



Artificial Intelligence Computing for a Smart City

Simon See^(✉)

Nvidia AI Technology Center, Singapore, Singapore
ssee@nvidia.com

Abstract. Recently, AI has progressed and continues to progress rapidly. AI technology and ideas are not new but the rapid rise is due to the facts that we have exponential growth in both data and computing power. In this talk, the author is giving trends on AI, computing technology and how it is being applied in Smart Cities.

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1 AI Computing for a Smart City

With the ability of new IOT devices and technology, governments can now gather real time data. Together with new with the capabilities of artificial Intelligence, cities are realizing interesting new ways to run more efficiently, effectively and hopefully more friendly.

The world's population grows and our species becomes rapidly more urbanized. There were just 14% of people on earth lived in cities in beginning of the 20th century. In the short 100 years, half the world's population lived in urban areas, and the rate continues to grow.

Between 2016 and 2030, the population in all city size classes is projected to increase, while the rural population is projected to decline slightly. While rural areas were home to more than 45% of the world's population in 2016, that proportion is expected to fall to 40% by 2030. A minority of people reside in megacities—500 million, representing 6.8% of the global population in 2016. But, as these cities increase in both size and number, they will become home to a growing share of the population. By 2030, a projected 730 million people will live in cities with at least 10 million inhabitants, representing 8.7% of people globally.

There were just 83 cities on earth in 1950. In 2016 there were 512 cities with more than one million residents compare to 83 of such in 1950. China's tier 1 cities (e.g. Beijing and Shanghai) has more than 25 million residents and growing. This put tremendous pressure on local government to improving the living standards and safety of the residents.



Modern cities have wealth of possible data sources, such as retail and shoppers movement data, traffic sensors, ticket sales on mass transit, police reports, and local weather stations. One huge source of raw data that AI pattern recognition technology is making significantly more manageable is video and photos. It is predicted that by 2020 there will be more than 1 billion cameras deployed on government property, infrastructure, and on commercial buildings.

China continues its huge expansion in monitoring technology. Recently Beijing police have ordered supermarkets and shopping malls to install high-definition security cameras. The country has added millions of surveillance cameras over the last five years, part of a broader increase in domestic security spending. In the city of Changsha, the Furong district alone reportedly has 40,000 – one for every 10 inhabitants.

There are cameras on streets and in stores, in university classrooms and outside the doors of dissidents.

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There is far too much raw data than could ever be viewed, processed, or analyzed by humans. This is reason only a small fraction of cameras are ever actively monitored by human. With artificial intelligence, one can count vehicles and pedestrians. It can process or read license plates and recognize faces. It can track the speed and movements of millions of vehicles to establish patterns.

This is only a small fraction on where AI can be applied to smart city.

In this talk, we shall how we can use AI right now in cities. We also look some of the new interesting development of AI.