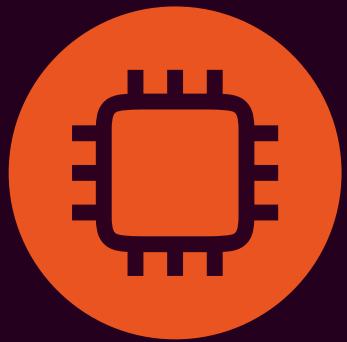


Award winning drone technology with Ubuntu



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CASE STUDY 2017

Summary

- Aerotenna's award winning technology seeks to solve the UAV autonomous flight-challenges.
- Partnering with Intel® and Xilinx®, Aerotenna developed and released OcPoC with Altera Cyclone and Xilinx Zynq, with an industry-leading 100+ I/Os for sensor integration, and FPGA for sensor fusion, real-time data processing and deep learning.
- One such sensor is Aerotenna's microwave radar that allows the drone to detect surrounding objects in all light conditions and environments, important for safe flying of UAVs.
- Ubuntu powers the OcPoC giving developers a familiar, extensible platform to build drone solutions based on the powerful combination of multiple sensors and complex robotics algorithms.

Award winning drone technology with Ubuntu

Aerotenna creates microwave sensors and flight controllers for UAVs. Its award winning technology seeks to solve the flight challenges faced by UAV developers and users - preventing UAVs from colliding with non-cooperative objects or other UAVs. They provide the technology for UAVs to fly in the reliable, stable manner required by increasingly demanding applications and unlock value for the business and users.

The market for drones is exploding as businesses and individuals embrace them the international business consultancy, PwC estimated (May 2016) put the global market for commercial applications of drone technology to balloon to as much as \$127 billion by 2020 up from £2billion today. Aerotenna is one of those innovators making this vision a reality.

For instance, the cost of a drone inspecting a wind turbine, is roughly half the \$1,500 cost of a human doing the same job. However, the environment is a challenging one to operate in with lots of obstacles and wind.

To use this to its fullest potential you need to have an adaptable, real-time system. This is what Aerotenna has created with its suite of products (aerotenna.com).

At the heart of Aerotenna products are its (Octagonal Pilot on Chip) OcPoC its revolutionary SoC Flight Controller.

What is OcPoC?

Aerotenna was the first to introduce flight control systems based on SoC technology. Partnering with Intel®, Aerotenna developed and released OcPoC with Altera Cyclone, with an industry-leading 100+ I/Os for sensor integration, and FPGA for sensor fusion, real-time data processing and deep learning. At the heart of this is the Ubuntu OS which provided the simplest development environment for the team whilst conforming to the team's belief in open source.

Together with Aerotenna's µ series microwave radars, OcPoC enables your drone to achieve safe and reliable autonomous flying, and allow the drone industry to grow unhindered by processor limitations.

Including the traditional sensor options for common peripherals, OcPoC also expands its input and output capabilities to include fully programmable PWM, PPM and GPIO pins to integrate with a vast number of different sensor additions. It also includes many other standardized connectors for peripherals such as GPS, CSI camera link and SD card. Drone developers can integrate various sensors and have the processing power to not only run the flight control stack, but also implement real-time processing of sensor data simultaneously.

"Advancements in drone sensing and processing technologies are making autonomous drones a reality and using Ubuntu has helped us get new products to market quickly. It provides us the platform we can rely on so we can focus on engineering great products for the drone market."

Dr. Zongbo Wang, CEO of Aerotenna



OcPoC™ with Xilinx Zynq®

Aerotenna uses Ubuntu as its OS in its product, for its simplicity and reliability both important considerations when creating component that needs to meet the needs of a variegated development environment and the commercial possibilities. If you consider the amount of processing and data involved in flying a drone, especially autonomously, the central OS needs to be up to task. Furthermore, being familiar with Ubuntu made using it the natural choice, enabling the team to focus on creating the best flight controller on the market rather than a custom OS.

Ubuntu allows Aerotenna's OcPoC to add new features easily from a sensor or other modules, really placing its flight controllers at the heart of the booming UAV market.

Features list box out:

- First SoC FPGA-based flight controller
- >100 I/Os for sensor integration
- Video streaming and processing capabilities
- Enhanced GPS and IMU sensor packages with open source flight control stack

For more information on Drones and Robotics visit:
ubuntu.com/internet-of-things/robotics

Aerotenna™