

XixHawk: Open autopilot based upon system-on-chip for multicopters
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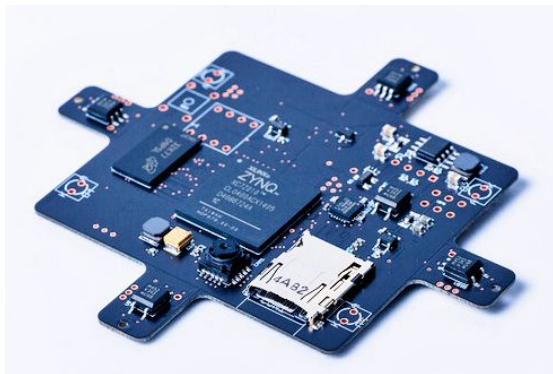
- UAVs are becoming an ubiquitous technology with new fields of applications appearing every day.
- Some of these apps are requiring on-board, computationally-demanding processing, as indoor navigation by using computer vision.
- One approach to solve this problem is to provide an autopilot based upon a more versatile and powerfull architecture.
- A Xilinx Zynq chipset is an ARM processor with an FPGA for optimal SW/HW algorithm partition.
- In this work it is proposed the development of a Zynq-based autopilot running Pixhawk, an open-software flight stack.
- All derivaded work from XixHawk will be released under open-software and open-hardware licences.

- Pixhawk is an autopilot system designed by the PX4 open-hardware and open-software project and manufactured by 3D Robotics (www.3dr.com).
- It uses an ARM Cortex-M4 microcontroller.
- More info at pixhawk.ethz.ch.



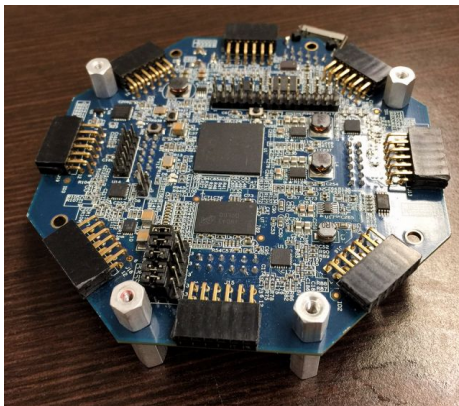
Phenox

- Zynq Z010 based autopilot for micro UAV.
- Proprietary HW, proprietary SW.
- More info at phenoxlab.com.

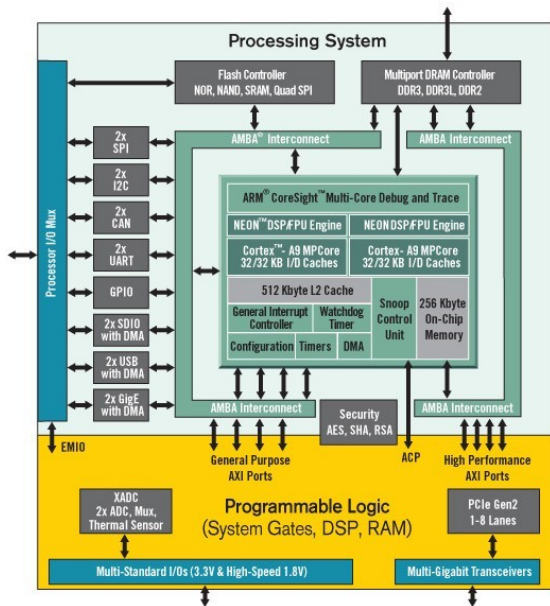


OcPoc

- Zynq Z010 based autopilot for UAV.
- Propetary HW running Pixhawk firmware.
- More info at aerotenna.com/ocpoc/.

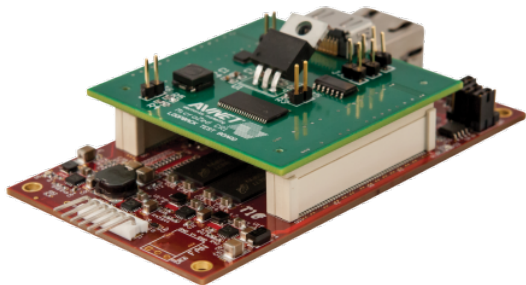


Zynq architecture



Microzed board

- MicroZed is a low-cost development board with a Xilinx Zynq Z020.
- Double FPGA fabrics when compared with Phenox and OcPoc.
- It provides connections to mount a complementary card.
- The complementary PCB will contain sensors for navigation (acc'rs, gyros, GPS, baro) and outputs to drive brushless motors.



Preliminary Xixhawk architecture

