

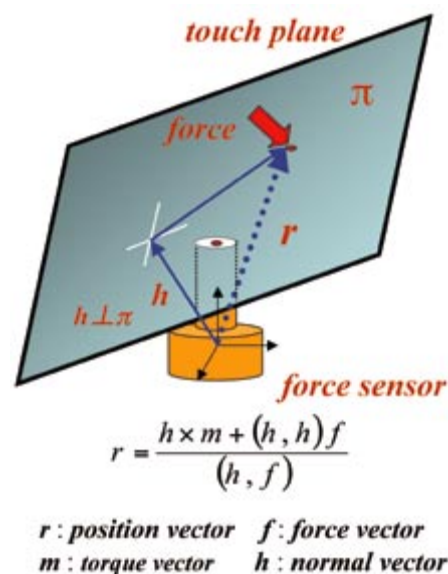
What You Touch is What You Get!

- An approach for direct manipulation by tactile modality for blind computer users -

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The Institute for Human Science and Biomedical Engineering developed a basic device combining tactile display function and force sensing function in collaboration with the University of Electro-Communications and the KGS Corporation. The device consists of two major components, a tactile graphic display and a 6-axis force/torque sensor. The force sensor measures six dynamical values generated by touch action on the display surface and PC estimates the point based on the data and a simple dynamical principle. Preliminary investigation indicated the validity of this device and promising capability for HCI using tactile modality.



A schematic illustration of the principle for estimating a touch position

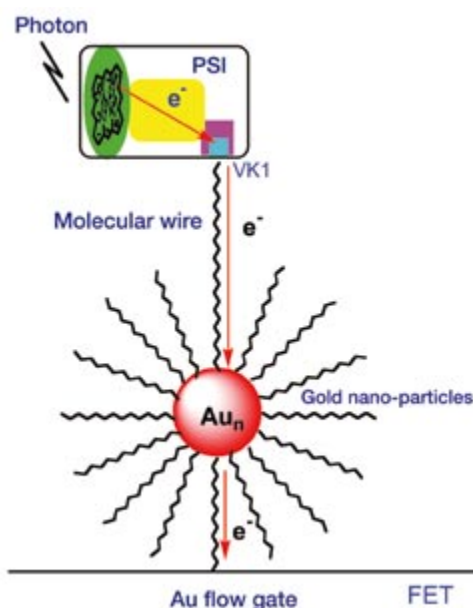
Information and Communication Technology

World-First Manufacture of Photosensor Based on Bio-conjugated Material

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An innovative photosensor using bioactivity unit as ultimate parts was developed. The use of photosynthetic protein, extracted from cyanobacteria living in a hot spring and characterized by 100% quantum yield of photo-electric conversion for red light, as a photoreceptor is promising way to achieve high-performance, no-heating and stable bionic-photosensor. The key-process for construction was as below; (1) extraction of protein with keeping their bioactivity, (2) direct connection of conductive molecular wire to electron relay system in photosynthetic protein (just like plugging) and (3) integration on semiconductor devices (FET). The work will be extended in future to the development of a bio-electronic imaging device with higher degree of integration, leading to the establishment of bio-electronic industrial technology and innovative materials science.



A schematic drawing of bio-photosensor. A photoreceptor illuminated by light emits electrons, which are led through integrated molecular wirings to gold flow gate of FET and given out as electrical signals.