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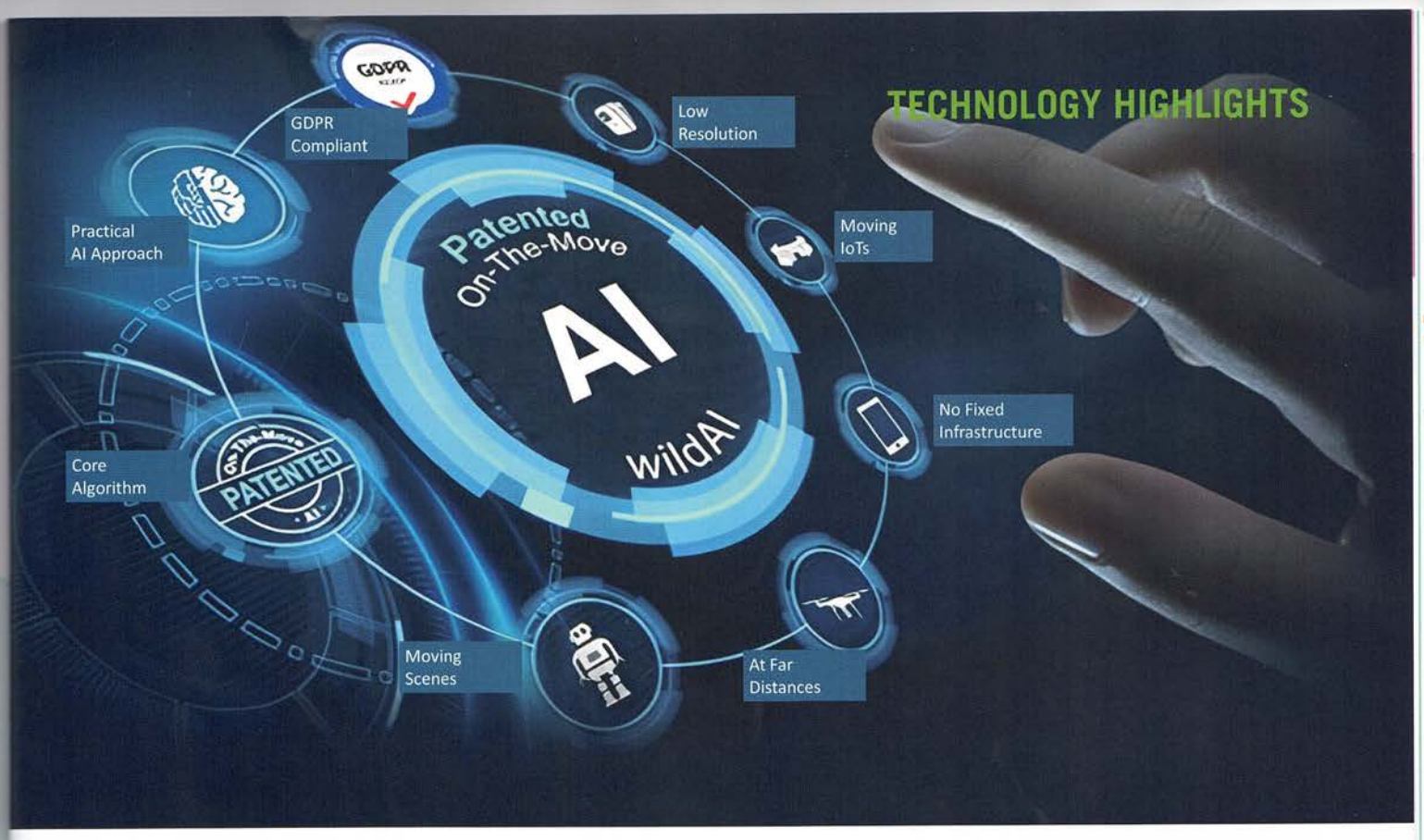
Employers' Federation of Hong Kong
香港僱主聯合會

CONNECT

Interview with Mrs Ayesha Macpherson Lau, BBS, JP, Chairman of the Mandatory Provident Fund Schemes Authority

Guangzhou's 130 Pilot Opening Measures to Boost Hong Kong Service Sector's GBA Opportunities

BEC Net-zero Carbon Charter – Collective Decarbonisation for Businesses



Is Artificial Intelligence equal to Deep Learning?

WildFaces

The current artificial intelligence (AI) market is flooded with providers and R&D developers using open-source libraries to develop their own AI solutions. Unfortunately, the suppliers of these open-source platforms (known as AI engines) tend to be interested in locking in users to their cloud service or hardware (e.g. GPU cards). What they offer to be black-boxes that cannot be easily modified or improved to meet specific objectives.

These open-source deep learning AI engines require large amounts of labelling and annotation which has nothing to do with AI. It is not feasible to expend such extensive labour-intensive effort in a high-cost economy like Hong Kong. Local companies cannot compete against companies from low-cost economies unless they can provide value added AI technologies.

Suppliers of AI solutions struggle to differentiate themselves. As they all rely on the same open-source platforms, their resulting models are very similar and only vary by the size and diversity of the data sets they use for training.

What is Deep Learning?

When an AI system is trained with thousands of images of dogs, it will recognise a dog when it has similar characteristics to all the other dogs in the data set. But what if a new type of dog that is not in the original data set turns up? The computer will fail to recognise it and the system will have to be retrained. Such training can be endless and very costly. This is how deep learning works, only emulating one of the human brain's capabilities. It assumes that humans solve problems in a single, overly simplified way. However, real life can be far more complex.

Consider a situation where deep learning would be ineffective. A manufacturer wishes to detect if his machinery is wearing down and requires maintenance. It normally takes many years for the machinery to break down. Therefore, it would have taken the manufacturer a century to obtain a few thousand images of the broken components, making deep learning infeasible.

Unlike deep learning systems which only draws on memory and experience to understand their surroundings, humans have a much more sophisticated arsenal of thinking capabilities which include:

- Memory and experience
- Deductive logic
- Creativity, inductive logic and intuition
- Multi-sensory perception (Using their eyes, ears, nose, taste and touch to understand the environment)
- Natural language communication
- Feelings and conscience

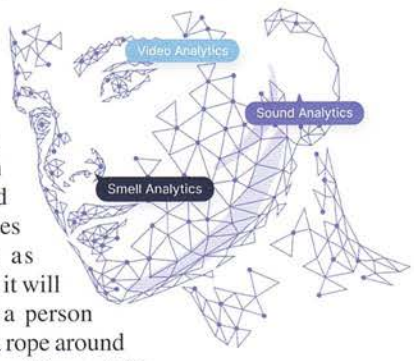
The key to good AI lies in replicating the sophistication of human thinking as much as is possible.

Many people believe (and most universities teach) that deep learning is synonymous with AI. This is not the case. WildFaces has pioneered the emulation of these more sophisticated thinking capabilities in systems that go beyond deep learning.

The First Smart Prison in Hong Kong

WildFaces has implemented the first Smart Prison in Hong Kong for pre-empting suicides. Many companies attempted to address this requirement with the use of a deep learning approach but failed due to the lack of adequate data sets (i.e. thousands of people committing suicide) to train their systems.

WildFaces was successful on this project as its technology emulated several other more sophisticated methods of thinking similar to those used by the human brain. The system used multiple diverse techniques simultaneously, just as humans do. For instance, it will know immediately that a person standing on a stool with a rope around his neck is at risk of committing suicide.

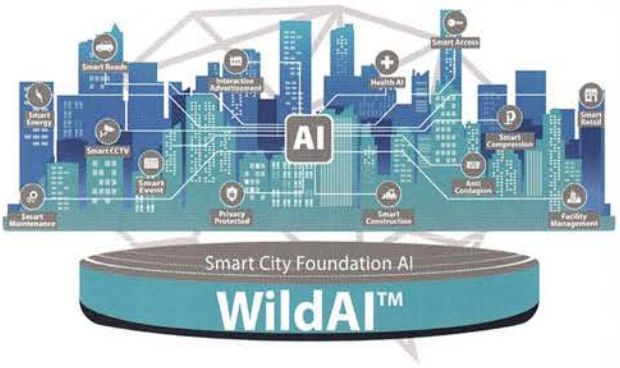


The technology used in the Smart Prison consists of a range of sensors for video, sound and smell analytics that work in combination to emulate the human eyes, ears and nose to understand what is happening in its surroundings. When the system sees a human fall down, it will autonomously locate the nearest appropriate responders and request them to go and help the person. If a gunshot is heard at the same time, the system will suggest caution as obviously the person was shot and someone had a gun.

Hong Kong – the silent powerhouse for Advanced AI

Unlike other AI companies who rely on open-source platforms and standard templates to build their AI models, all of WildFaces technology has been built in-house from the ground up. With over 70 international patents and a large portfolio of self-owned core technologies, the algorithms in WildFaces keep evolving and improving.

As little labelling and training is involved, applications can be implemented very quickly - in hours rather than months. The algorithms have been designed to be extremely computing light so no GPUs (which are expensive and extremely power-hungry) are required. Thus, the system can be implemented at a lower cost than a simple recording system. The reduced power requirement cuts the carbon footprint by a factor of up to 16 – making the system very sustainable as well.



From finding lost children at the world's largest theme park to securing the safety system for the high-speed rail in China, this disruptive AI technology brings Smart Cities to life. It will continue to outperform deep learning and allow sophisticated solutions to be created at a fraction of the cost, quietly positioning Hong Kong as the powerhouse of the next generation of AI.

Scan here for more smart solutions that mimic complex human intelligence.