Wu Gansha: Driving into the Future

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"In my view, intelligent driving will be an important practical application for artificial intelligence (AI) in the coming decade. Anyone who wants to be a player in this area must consider the following: vision, competitive strategy, potential cooperation with big players, and a practical plan for market entry. An exceptionally brave vision is essential to being a player in intelligent driving, which can provide solutions for many problems, including urban traffic congestion, traffic violations, parking difficulties, pollution, and lengthy commutes.

Some traffic problems have already been solved by car hailing apps, which have reduced information asymmetry and reallocated resources without reducing productivity. The apps have lowered the costs of transactions, time, and money, though they have not yet reduced production costs. They have also allowed more people to enjoy premium car services. But though they benefit individuals, they have not necessarily benefitted society overall.

Practical use of AI is certain to grow. Traditional economics distinguishes means of production from the labour force. Thanks to AI, the means of production, especially production tools, is becoming integrated with the labour force. The divide between the two has been blurred, which will give rise to the development of reforms in productivity.

AI is focused on treating pain points such as rising labour costs, labour shortages and human error. Intelligent driving is likely to solve all these problems. In the future, cars will either be spaced more closely together on the road or fly through the air in formation like a flock of geese. The road space that today can be safely occupied by just two moving vehicles will be filled by eight cars once intelligent driving is fully

adopted. The efficiency of road use will rise dramatically and traffic accidents will drop by more than 90%. Parking will no longer be a problem because self-driving taxis will run nonstop in downtown areas during the day and park on the outskirts of a city at night. This will help reduce the amount of time people spend sitting in traffic. The time saved from commuting can be put to better use, which will result in a huge increase in social productivity. AI's potential inspires us to dedicate ourselves to realising this grand vision in the coming two decades.

Besides a brave vision, a small company also needs differentiation strategies if it wants to compete with large companies. Our strategy is "Marginal Innovation, Collaborative Innovation
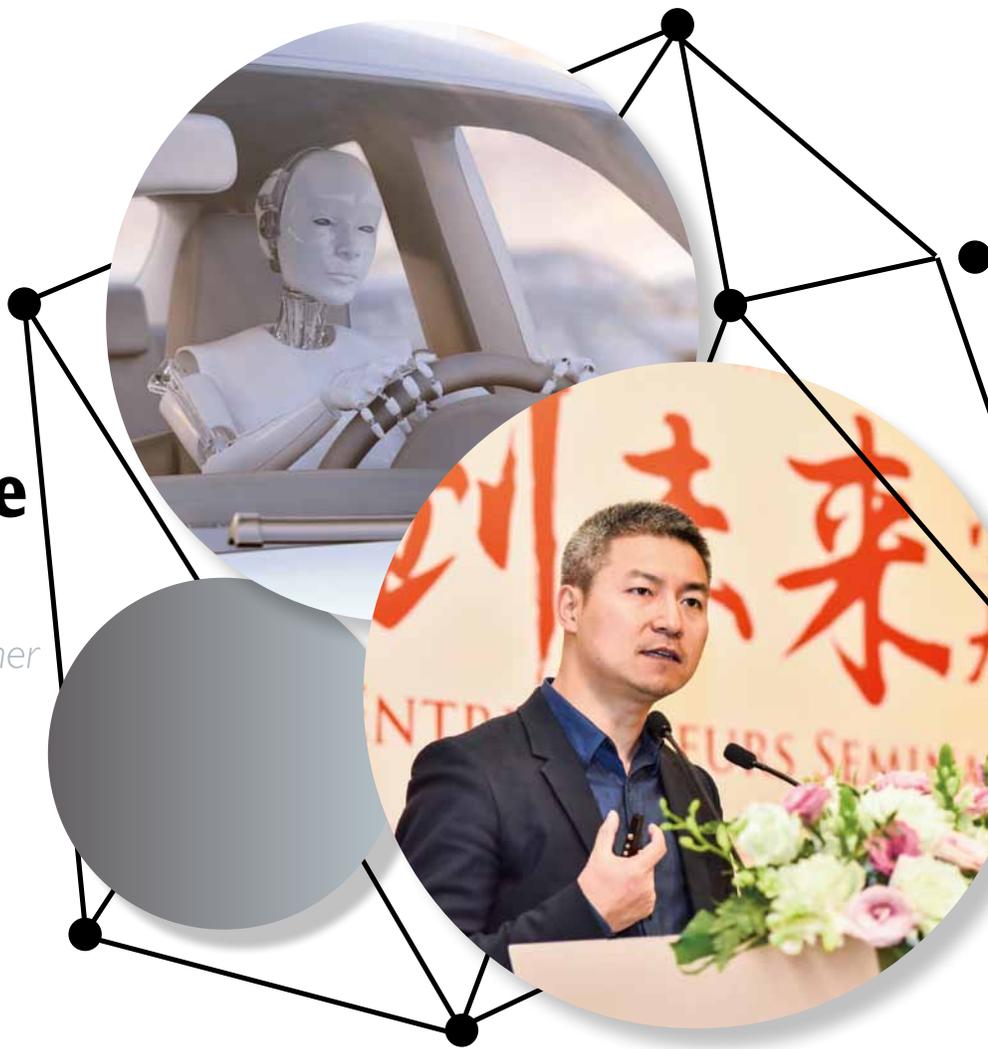
and Mortality". "Marginal Innovation" means we target market segments on the margins of the mainstream market. This segment may not be that attractive to big players because of its small scale, meagre profit and daunting risks. It's the kind of space the big players will avoid, which creates space for small companies. This is the simplest idea we have; and in terms of intelligent driving it has practical applications for the sharing of low-speed, self-driving cars which could be used in areas such as parks, hotel compounds, colleges and golf courses. Everyone knows that we will not be able to use self-driving cars on public streets for at least the next few years, but they may be operated in places such as parks and on private roads. More data will be accumulated once they are marketed, and this will accelerate the development of both software and hardware.

Now let me explain our view on "Collaborative Innovation". The technology for intelligent driving is owned by various international suppliers. However, carmakers have a great need for more technology, which creates collaborative innovation opportunities for small companies. For example we have been first movers in creating a set of driver assistance technologies which can be used when travelling at speeds of up to 100km/h. We have tested these on real roads, while overtaking other vehicles. Companies which own such technologies tend to keep them to themselves, but we have found that helping the whole ecosystem to grow

is the best way forward. Therefore, we are also willing to share our source code and data with original equipment manufacturers (OEMs) and other suppliers in order to collaboratively innovate with upstream and downstream manufacturers, and create a better living and development space.

Finally, let's discuss what we mean by "Mortality". We will inevitably enter areas where we have to compete with big players. What advantages do small companies have in such situations? I use the allegory of the lion and the rabbit to illustrate this. A lion tries unsuccessfully to catch a rabbit and everyone mocks him for his failure. The lion responds to this by saying, "The rabbit is just lunch for me, but he was running for his life". For large companies, innovation is just one aspect of their business, but for small companies, it is a matter of life or death.

Strategies must be practical. The players in the intelligent driving industry can be excellent dreamers, but they must have practical dreams. They should be concerned about their products' real-life application rather than just making a good demonstration video. No one can ignore reality when innovating. An algorithm that works well in the lab can be problematic in real life. For example cars travelling out from under an overhead bridge may be hit with a strong backlight. If the conventional algorithm falls short in this situation, there will be a problem seeing clearly. When we are developing self-driving cars we need them to be able to identify lane lines, but in reality these lines may

be snow-covered or worn away, or the car might be driving on a simple dirt road that does not have any lines. These things are not found in lab conditions but in the real world. Once AI enters the application phase, one can no longer brag about being an algorithm expert, because the real application focuses on how to integrate software and hardware. At this point, regardless of whether or not your speciality is AI, a company needs five times more product systems engineers than AI engineers and algorithm engineers.

Once you move from sample to real-world use, one failure even after 100 trials can be fatal for a company. This is the real challenge. Another is cost estimation. Many manufacturers today invest several million RMB to produce one self-driving car; just one laser radar in the car can cost RMB700,000. Large-scale commercialisation is out of the question at this price. Another thing to consider is the feasibility of operation and maintenance systems. Any potential problems in these areas will remain unknown if the cars are not operated in real world conditions.

I think we first need a brave vision to inspire ourselves to develop an understanding of this AI age and take a leadership role, while at the same time we have to admit the path ahead is difficult. For start-ups, innovative collaboration is more important than choosing a clear development path. One should not fight alone but move forward and innovate together with the other pioneers of this new era."