation.

Sources	Generated	Augmentation
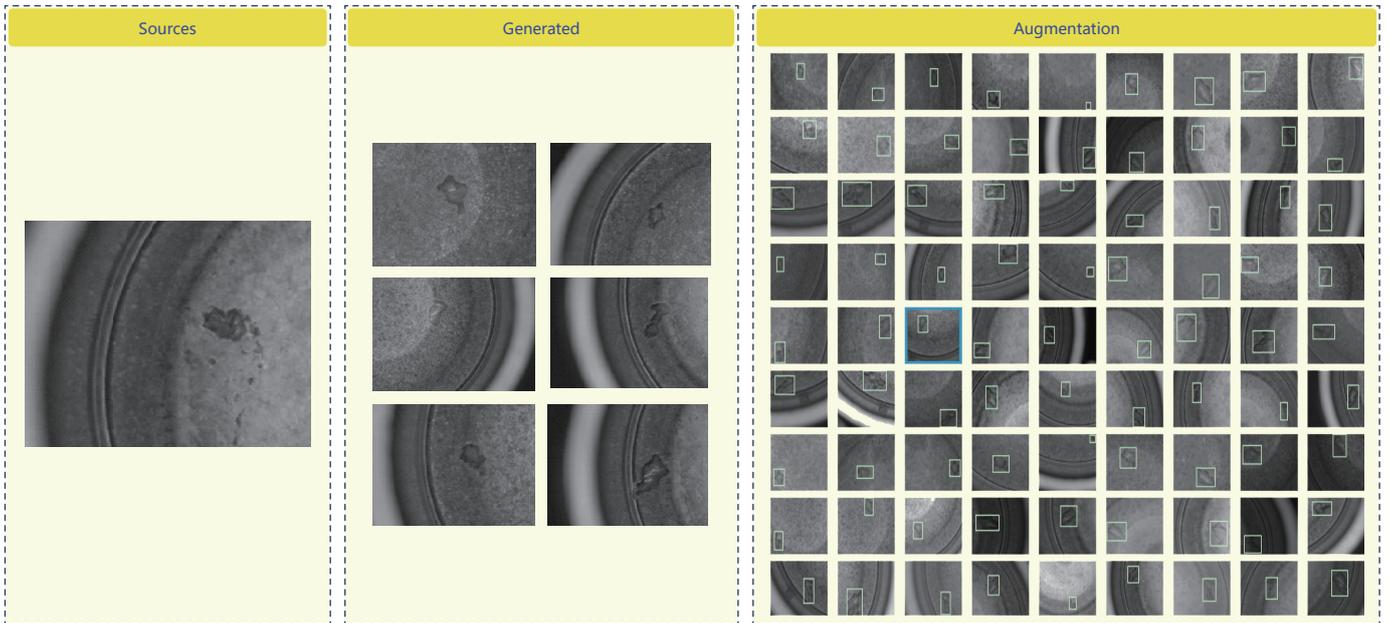
2. Visual display of training pictures to improve the controllability of training results.
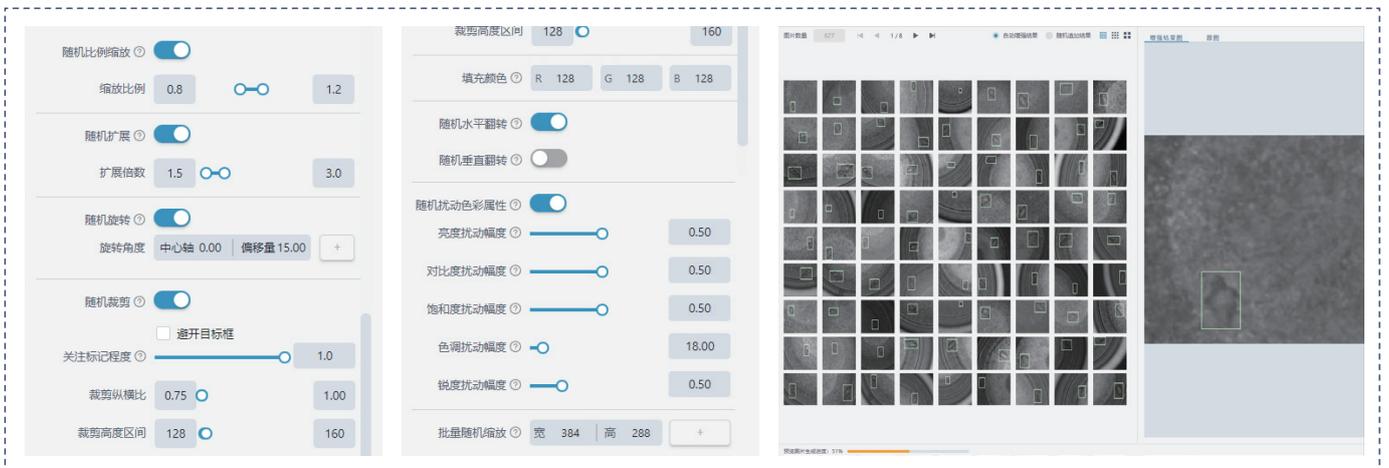
**3.** Preview augmentation results and adjust parameters real-time to optimize data actually used in training.

Before	After

Integration of Traditional and Deep Learning Algorithms

Combination of Traditional and Deep Learning Algorithms		**Condition changed** Intelliblink™ pre-processing algorithms can ensure image consistency.	**Deep Learning Detecting**	**Standard changed** Intelliblink™ post-processing algorithms ensure adaption to different detection standards.	
Using Only Traditional Algorithms	Outdated Algorithm	When detection conditions, or detection standards change.	Engineers need to continuously customize and develop new algorithms.		
Using Only Deep Learning Algorithms	Outdated Model	When detection conditions, or detection standards change.	Engineers needs to re-label samples and train new models.		

Application of the Leaper IB-AI Integretion in the Detection Workflow

Intelliblink™ Pre-processing of Sample Images

Data Synchronization Tools

AI Platform of Sample Labeling, Generation, and Training

Labeling

Generation

Training

Intelliblink™ Model Execution and Result Validation

Data Synchronization Tools