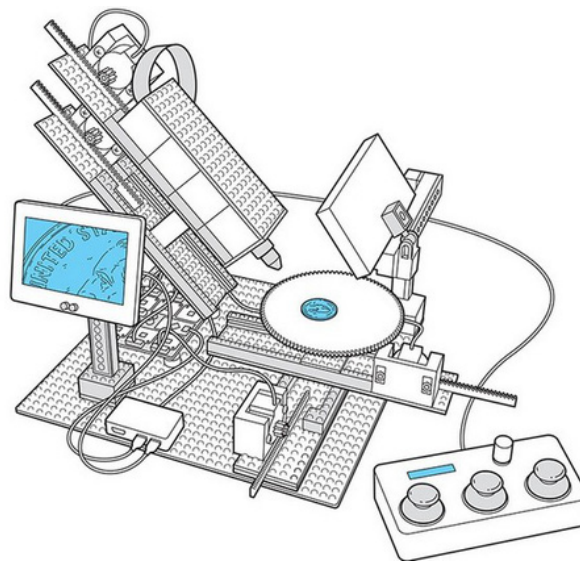


IBM engineers make microscopes made of Lego, Arduino and Raspberry Pi, for only \$ 300

Surprisingly, a microscope made of modules costs only \$ 300 for the entire design and the parts.

IBM Research Engineer Yuksel Temiz has developed a modular microscope model for only \$ 300. Interestingly, Temiz used a combination of an open source Arduino board, a Raspberry Pi computer, and Lego blocks.



His goal is to develop a laboratory tool to support research work. The reason behind the story of creating this microscope is quite interesting. Temiz was frustrated by the fact that his laboratory microscope produced poorly defined images, and he thought the Lego kit could help him somewhat.

Temiz wants to replace expensive and large-size macro lenses in laboratories with cheaper and more comfortable items to use.

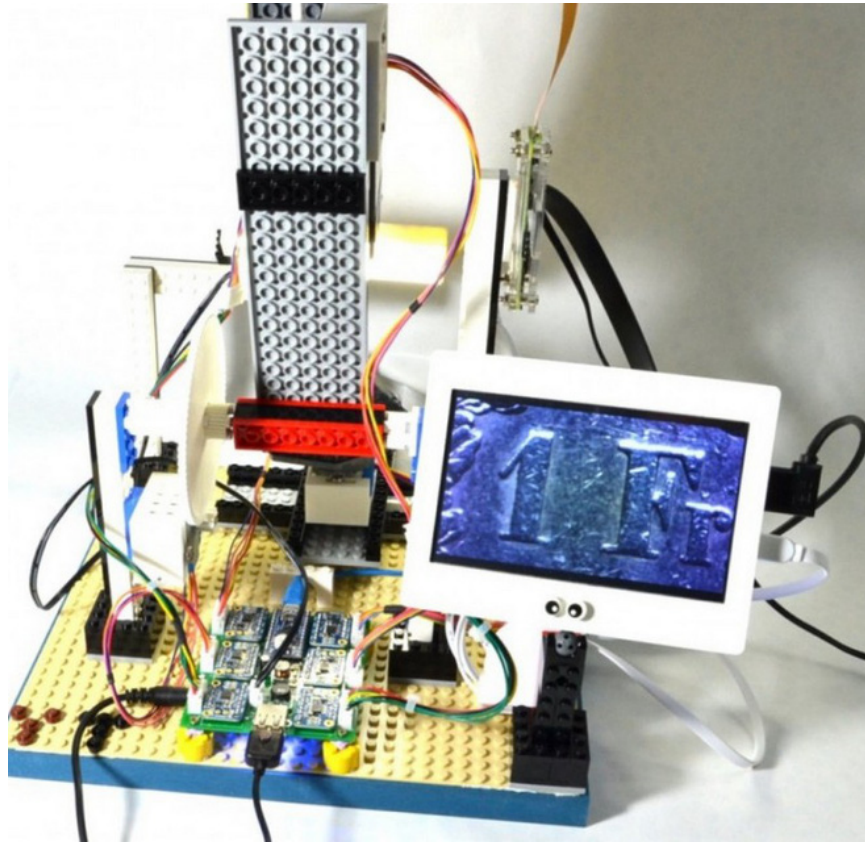
That's why Temiz decided to combine and use very special items, including the Arduino board, Raspberry Pi, and Lego blocks to create a microscope.

Recipe for a perfect microscope

Temiz uses Lego pieces, Raspberry Pi computers, 8MP Raspberry Pi cameras and 3D printers. He then placed a 10 micrometer microscope inside the module.

Raspberry Pi computer and 8MP camera allow users to take photos and videos. Meanwhile, the Arduino board is responsible for controlling high power LEDs, stepper motors. The modular version of the microscope is fully mechanized, including camera angles, specimen placement, magnification and focal length. Especially, it also has HDMI connection port and integrated a display screen.

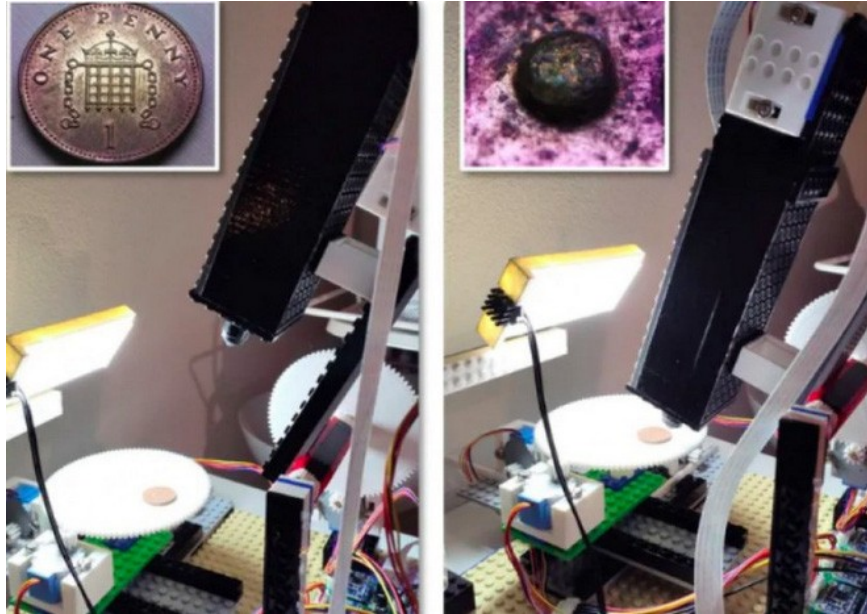
The outer shell of the modular microscope is made entirely of Lego blocks and most of the parts are made of 3D printing technology.



Users can control the functions of a microscope using the keyboard connected to the Pi computer or the control key in the Arduino board.

Temiz's Lego modular microscope project costs about \$ 300 and is as good as a thousand-dollar microscope on the market.

Temiz and his lab colleagues at IBM Research have been using Lego microscopes for the past 2 years and have obtained many lifelike magnification images similar to conventional microscopes.



This special glass can capture images and applications in a wide range of techniques from microfluidic (microcirculation channels) to blood, urine, for cancer and infectious disease research.

What's even more interesting, though, is that Temiz shared the full instructions on assembling Lego microscopes on GitHub. The guide even provides files for partial 3D printing.

The process of making a microscope made from Lego and other compact hardware for only 300 USD

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