Multi-Sensory Predictive Maintenance with NO Deep Learning & NO GPUs

WildAI – Patented Technology

Video Analytics

Sound Analytics

Smell Analytics

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WildAI On-The-Move

Autonomous Operation with WildAI^{TM}

Autonomous Operation

WildFaces' multi-sensory based **WildAI** technology utilizes IoT sensors aiming to automate & offload numerous repetitive, time-consuming & manual monitoring activities. It can empower various Industries to maintain a safer, cost-effective & efficient operation

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Maintenance Pain Points

Many customers have been asking us if they can use our AI to automate their manual equipment maintenance procedures due to the following reasons:

- Severe shortage of general workers including inspectors

- High shortage of experienced maintenance workers

- Very short available time for carrying out daily maintenance work (e.g. Metros)

- High Risk maintenance activities raise Safety concerns (e.g. Elevator inspectors)

- Use AI to reduce time and costs replacing current human maintenance processes
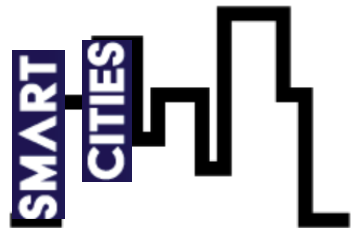
About WildFaces

a spin-off of 23 years old, iOmniscient, a multi-sensory AI company (visual, sound and smell analytics)

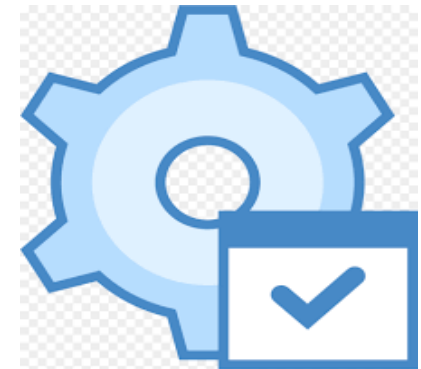**WildFaces.ai** — WildAI On-The-Move ➕ **Q iOmniscient**

300+ AI Use Cases derived from 70 international patents to automate expensive & time-consuming manual process.

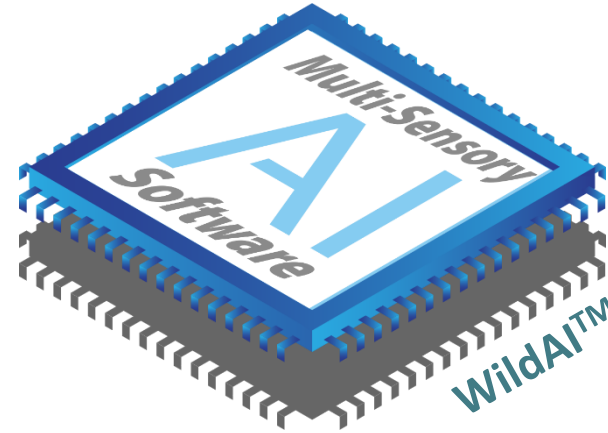Company's AI Technologies have been successfully deployed in **75+ smart cities**

Automation

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Who is WildFaces?

Multi-Sensory AI Software — WildAI™

Used By **75** Smart Cities

International **70 Patents** Patents

300+ Proven Use Cases

Top **Gartner's** Global list **3X**

MADE IN **Hong Kong** 香港

✓ **World's First & Patented technology for Moving IoTs (eg. Autonomous drone)**

✓ **Owns core AI Algorithms;**

✓ **Expandable to cover comprehensive industry use cases**

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Trusted by public sector clients

Successfully delivered projects for:

and more...

Penetrating the private sector

Engaged for proof-of-concept projects & establishing strategic alliance with:


and more..

Successful Deployments

- **Highly Trusted by Public Sector**

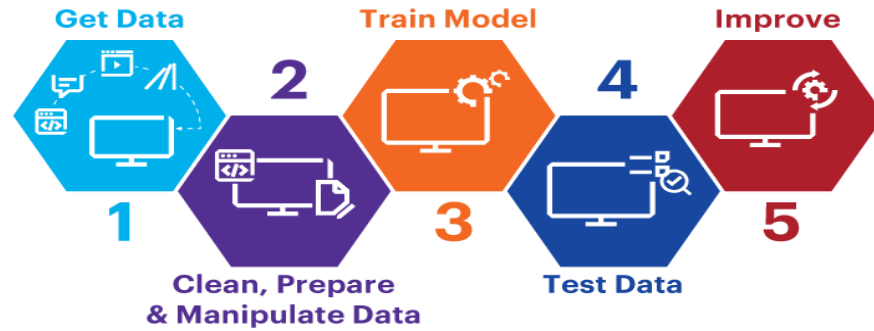- **Able to achieve their high Accuracy & Privacy Requirements**

Does AI = Deep Learning?

- Deep Learning becomes ineffective when datasets are unavailable or limited in Maintenance arena. It is impractical to wait for years for the machine to breakdown to get the appropriate datasets for deep learning purpose.

- Endless Data Annotation Exercise: Deep Learning becomes too expensive. The cost of training a single large AI model with large dataset can be as high as US$30 million. See this report.

- Deep Learning is reaching its computational limits. Refer to another report

- Deep Learning represents the memory function that lacks of capability in solving complex real life problems
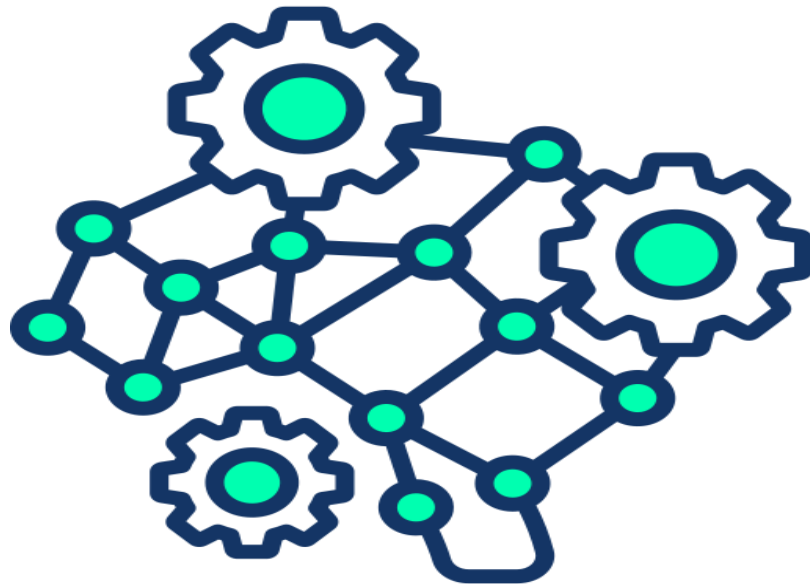
❑ NO or Unavailable Datasets
❑ Labor-Intensive Data Annotation
❑ High Computation

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WildFaces' Unique AI Approach (see video)

Comparison	Deep Learning Process	WildAI™ (Intuitive AI) Process
1	Requires good quality images with sufficient #/types of samples. Eg. 10,000 to 50,000 images per object type to return a reasonable result **Massive**	Ready Algorithm ingests realistic/ low resolution video & automatically decode the video into frame by frame images. **Auto**
2	massive manual data annotation processes. E.g. image selection, cleaning & cropping **Massive**	Ready Algorithm to select, crop, detect & classify target images/section automatically in the video. **Auto**
3	Massive data training of at least 10,000 – 50,000 images are required for each type of Deep Learning engines **50,000**	Proprietary QUICK Training engine requires only 30 datasets **<30**
4	repeat ALL the above steps if the camera view has changed **Massive**	Adaptable to any new camera view requires no re-training 90% of the cases. **Re-use**
5	Repeat all of the above steps to fine tune the system **Massive**	Just need to test different day & night data to make sure that the system can cope with realistic scene **Auto**

Sound Analytics

- **100+** Sounds (shouting, screaming, clapping, glass breaking, Gunshot including its Direction/ Location & etc)
- Maintenance issues related sounds include vibration, tires squeaky, flushing, water running, aircraft noise, engine acceleration, car backfired, vacuum cleaner, wind blowing, water dripping etc
- Can be trained to pick up any abnormal sound for maintenance purpose

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eNose – 6-dimensional sensors for Complex Smell

❏ **Infinite** number of Smells

Toxic Smell

Greasy Equipment

Press Esc to exit full screen

❏Can be trained to pick up new burning smell for maintenance purpose

eNose: https://youtu.be/dJy2MWgPQUE

Auto Reading of Odometer

1) Understand Meters' utilization at Driver Cab using camera based AI:

- When the train is running/stopping to understand its mileage
- Prolonged accelerated speed/slower speed or frequent stoppage
- Certain buttons are "on" most of the times
- Engine Overheating – with a specialized thermal camera

+ MORE…

2) Adding Sound Analytics can understand the followings:

- Smoothness of engine starting /stopping sound
- hiccups of the engine sounds
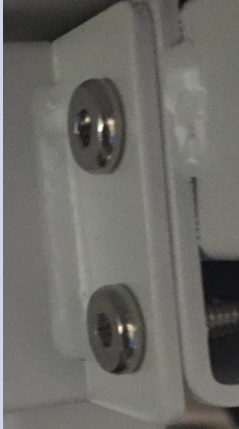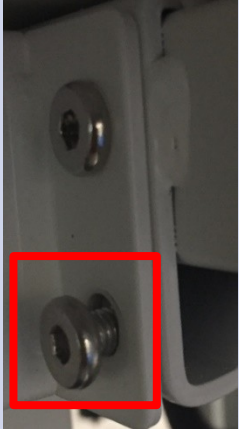- Abnormal engine sounds

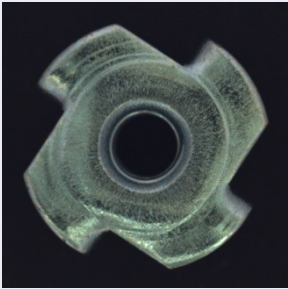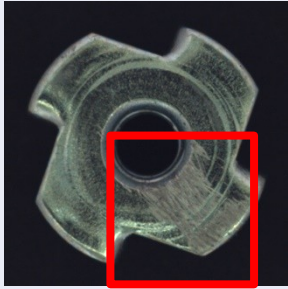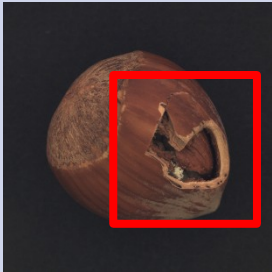WildFaces : **Smart Maintenance** https://youtu.be/Lv23HnYFIU0

NO Deep Learning NO Massive Data Annotation

- We can have the visual analytics software detect high, medium or low levels on the odometer and send an alarm if the threshold is higher or lower than normal.

- We can also draw multiple Areas of Interest (AOI) as depicted by the yellow polygons on the right image to detect more accurate readings of the odometer.

Visual AI - Anomaly Detection

Types	Normal	Abnormal
Loosen Screws		
Scratches		
Cracks		

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Comprehensive Visual AI Capabilities

- ☐ Meter Anomaly
- ☐ Overheating component
- ☐ Smoke/ Steam/ Vapor
- ☐ Black/ Cloudy Smoke
- ☐ Foreign Objects/ deformation
- ☐ Water Overflown/ flooding
- ☐ Any forms of cracks
- ☐ Defects/ signaling system

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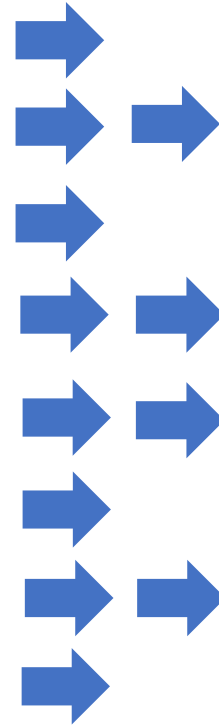
Predictive Maintenance

1. Compare current with historic data /images to understand the deterioration
2. No /insufficient historic data then it will be based on Expert opinion. Knowledge based library will be created based on experts opinion.

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Wide Industries Coverage

- **Building Maintenance:** Equipment involved can be escalators, elevators, HVAC etc. These will include Facility Management companies, service companies as well as the equipment manufacturers

- **Transportation Industry:** Road Signs, Traffic Control & Signaling equipment, and Railway related equipment that has a short repair and maintenance time

- **Utility Maintenance:** Equipment used throughout their utility plants

- **Construction Industry:** Equipment used during Construction Phase

- **Manufacturing plants** with heavy machinery

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See Live Demo at booth #B05

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