Scientists use AI to diagnose mental illnesses

Scientists from India and Canada including the National Institute of Mental Health and Neurosciences (NIMHANS) have developed a machine learning-based tool that can diagnose schizophrenia with high accuracy. Schizophrenia is a debilitating psychotic illness where diagnosis is often difficult due to its numerous clinical forms and considerable overlap with other psychiatric disorders. Using data points from healthy and schizophrenic patients, the scientists have built a model that could predict schizophrenia with an accuracy of 87 per cent. The model has been named EMPaSchiz or 'Ensemble algorithm with Multiple Parcellations for Schizophrenia prediction'. More research is needed on the model before user-friendly software can be generated. The scientists hope that such automated and semi-automated diagnostic tools could be developed for detecting other kinds of mental disorders and help predict treatment strategies.

ICMR begins research on Zika virus

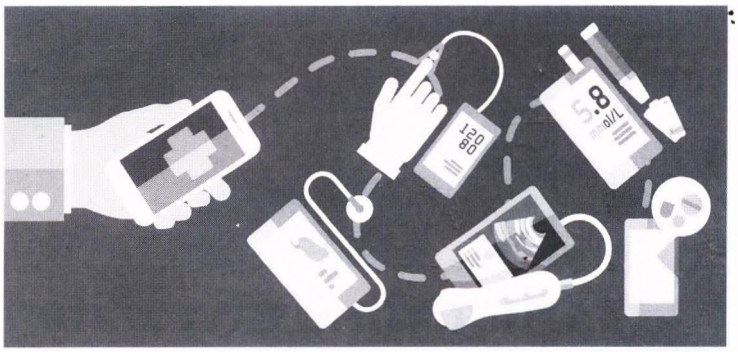
India's apex research organization Indian Council of Medical Research (ICMR) has initiated a study to understand the outcomes of pregnancy of women infected with Zika and also the occurrence of conginital Zika Syndrome (CZS) as well as other neurological malformations in their newborns. The studies are being conducted on pregnant women in Rajasthan and Madhya Pradesh, where cases of virus outbreaks were reported last year. According to ICMR, the Zika virus strain isolated from Rajasthan matches with the Brazilian Zika strain associated with outbreaks, and microcephaly or CZS. In this regard, the ICMR-National Institute of Virology (NIV), Pune, has also initiated animal studies (on mice) to understand the potential of this virus to cause microcephaly or CZS. Preliminary reports suggest the absence of one known mutation linked with microcephaly. However, further characterization of the strain is required as microcephaly or CZS has several attributable causes.

IISc researchers design smartphone based hearing aid

A group of researchers from Indian Institute of Science (IISc), Bengaluru, has designed a hearing aid that can offer substantial support. It is a simple smartphone application integrated with an affordable hearing aid. The prototype of this hearing aid costs about Rs 5000, a third of those available in the market. The newly developed hearing aid can be connected to a smartphone application, via Bluetooth. The application is multilingual and

currently supports English and Kannada languages. The app is designed to switch between two modes- a 'hearing aid' mode and a 'therapy' mode. In the 'hearing aid' mode, the ambient sounds are amplified and processed to enable the child to hear clearly. In the 'therapy' mode, pre-programmed audio clips, available in the application, can be accessed and therapy sessions can be conducted by the parents or caretakers of the child. As a next step, the researchers are trying to develop the ability to identify different sounds and understand their relevance in the application.

IIT-D develops AI hardware to detect diseases



Researchers at the Indian Institute of Technology (IIT), New Delhi have developed an artificial intelligence (AI)-based low-power electronic hardware system that can help in detecting diseases like malaria, tuberculosis, an intestinal parasite, and cervical cancer in a few milliseconds. The research focuses on building a neuromorphic system which can be used for healthcare access in resource-constrained areas with limited access to human specialists. According to the research team, several software AI models exist for healthcare and diagnostic related applications but need of the hour is to efficiently map these models on portable dedicated low-power, low-cost hardware to enable edge-AI systems accessible to all in low resource environment. The long-term impact and goal of this work is to enable potential future use of the platform in rural and resource-constrained areas and improve the access to diagnostic health-care.

CCMB team discovers enzyme to fight bacteria

A team of scientists at the Centre for Cellular & Molecular Biology (CCMB) in Hyderabad has discovered a new enzyme which helps in breaking cell walls of bacteria and hence, offers a potential for a new drug delivery route to arrest the anti-bacterial resistance through existing antibiotic drugs. The scientists have been working on how the cell governs the synthetic machinery to build the cell wall in the first place, identified the principal players behind the process and discovered the new mechanism or enzyme through which the cell regulates growth of its wall. The next step is to find out the molecule of the enzyme endo-pepcidine and it has to be followed by the drug trials to unravel a new combination of drugs to replace existing antibiotics though it is difficult to forecast a time frame.

Scientists develop unique tool to identify dementia

Scientists at the Indian Institute of Technology (IIT) Gandhinagar have developed a technology that can non-invasively diagnose dementia by tracking a person's eye movements, much before the symptoms appear. With a significant rise in ageing population, neurodegenerative disorders are becoming a serious health issue. While dementia can't be cured, its progression can be delayed if diagnosed early. 'MindEye' project can track a person's eye movement, quantifying gaze in terms of reaction time and correct fixations, in response to visual stimuli presented on a computer monitor. Researchers can then map the eye movements in response to the stimulus. They can identify subtle patterns that predict whether a person suffers from mild cognitive impairment. The researchers have handed the technology over to the industry and a larger clinical trial is underway in Kolkata and Gujarat.