Keyboard 'Speaks' its Typing Secrets

What you type on your computer keyboard may no longer remain a secret, thanks to a new software that can recreate the text by 'listening' to the sound of the keys. Doug Tygar from the University of California, Berkeley and his co-workers have been able to recreate up to 96 percent of what was typed in a computer - by 'listening' to the sound of the keyboard. A $10 microphone was used for this purpose. "Our algorithms require no information about the typist, keyboard, room or text typed," Tygar said. In fact, the microphone needn't even be placed in the same room as the typist. The method relies on the 'tap' produced when your finger strikes the keyboard. "Every key makes an ever so slightly different sound," Tygar said. "Keys at the edges sound different to those in the centre, just as a drum produces different tones when struck in the middle or near the rim." This sound isn't usually distinct enough to identify a specific key, but that's where the computer software comes in. Using the sequence of sounds, it guesses as to what the words might be, and then gradually refines them, using standard algorithms for checking spelling and grammar. The software also learns to recognise individual keys, becoming more accurate as it goes along. "Once our algorithm has 10 minutes' worth of typed English, it can recover arbitrary text, such as passwords," said Tygar.

Software that turns writings into 3D images

Scientists have developed a software that can turn written languages into 3D images. Researchers led by Pierre Nugues at Lund University in Sweden have developed the software called 'CarSim' that analyses eyewitness accounts of an incident - in Swedish - to determine the positions of the vehicles and people involved. "It is able to cope with potentially ambiguous statements like 'it overtook without signalling' by looking at their context to work out what the word 'it' relates to," the report said. The software can interpret everyday written language, used to turn descriptions of an event such as a road accident, into 3D images. The researchers hope it will help people visualise a complex chain of events such as the build-up to an accident, or as a training aid to teach drivers about safe driving.

Mechanism regulates tooth shape

University of Helsinki and University of Kyoto researchers say the balance of induction mechanism directs the placement of tooth shape features. The developmental initiation of the tooth shape features, known as cuss, is known to involve several developmental genes at the places of future cusps, but it was unknown how cusps form at the right places, according to the researchers. Computer simulations on tooth development have suggested there should be a gene inhibiting induction of cusps. The research team has identified this inhibitor to be a recently identified gene called ectodin. The team generated a mouse that has no functional ectodin. The mice appear fairly normal but the areas forming cusps were much broader, resulting in cheek teeth whose shape resembles rhinoceros teeth more than mouse teeth. Furthermore, the mice have extra teeth and sometimes, adjacent teeth are fused. These results indicate there is a delicate balance of induction and inhibition in determining tooth cusps -- and that ectodin is a key gene in this developmental control.