

# Cognitive AI for Smart Cities

by Shahqil Kshah October 12, 2022



## **Leonard Lee, President at Beyond Limits APAC.**

By 2025, 30% of cities will use automation to merge the physical and the digital, as well as to enhance remote administration of crucial infrastructure and digital services. This automation will be enabled by artificial intelligence (AI) and other technologies. By 2025, UBS predicts that APAC will account for US\$800 billion, or 40%, of the worldwide addressable market growth for smart city initiatives.

Smart cities in Southeast Asia are rapidly prioritizing digital investments to address the most urgent issues for municipal authorities. This is due to the ever-growing urban population and the desire for additional digital contact points. CIO World Asia spoke with Leonard Lee, President at Beyond Limits APAC.

## **Challenges that smart cities face in achieving their carbon reduction targets**

There are often two sides. The supply side is represented by one, and the demand side by the other.

### **Supply Side**

To achieve these carbon reduction objectives or net zero goals, all cities and utilities must consider how they convert and burn hydrocarbons to produce electricity.

Therefore, a roadmap and an implementation strategy are required to switch their power generation to somewhat more environmentally friendly sources of fuel.

### **Demand Side**

It is the usage and consumption. Heating and cooling, or more precisely cooling, account for a sizable portion of the energy expenditure in a city like Singapore. How can you know that these structures are clever and environmentally friendly? Are they self-cooling? Do they have HVAC systems that are AI or machine learning enabled, allowing you to detect the building occupancy and automatically modify the air conditioning set point?

In order to become far more carbon neutral, all of these factors should be taken into account and not only thought about.

## **The role of AI in building a Sustainable future in cities**

There is little doubt that AI, along with a variety of other digital technologies like IoT and Web 3.0, have a role to play. Particularly for AI. There are two examples where AI or machine learning can effectively help achieve objectives.

The first example is water use. In China, the water utility often wastes between 10% and 20% of the water that is used due to leaks in the pumps

and pipelines. China has established a three-year objective to reduce water leakage from 18% to 15% due to the importance of water as a resource. The 18 billion cubic meters of water that this 3% represents. That equates to 7 million Olympic-sized pools. An AI-powered network for leakage detection is used to achieve this.

This artificial intelligence system foresees the location of the leak in the water pipe network. The distance between points A and B, the topology of the water network, the pressure, the movement of sediment, the ambient temperature, and the ground temperature are taken into consideration.

The AI program can also forecast where leakage will occur based on all of these inputs, and it can proactively ensure that those sites are fortified and under constant observation.

Having intelligent HVAC systems is the second illustration. Therefore, the unnoticed cooling system in any structure is HVAC.

Many of these heating systems in modern nations operate on a predetermined point that the building management would establish. Unlike in 40 degree hot weather, whether it is raining or plain cold outdoors, there is no need to turn on the air conditioner.

As a result, an AI solution exists that controls the HVAC system using data from occupancy sensors. Thus, when someone enters a room, motion sensors will detect it and switch on the lights and regulate the air conditioning.

These are the applications where AI has the most potential to cut energy use, lower carbon emissions, and advance the net zero goals.

## **Challenges that countries will face while moving into a smart city**

We frequently forget that much of the globe is not like Singapore since there are a significant number of developed, high-tech cities like Singapore. Accordingly, the difficulties would change depending on what region of the world you're referring about.

In order to provide their inhabitants' fundamental requirements, developing nations in Africa, the Middle East, and Southeast Asia also face

economic difficulties. As a result, it is challenging to prioritize shifting to a smarter city since they must first cater to these necessities, which may include burning coal to provide electricity in the city.

Correspondingly, it truly is up to some of the wealthier countries to aid some of these countries by either adopting modern technology where they can do things better or by teaching them about urban planning.

## **Challenges that Singapore will face while moving into a smart city**

Singapore serves as a clear reference point for discussing smart cities globally. Many nations visit Singapore for benchmarking purposes to observe how the nation is run. However, there are challenges that Singapore has been facing.

### **Natural resources**

Singapore has no natural resources, but it consumes a lot of energy. It is therefore obvious that it lacks oil reserves, ample acreage for wind farms and windmills, and even solar. Additionally, the majority of Singapore's energy requirements must be imported.

The government and businesses in Singapore have been following roadmaps to make sure they will be able to overcome these obstacles with the help of technological breakthroughs, therefore it is safe to conclude that Singapore is prepared.

### **Manpower**

Particularly when it comes to smart cities and decarbonization, skill sets are crucial. This is due to the fact that many of them utilize innovative technology that is still developing and may be in the research stage.

As a result, there will be a talent war since businesses need these individuals to help them with these projects. These individuals would, however, have to choose whether to work in Singapore or elsewhere in the world.

"AI, I think just like any other digital technology, is an accelerator, an enabler." Leonard added.

“Business owners and, and mid-size businesses should definitely simplify their business process before they digitize and should always engage an industry expert to help them with their digital transformation journey.” Leonard advised.