Student depression, a way to detect it in time with De^2

Professors and students from **Tecnológico de Monterrey's State of Mexico** campus lead the De2 project, a **NOVUS** research project, which seeks to measure the level of student depression and its impact on academic performance.

The team is made up of: Dr. Luis A. Trejo, Ramón Díaz, Dr. Raúl Monroy, Dr. Miguel Ángel Medina, José Javier Rodríguez, and Danna González, from the **Computer Science Department**; and Dr. Carlos Gonzalo Figueroa and Dr. Fresia Hernández from the **Department of Psychology** at **Mexico City** campus and **Monterrey** campus, respectively.

Dr. Luis Trejo, a professor in the research group with a strategic focus on machine learning, explains the importance of the project and its progress.

In 2016, the research group generated a dataset to understand academic resilience in undergraduate students. Similar procedures to acquire the data are implemented in this NOVUS project.

This research plans to use **machine learning algorithms** to **predict depression** with variables such as **heart rate, stress, physical activity, and sleep disorders**, which can be collected from sensors built into **smart watches**; as well as personality type, which is determined using written tests.

An application framework has been developed to upload the sensor data from the smart watch to the cloud.

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Students can be referred to the university's mental health support system with a quick diagnosis of depression and treated appropriately before their performance is affected.

According to the research team, more students are seeking support services for mental health, the most common reason being that they are experiencing a state of stress or depression.

The professor mentions that having depression for long periods of time can contribute to health problems, such as obesity, high blood pressure or other heart diseases.

"Depression affects not only the body, but also mood and behavior. When a student suffers from depression, their attitude towards learning and studying are negatively affected. Loss of interest and lack of attention at conferences and academic activities will have an impact on student performance," said Trejo.

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He also mentions that it is difficult for academic staff, parents or friends, and even students themselves, to detect a change in attitude caused by depression. Some of its symptoms usually affect the body, so they can be measured with smart watch technology.

"We wanted to do something about the issue of depression. Rapid detection of symptoms enables them to be treated immediately to avoid the repercussions of exposure to a major depressive disorder. That is our greatest goal," he said.

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The research team is optimistic that the project can transcend Mexico and positively impact society. They are actively looking for new volunteers to collect data and built the dataset, therefore invite everyone from the Tec community and the general public to **join de De2 project.**

Those who are interested to contribute to this big challenge can **contact Doctor Luis Trejo** through his email address: **ltrejo@tec.mx.**