The exabyte data solution? How we can store all of the world's data in microscopic silica particles placed in DNA

On Earth right now, there are about 10 trillion gigabytes of digital data, and every day, humans produce emails, photos, tweets, and other digital files that add up to another 2.5 million gigabytes of data. Much of this data is stored in enormous facilities known as exabyte data centers (an exabyte is 1 billion gigabytes), which can be the size of several football fields and cost around \$1 billion to build and maintain.

Many scientists believe that an alternative solution lies in the DNA molecule that contains our genetic information. After all, DNA has evolved to store massive quantities of information at very high density. A coffee mug full of DNA could theoretically store all of the world's data.

Follow the latest news and policy debates on sustainable agriculture, biomedicine, and other 'disruptive' innovations. Subscribe to our newsletter. SIGN UP

Scientists have already demonstrated that they can encode images and pages of text as DNA. However, an easy way to pick out the desired file from a mixture of many pieces of DNA will also be needed. [Professor Mark] Bathe and his colleagues have now demonstrated one way to do that, by encapsulating each data file into a 6-?m particle of silica, which is labeled with short DNA sequences that reveal the contents. Using this approach, the researchers demonstrated that they could accurately pull out individual images stored as DNA sequences from a set of 20 images.

Read the original post