Invention of Digital photograph

Digital photography uses cameras containing arrays of electronic photodetectors to capture images focused by a lens, as opposed to an exposure on photographic film. The captured images are digitized and stored as a computer file ready for further digital processing, viewing, electronic publishing, or digital printing.
Until the advent of such technology, photographs were made by exposing light sensitive photographic film and paper, which was processed in liquid chemical solutions to develop and stabilize the image. Digital photographs are typically created solely by computer-based photoelectric and mechanical techniques, without wet bath chemical processing.
The first consumer digital cameras were marketed in the late 1990s.[1] Professionals gravitated to digital slowly, and were won over when their professional work required using digital files to fulfill the demands of employers and/or clients, for faster turn-around than conventional methods would allow.[2] Starting around 2000, digital cameras were incorporated in cell phones and in the following years, cell phone cameras became widespread, particularly due to their connectivity to social media websites and email. Since 2010, the digital point-and-shoot and DSLR formats have also seen competition from the mirrorless digital camera format, which typically provides better image quality than the point-and-shoot or cell phone formats but comes in a smaller size and shape than the typical DSLR. Many mirrorless cameras accept interchangeable lenses and have advanced features through an electronic viewfinder, which replaces the through-the-lens finder image of the SLR format.

While digital photography has only relatively recently become mainstream, the late 20th century saw many small developments leading to its creation. The history of digital photography as we know it began in the 1950s. In 1951, the first digital signals were saved to magnetic tape via the first video tape recorder.[3] Six years later, in 1957, the first digital image was produced through a computer by Russell Kirsch. It was an image of his son.[4]
The metal-oxide-semiconductor (MOS) process, invented by engineers Mohamed Atalla and Dawon Kahng at Bell Labs in 1959,[5] led to the development of digital semiconductor image sensors, including the charge-coupled device (CCD) and later the CMOS sensor.[6] The first semiconductor image sensor was the CCD, invented by physicists Willard S. Boyle and George E. Smith at Bell Labs in 1969.[7] While researching the MOS process, they realized that an electric charge was the analogy of the magnetic bubble and that it could be stored on a tiny MOS capacitor. As it was fairly straighforward to fabricate a series of MOS capacitors in a row, they connected a suitable voltage to them so that the charge could be stepped along from one to the next.[6] The CCD is a semiconductor circuit that was later used in the first digital video

cameras for television broadcasting,[8] and its invention was recognized by a Nobel Prize in Physics in 2009.

The first image of Mars was taken as the Mariner 4 flew by it on July 15, 1965, with a camera system designed by NASA/JPL. Later, in 1976 the Mars Viking Lander produced digital images from the surface of Mars. While not what we usually define as a digital camera, it used a comparable process. It used a video camera tube, followed by a digitizer, rather than a mosaic of solid state sensor elements. This produced a digital image that was stored on tape for later slow transmission back to Earth.[10][11]
The first published color digital photograph was produced in 1972 by Michael Francis Tompsett using CCD sensor technology and was featured on the cover of *Electronics Magazine*. It was a picture of his wife, Margaret Thompsett.[12] The Cromemco Cyclops, a digital camera developed as a commercial product and interfaced to a microcomputer, was featured in the February 1975 issue of *Popular Electronics* magazine. It used metal-oxide semiconductor (MOS) technology for its image sensor.

An important development in digital image compression technology was the discrete cosine transform (DCT), a lossy compression technique first proposed by Nasir Ahmed while he was working at the University of Texas in 1972.[13] DCT compression later became the basis for JPEG image standard, which was introduced by the Joint Photographic Experts Group in 1992.[14] JPEG compresses images down to much smaller file sizes, and has become the most widely used image file format.[15] The JPEG standard was largely responsible for popularizing digital photography.[16]
The first self-contained (portable) digital camera was created later in 1975 by Steven Sasson of Eastman Kodak.[17][18] Sasson's camera used CCD image sensor chips developed by Fairchild Semiconductor in 1973.[19] The camera weighed 8 pounds (3.6 kg), recorded black and white images to a cassette tape, had a resolution of 0.01 megapixels (10,000 pixels), and took 23 seconds to capture its first image in December 1975. The prototype camera was a technical exercise, not intended for production.[20] While it was not until 1981 that the first consumer camera was produced by Sony, Inc., the groundwork for digital imaging and photography had been laid.
The first digital single-lens reflex (DSLR) camera was the Nikon SVC prototype demonstrated in 1986, followed by the commercial Nikon QV-1000C released in 1988.[22] The first widely commercially available digital camera was the 1990 Dycam Model 1; it also sold as the Logitech Fotoman. It used a CCD image sensor, stored pictures digitally, and connected directly to a computer for downloading images.[23][24][25] Originally offered to professional photographers for a hefty price, by the mid-to-late 1990s, due to technology advancements, digital cameras were commonly available to the general public.
The advent of digital photography also gave way to cultural changes in the field of photography. Unlike with traditional photography, dark rooms and hazardous chemicals were no longer required for post-production of an image – images could now be processed and enhanced from behind a computer screen in one's own home. This allowed for photographers to be more creative with their processing and editing

techniques. As the field became more popular, types of digital photography and photographers diversified. Digital photography took photography itself from a small somewhat elite circle, to one that encompassed many people.[26]
The camera phone helped popularize digital photography, along with the Internet, social media,[27] and the JPEG image format.[16] The first cell phones with built-in digital cameras were produced in 2000 by Sharp and Samsung.[28] Small, convenient, and easy to use, camera phones have made digital photography ubiquitous in the daily life of the general public.