aetina

Application Scenario

Patrol Drone

Safer patrol solution for power gird maintenance and expansion by smart drone.

Introduction

Power equipment supplies the needs of human life, and the deployment of electricity depends on the erection of the power grid. In recent years, the governments over worldwide have actively updated traditional power grids into smart grids. However, for countries with large territories such as the United States and China, power grids are spread throughout the country. They are facing challenges in equipment expansion and daily maintenance of existing equipment. For equipment expansion, that is hard to plan by on-site research with complex terrain. On the other hand, for existing equipment, maintenance personnel often face the difficulty of safety to bear the risk of electric shock while maintaining efficiency and accuracy of maintenance.

Challenge

Since the power grid was building is arduous to reach, a patrol drone could help up the situation. Yet, there are still challenges for the drone. The drone needs to collect the images data from the environment; it has to handle intensive vision computing ability. Meanwhile, the drone will have to make AI inference to escape the danger; it needs high AI computing performance. Last, the drone always keeps the size small to move smoothly and flyable.

Solution

One research institution in China developed the power grid inspection algorithm to respond to the power grid management for the country's vast power grid equipment.

This research institution planned to build a patrol drone to reduce equipment maintenance costs and increase new power grid deployment efficiency. And a significant point of the drone to provide a safer work environment for the maintenance personnel.

Aetina Jetson-based edge AI computing platform features its computing ability. Such AN810-XNX platform delivers up to 21 TOPS with the performance of 384 NVIDIA CUDA® Cores, 48 Tensor Cores, and two NVIDIA Deep Learning Accelerators (NVDLA) engines. With this computing performance, it is widely adopted for various AI algorithms. Also, AN810-XNX supports expansion M.2 devices and onboard SIM card slot, comprehensively providing the patrol drone a seamless connection of data transmission.

Results

The research institution has successfully built a patrol drone with Aetina Jetson-based computing platform. The smart drone executes the patrol work 24/7 to keep the equipment maintenance. It can fly around the entire power grid equipment area, searching for the disability of machinery damages. This effort also prevents the highly-hazardous operating situation for maintenance personnel. Moreover, the drone could collect terrain information for the further power grid construction plan, making the build process go smoothly and efficiently.