Leading Patentors in the Image Sensors Market

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6G promises accurate positioning in 3D provided the massive amount of required infrastructure is put in place. However, the idea that 6G is essential to driverless vehicles and other robotics has been quietly dropped by some enthusiasts. After all, you expect your car to work on any road and making it progress through automatic driver assistance systems ADAS to driverless is most elegantly and safely performed by the Tesla approach. This makes the vehicle independent where necessary, the connected car being another matter. Tesla avoid LIDAR and ultrasound, focussing on radar and mainly image sensing cameras. As for the others, well, the only consensus is you must have those cameras, whatever else you add. In this article we therefore look at these in general both for use independently of 6G and as a part of 6G. The most comprehensive and up-to-date report on all sensors, these included, is the Zhar Research report, " Sensor Markets, Technologies, Companies 2023-2043: By Parameters Measured, Operation Modes, Application Sectors, Patent Trends, Top Patentors, Manufacturer Appraisals, Future Leaders, Research Pipeline, Roadmaps, Market Forecasts".

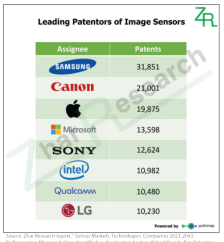
Here we share some of that coverage. In the section on image sensors and cameras it notes that an image sensor or imager is a sensor that detects and conveys information used to form an image. It converts the variable attenuation of light waves (as they pass through or reflect off objects) into signals, small bursts of current that convey the information. The waves can be light or other electromagnetic radiation. It is wise to include ultrasound imaging too – see "ultrasound sensors" in the report. Indeed the report also has a section on ultrasound sensors and how imaging is coming in there too.

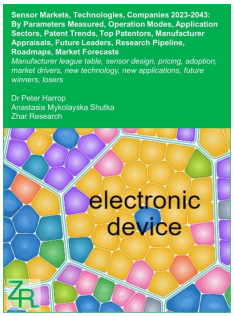
Image sensors are used in electronic imaging devices of both analog and digital types, which include digital cameras, camera modules, camera phones, optical mouse devices, medical imaging equipment, night vision equipment such as thermal imaging devices, radar, sonar, and others. As technology changes, electronic and digital imaging tends to replace chemical (developing camera film) and analog imaging. There are two types of commonly used image sensors for electromagnetic inputs in the market - charged-coupled device (CCD) and complementary metal oxide semiconductor (see MOS and CMOS sensors in the report).

Image sensors are something of a bellwether for all sensors because their growth in sales and patenting and leading patentors are similar and interest is global. Partly, this is because of their broad applicability in most applicational sectors from military to medical, automotive to personal electronics and they come in so many different forms. An image sensor or imager detects and conveys information used to make an image, in principle from far infrared (THz) such as for security and archaeology to ultraviolet across the electromagnetic spectrum. It does so by converting the variable attenuation of those waves as they transit through or reflect from objects making them into small bursts of electric current that convey the information.

The report finds Samsung to be the leading sensor company for 2023-2043 when a range of metrics are considered from patenting to technology, finances and strategy. Part of this consideration is its remarkable image sensing capability and the fact it supplies electric car market leader Tesla with its embedded cameras. It is no surprise therefore that Samsung leads in patenting image sensors, one of the most patented sensor topics of all as shown below.

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