Open Hardware/Modding: Raspberry Pi Zero W, OpenFlexure Microscope, Bill Dally's Ventilators

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- **Engineers developed a low-cost, open-source, indoor robotic airship [3]**

  To date, most unmanned aerial vehicles have a multicopter design. The popularity of this design is mainly due to the fact that it is quite simple in terms of mechanics as well as control when compared to aircraft-type drones. But they usually have very short flight duration, about 20-30 minutes. In addition, multicopters have to rotate the screws at high speed, which makes them noisy and dangerous, so using such devices indoors is not a good idea.

  To address these problems, New Zealand engineers Gal Gorjup and Minas Liarokapis have developed a low-cost, miniature indoor robotic airship project, which is intended for indoor use and will be used for educational and research purposes. The engineers are part of the New Dexterity research group at the University of Auckland.

  [...]

  The 3D-printed case contains a Raspberry Pi Zero W, the motor drivers, a set of DC motors...

- **Print your own laboratory-grade microscope for US$18 [4]**

  For the first time, labs around the world can 3D print their own precision microscopes to analyse samples and detect diseases , thanks to an open-source design created at the University of Bath.

The OpenFlexure Microscope, described in Biomedical Optics Express, is a fully automated, laboratory-grade instrument with motorised sample positioning and focus control. It is unique among 3D-printed microscope in its ability to yield high-quality images. It has been designed to be easy to use, with an intuitive software interface and simplified alignment procedures. It is also highly customisable, meaning it can be adapted for laboratory, school and home use.

- **NVIDIA Chief Scientist Releases Low-Cost, Open-Source Ventilator Design [5]**

  NVIDIA Chief Scientist Bill Dally this week released an open-source design for a low-cost, easy-to-assemble mechanical ventilator.

  The ventilator, designed in just a few weeks by Dally?whose storied technology career includes key contributions to semiconductors and supercomputers?can be built quickly from just $400 of off-the-shelf parts, Dally says.

  Traditional ventilators, by contrast, can cost more than $20,000?and that?s when the world hasn?t been slammed with demand for the life-saving machines.

  ?I hope that we don?t get so many people sick that we run out of ventilators,? Dally says, speaking from a spartan home electronics workshop stocked with oscilloscopes, voltmeters and other lab equipment.

Hardware OSS

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