

Scientists from IIT Gandhinagar develop a tool to identify dementia through eye movements

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In a breakthrough study, scientists at 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.

"By the time symptoms of dementia are detected, it is too late -- Alzheimer's disease kicks in and it can't be managed. But if dementia is caught early, we can delay the progression of Alzheimer's," said Uttama Lahiri, Associate Professor of Electrical Engineering, at Indian Institute of Technology (IIT) Gandhinagar.

Her team, which included Ritika Jain and Valay Patel, developed the 'MindEye' project that 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.

"We present a stimulus -- dots appearing at certain portions of the screen at certain angles. People with dementia often have issues with following the dot or fixing their gaze," Lahiri told PTI.

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 preliminary results of the experimental study with 10 healthy participants were promising, Lahiri said.

"We have handed the technology over to the industry and a larger clinical trial is underway in Kolkata and Gujarat," Lahiri said. This will completely change how dementia is seen as in the world.

About 1,600 people have been screened already, she added.

Researchers used standard tests -- long questionnaires that a patient answers with the help of a psychiatrist -- to validate their results.

The results were presented this month at the Faculty of Old Age Psychiatry Annual Conference held in the UK.

Existing tests methods to diagnose dementia in patients have several shortcomings. During their research, Lahiri found that uneducated people in old age homes have difficulty answering the questionnaires, making it harder to give a correct diagnosis.

"That is where our system can take over and diagnose dementia. There is no screening tool yet that can detect dementia in such objective terms," said Lahiri.

About IIT Gandhinagar

The Indian Institute of Technology Gandhinagar strives to offer the best undergraduate and graduate education in India with unmatched innovations in the curriculum. The institute promotes critical thinking and an appreciation of the interdisciplinary character of knowledge, with an emphasis on the liberal arts, project-oriented learning, compulsory courses in design and the life sciences, diversity and globalization.

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