# Artificial Intelligence in Autonomous Vehicle Applications

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## Abstract

Autonomous cars are finally here, and how they are deployed will change how we get around forever. According to Business Insider headline in 2016, 10 million autonomous cars will be on the road by 2020. Those declarations were accompanied by announcements from Tesla, General Motors, Google's Waymo, Toyota, and Honda that they'd be making autonomous cars by 2020. However, the year is coming to an end and autonomous cars are not popularize. Despite extraordinary efforts from many of institutes, centres, and leading scholars in artificial intelligence (AI) technology, fully autonomous cars are still out of reach by the end of this year. What happened? One of the most key problems is reliability, AI technologies still faces many practical challenges especial on environment perception in complex traffic scenes, tasks or adverse weather. İn addition, AI-based technology needs for lots of training data and then to derive valid environmental perception results and to teach the computer good driving behavior. However, collecting some events data are not easy, because of these situations are infrequently encountered in its training data.

In this speech, I am going to present some new trends of environment perception and control strategy technologies and applications for autonomous car.

**Short Bio:** Yu-Chen Lin is currently an associate professor with the Department of automatic control engineering, Feng Chia University, Taichung, Taiwan. Yu-Chen Lin received Ph.D. degrees in electrical engineering from the National Chung Hsing University in 2009. Before becoming an academic, Dr. Lin was a researcher at Industrial Technology Research Institute, Mechanical and Systems Research Lab (Intelligent Mobility Technology Division) during the five-year period from 2009 to 2014. Dr. Lin led the development of the ADAS technologies and products, such as lane departure warning system (LDWs), forward collision warning system (FCWs), rear safety assistance system (RSAS), around-view monitoring systems (AVMs) etc. He was also the project leader for R&D Organization Technology Development Program (TDP) of Ministry of Economic Affairs, Taiwan, (R.O.C.). His fields of interest include the advanced driver assistance system (ADAS), collaborative control system, deep learning, reinforcement learning, vehicle dynamic and control, active suspension system, uncertain time-delay system, optimal control, model predictive control.