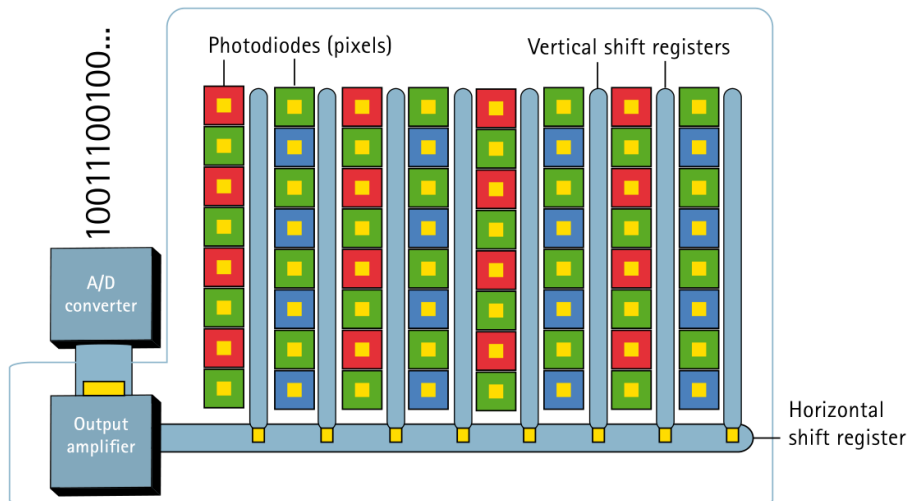


## Charge-coupled devices (CCDs) in scientific research

CCDs are extensively used in several fields. After being invented by Boyle and Smith as storage devices in 1969, their light sensitivity was quickly noticed. Nowadays, after a long evolution, different iterations of the CCD, namely EMCCD and ICCD, are the most important digital imaging devices in science.

Many experiments require CCD sensors which makes it crucial to understand how these devices work and which one to choose for a specific application in order to enhance the overall measuring results. Therefore, the essential architectures and sensor technologies will be discussed regarding their inherent strengths and weaknesses.



CCD operation principle

Image source: [http://www.axis.com/files/whitepaper/wp\\_ccd\\_cmos\\_40722\\_en\\_1010\\_lo.pdf](http://www.axis.com/files/whitepaper/wp_ccd_cmos_40722_en_1010_lo.pdf)