

The Role of IoT in Providing Security, Efficiency & Accessibility in Education



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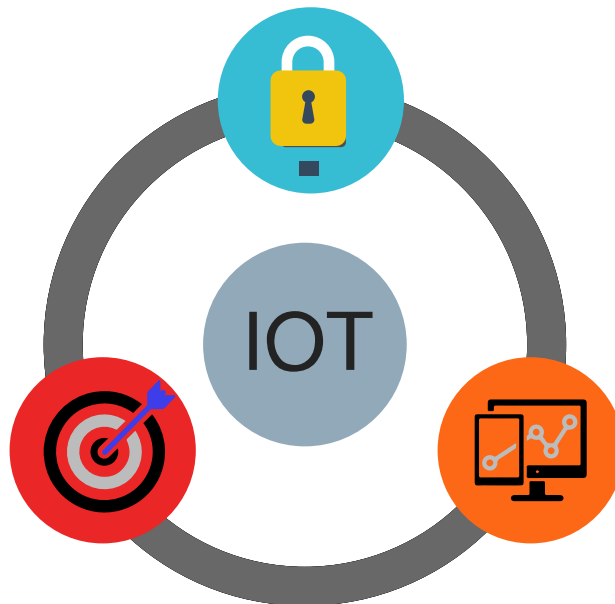


Introduction

Education domain has always been reluctant in adopting technology in comparison to any other domains like Industrial Automation, Home Automation etc. Even when the new technological paradigm the Internet of Things is conquering the entire world, Education domain once again is falling back in utilizing the advantages of it. IoT is the network of networks that is connecting the physical objects for collecting and exchanging data and deriving relevant insights which in return will create unprecedented opportunities for an enterprise. This White paper touches the various aspects on how the Education Domain can take advantage of Internet of Things and benefit from it.

The Internet of Things can play major role in equipping three Areas of the Educational Domain:

- 1) Security
- 2) Increasing overall Efficiency
- 3) Making Technology Accessible to students



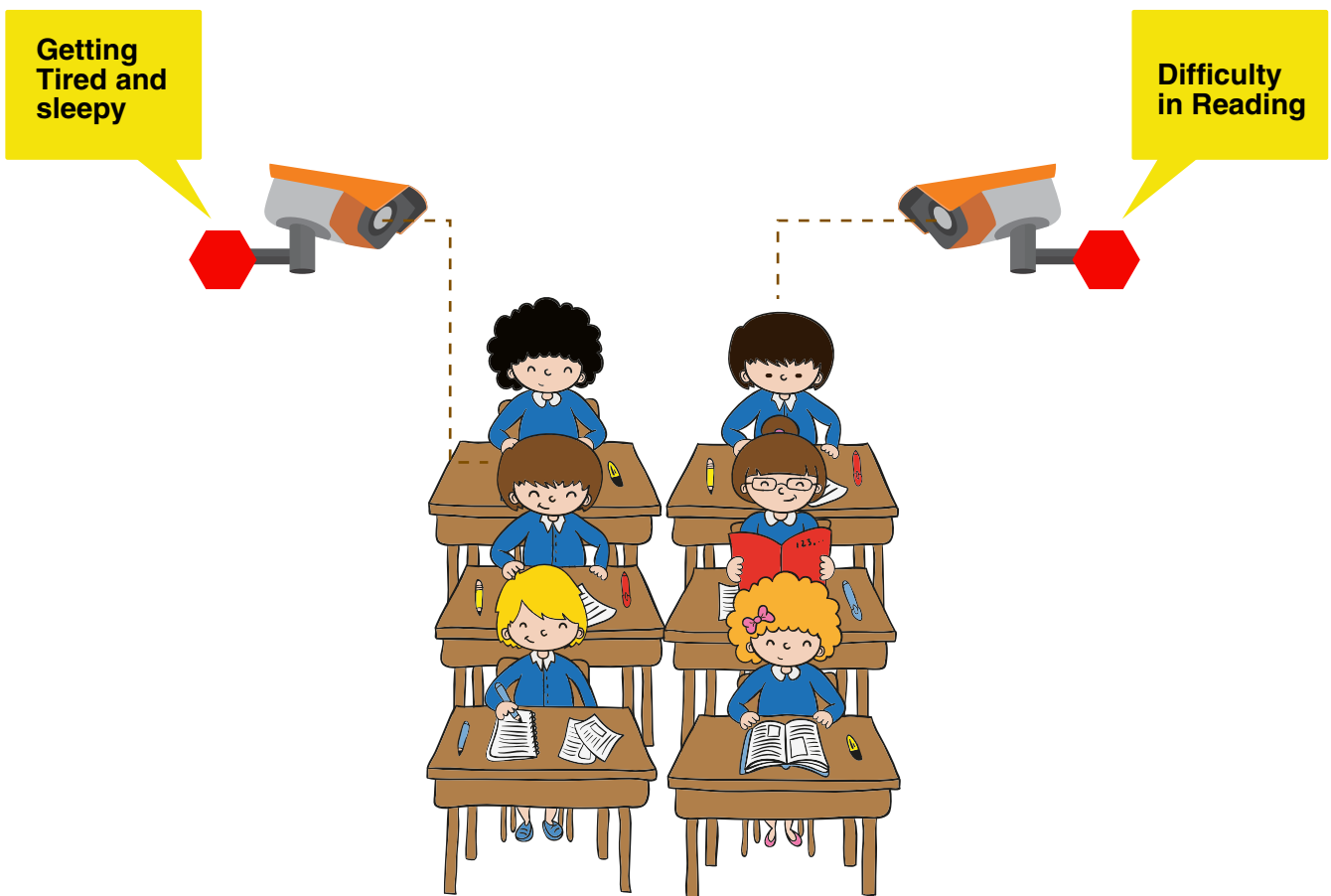
IoT in the Educational Eco-System

Security

It is very difficult to monitor the activities and whereabouts of the students in any Educational Institution because the person per unit area is high. For example, around 40 students might be in a classroom which might be of the size of 20 by 20 feet. This kind of high density is usually not seen in other types of building, be it factory or an office. Moreover, students at an Educational Institution are more vulnerable to risk and need smart security as compared to any adult population in any other workspace.

IoT comes to the rescue here and can add tremendous value in terms of increasing the security of the Schools or any Educational Institutions. Technologies such as 3D positioning can monitor the students all the time and report their presence at any point in time. This technology can also provide an option of distress buttons in order to raise an alarm if needed.

Intelligent Camera Vision can be employed in the campus to monitor the behavior of the students. Currently, Computer Vision Technologies have improved tremendously and can track any signature movements etc. which can prevent any untoward incidents automatically.

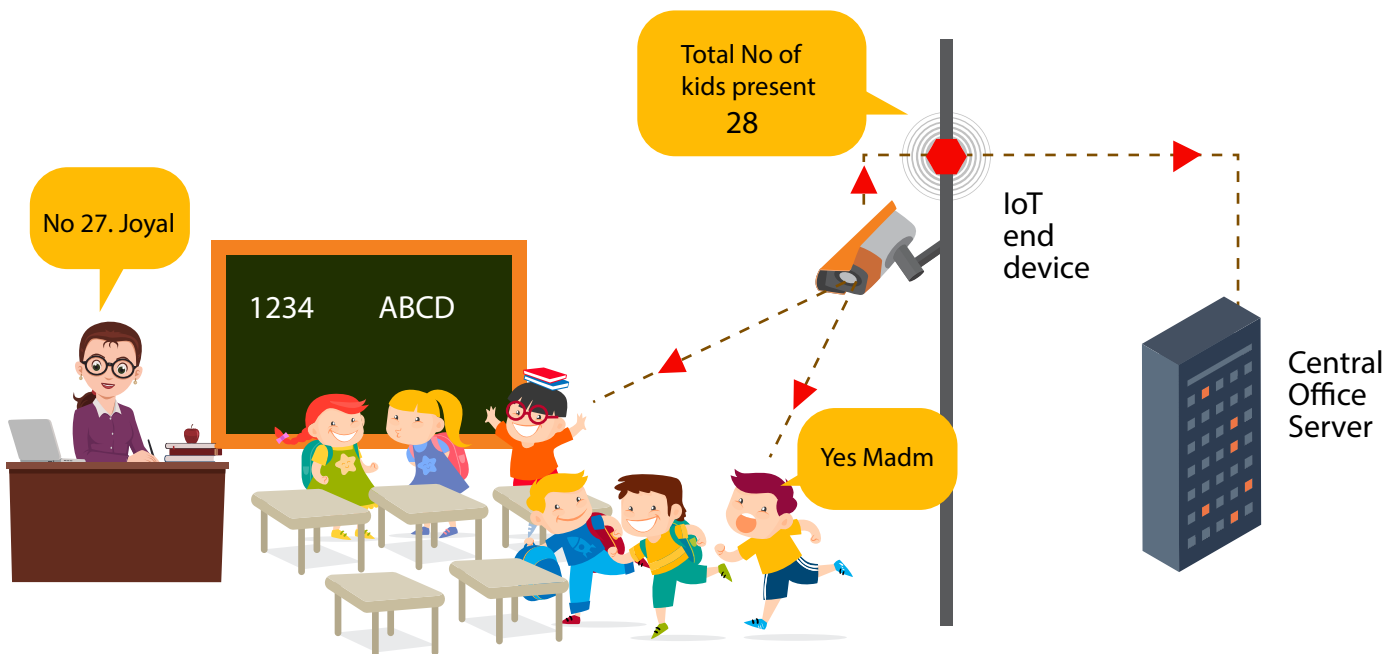


Computer Vision Technologies tracking any signature movements

IoT for Increasing Efficiency

In Schools and Educational Institutions, a huge amount of time is spent on activities which do not add value to the central aim of their existence. For example taking attendance is a huge drain on the resources and time. This activity needs to be repeated eight or nine times a day. If a class has 30 students, then each student's name has to be called and the student has to answer to the attendance while the teacher has to mark the presence in a register. This process might take 10 seconds for each student. Therefore the total time spent on taking attendance is about $30 \times 10 = 300$ seconds which is about 5 minutes. If the total duration of the class is 40 minutes, then 12.5% of the class time is wasted in taking attendance, which is a huge loss. Given an entire day which has about 8 periods, the total time wasted is a whopping number of $(8 \times 5 =) 40$ minutes that is wasted in only taking attendance. If a school has 100 class rooms then the total loss of time per day is a huge $40 * 100 = 4000$ minutes or 66 hours.

In addition to that the data has to be collectively sent to the central office for various purposes, which is another set of task all together. Internet of Things can come to the rescue of this inefficient system. IoT end-devices can collect these data and then can automatically send those data to the central office server without any human intervention. This revolutionary shift towards IoT technology can relieve the teacher and the students of the tedious task and concentrate more towards studies and innovation which is the central function of any Educational Institute.



IoT end devices sending information to the Central Office Server

Making Technology Accessible to Students

In some cases there are children or students with special needs in the class and every time the student needs some help, he or she has to call the teacher for help or someone else has to do the same on their behalf. Connected devices of IoT can automatically detect their needs by gauging their behavior and need based on any situation. For example, a special needs student in a computer lab can have the screen font size increased automatically using his or her connected device instead of calling for help. This will empower the special needs students and the institution as well.

Conclusion

Education domain is a ripe low hanging fruit for M2M and IoT to take roots. There are many inefficiencies in the present Educational system which can be alleviated by using the IoT technologies. It is only a matter of time before Internet of Things is adopted in the Educational Space.

About the Author



Shanmugasundaram.M

Shanmugasundaram.M (Shan) is a prolific inventor and creator of many products and who possesses 15 patents in the areas of telecoms, automotive (OBD II, J1939 etc.), M2M etc. Possess 14 years of IT industry experience in the areas of R&D (telecoms, automotive, M2M etc.), filing patents, inventions, converting inventions to successful products, customer Projects and maintenance Projects. An accomplished master and successful implementer in M2M (Machine to Machine) technologies who proved himself again and again in creating and deploying real world cutting edge M2M products. Some of the products are Logica EMO, Static Asset Monitoring, and Retail Innovations etc.

These inventions won numerous awards including Golden Peacock award, Nasscom award, The Economist award etc. These inventions provided Logica with much needed global exposure in many different domains including automotive technologies.

Shan and his inventions have been covered in leading publications in India and abroad such as in

- Times of India (<http://bit.ly/ROS43M>)
- Hindustan Times
- The Economist (<http://bloom.bg/Uvg74g>)
- Electronics for You
- The Live Mint (<http://bit.ly/VHsW02>)

Contact information: name, title, company, address, office phone, fax, email address, and web site

Name: Shanmugasundaram.M

Title: Associate Director

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