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https://www.100test.com/kao_ti2020/266/2021_2022__E5_86_B2_E5_88_BA_EF_BC_9A_E5_c69_266124.htm 一、Mood Music Seth Horowitz is a neuroscientist who uses Magnetic Resonance Imaging (MRI) scans of the brain to find how different sounds can trigger activity in the brain. Now he is working with a musician to create music incorporating sounds, in the hopes of triggering specific emotional responses. MRIs have revolutionized brain science because they allow researchers to study what parts of the brain are active at different times. For example, when a person feels angry, an MRI shows theres new activity in the right frontal cortex of the brain. So neuroscientists can say that the right frontal cortex plays a role in feeling anger. Over the years, neuroscientists have come up with sophisticated maps of brain activity that show exactly what parts of the brain are active when humans feel different emotions. At the same time as they have been mapping what parts ofthe brain are involved in different emotions, scientists have been bombarding test subjects with sights and sounds to see what parts of the brain get "turned on." Subjects lying in an MRI scanner are played different sounds, or shown different pictures to determine exactly what parts of the brain are activated in response. So using this information, scientists have created maps showing the correlation between brain activity and different emotions and a list of sights and sounds that trigger activity in different parts of the brain. Horowitz had the idea of combining these two fields of knowledge. He reasoned that if researchers knew activity in a specific area of the brain caused a specific emotional response, and if they knew that a particular stimulus could cause activity in that specific region, then that stimulus could reliably induce that emotion. He says he chose to focus on sound because most researchers have concentrated on the sense of sight. 二、 Every time you eat sushi youre most likely eating Japonica rice grown in the Sacramento Valley. It become some of the best in the world and is now satisfying some of the most discriminating rice connoisseurs: Asian markets both abroad and in the States. This regions rice production has its origin in the California Gold Rush when it became too expensive to import rice from China to feed the large Asian workforce. Today it is a $500 million industry, second only to Thailand in export of premium rice. Why have farmers in the Sacramento Valley been so successful? First, Mother Nature has provided the perfect growing conditions for Japonica rice: hot days and mild nights, a clay-based soil that holds water at the root of the plant, rather than allowing it to percolate down, and a high quality and plentiful supply of water from nearby rivers and from snow melt from the Sierra mountain range. But most important are the improvements in rice production technology. The California rice industry has invested millions of dollars in new equipment that allows for the production of rice that can compete with rice grown in Japan. These innovations ?many of which originated in Japan ?include a specialwww.xycentre.com "tasting" machine that measures the chemical and starch composition of each grain and gives each batch of rice a score. This score can then be measured against rice grown anywhere in the world. In addition to taste, the Japanese market requires rice that is visually appealing: it must be bright white. To meet this standard, Sacramento Valley mills have adopted Japanese polishing methods that make the rice bright white. One milling refinement introduced from Japan is called Kapika, where the rice is actually fine sanded to produce a sparklingly white finish. Another innovative polishing method is called Musenmai, where rice is bathed in hot uncooked tapioca after milling to remove remaining dust or bran. The California rice industry, in association with U.C. Davis, oversees the development of new and improved Japonica varieties at the Rice Experiment Station, where the predominant Japonica variety grown in California, called Cal Rose, was developed. California farmers have begun planting varieties of rice ?in addition to U.S. developed varieties of Japonica -- favored by the Japanese, such as Akita Komachi and Koshihikari. The primaryrice crop in California is called Japonica. It is the moist, sticky, bright white rice used in Sushi and consumed mainly in Japan, Taiwan and Korea (and increasingly in California). 三、 Thought-controlled machines are part of the staple of science fiction stories. now researchers are taking science into places that were once limited to our imaginations. In 1924, German neuron-psychiatrist Hans Berger made the first electroencephalogram(EEG) recording on a human being. Using electrodes attached to the scalp, this new device allowed researchers to read electrical impulses created by nerve cells in the brain. After Berger discovery, the next major step came during the 1980s, when a handful of laboratories developed the first brain-machine interface prototypes. The past decade has seen enormous leaps forward in technologies that link man and machine. From military targeting systems controlled by a crewmembers head movements to motion-capture cameras for the entertainment industry, machines were designed to respond directly from human-generated motion. Now were at the threshold of another leap forward ?developing machines controlled simply by thought. The brain-machine interfaces work byusing a three-part structural scheme: an implant, a patient cable, and computer hardware/software. The implant is one of several forms of microelectrode array, similar to a computer chip or processor, which is directly implanted in the cerebral cortex ?the area of the brain that controls much of our movement. The array is then attached to a computer through very thin, permanent wires. The computers then use specialized hardware and software to record and decode neural activity as it happens. Decoding neuralbrain activity is a process that allows researchers to record brainwaves and then use computer programs to translate these signals into messages a computer can understand and use to control devices such as robotic arms. At Duke University Medical Center,professor of neurobiology Miguel Nicolelis and his team have taught monkeys to control a robot arm using thought. After being trained to move a robotic arm, using a joystick, the researchers then removed the joystick and allowed the monkey to control the robotic arm with their own arm movements. The next and most surprising step was the monkey realization that it didnt need to move its arm to control the robotic device. At that point, the monkey began controlling the robotic arm by using only the visual feedback of what it saw in front of it and its own brain signals. The overall process revealed that the animals brain was physiologically reconfiguring itself to adapt to the new thought-initiated control process, meaning that its brain circuitry actually began reorganizing itself to adapt to the new method of controlling the robotic arm. For the research using monkey test subjects, researchers began by recording the monkeys neural activity during natural arm movements. This helped researchers specificallydetermine which areas of