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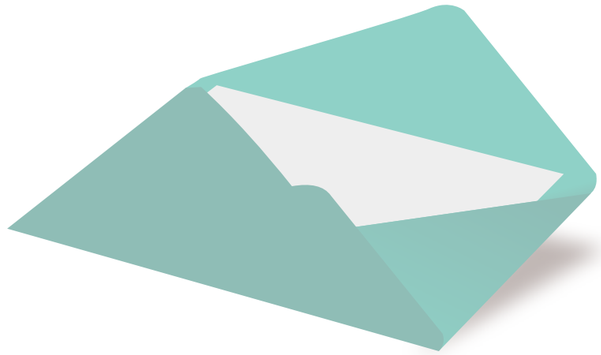
BOOK POST



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Monthly Newsletter

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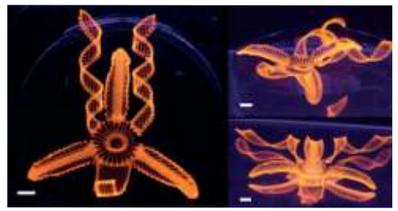
From 3D to 4D Printing

Transforming the way Micro Scale Structures are printed

Technology has grown up to a large extent in the recent past years. It showed some of the technical marvels that were never imagined before. One of them was the evolution of the 3D printing technology that made it possible to transform computer models into real world objects.

Ever since the dawn of 3D printing, it never left the sky. The technology first started printing with metal alloys and plastic materials. Growth never stopped and now a number of other materials have been used to produce 3D printed objects. Technology made it possible to use a different "inks" that made it possible even to print living cells and semiconductor batteries.

3D printing soon entered the micro scale device manufacturing. Experts, scientists and researchers from the top organizations such as University of Harvard, Cambridge, Princeton, UCLA, and Minnesota have been constantly working on this 3D printing technology and soon came up with designing micro scale devices and gadgets that were even smaller than the width of a human hair.



On the way forward, material science experts and Biologists worked together to take things on a complete new level.

- They developed objects that hold properties of both- life science and electronics.
- Materials with multivariate characteristics of materials were developed that can be potentially used as a fluid in micro-scale printing.
- On the same way, scientists from the University of Princeton developed a fully functional bionic ear blending biology and electronics together.

The Next Step- 4D Printing

Professor Lewis, a researcher from the Harvard University has been working on this technology in her Lewis lab from a while. She has been showing a keen interest on developing 3D printed objects that had features as small as one micrometer. The Lewis lab again gained recognition when they developed objects that actively responded to external stimuli.

Inspired by many plants that responds by the external stimuli, this 4D technology was a big breakthrough.

- The 4D-printed hydrogel composite structure changed shapes when immersed in water.
- Objects now started moving in the fourth dimension when we were only brainstorming around the third one.
- Combining both biological as well as electronic properties, researchers soon developed micro scale structures.
- 4D printing soon made objects change into any arbitrary shape using any suitable material.

This 4D printing technology is said to be competent enough to print dynamic micro scale structures that can significantly contribute in both industrial as well as medical domains.

3 E-Learning Technologies *that Can Jumpstart the Training Programmes*

In this technological era, before getting used to one technology, the next one emerges. However, there are some things that remain the same such as e-learning. Most of the learning technologies have not yet evolved for a long time and finding the hottest solution for the same has become a challenge for the entrepreneurs. So the important question is

How do we increase the effectiveness of learning through the latest technologies?

The answer to this question includes three solutions that are not interactive and at the same time popular. They are

- Games
- Videos
- Mobile

Gamification

An industrial study found that about 75% of the people working today are "casual gamers." Some giants such as IBM, Xerox, and Deloitte have taken initiatives to incorporate interactive e-learning. However, when looking for ROI, the implementation of such technology seems difficult due to the following issues

- Development time
- License fee
- Usage and many other factors

The only way to overcome these issues is to leverage several elements of games. For example, achievement-based systems such as leader boards can encourage the learners to reach various certification levels. Thus, the issues of implementing "games" will resolve and at the same time learning will become fun and interactive.

Short Videos

The existence of videos is not new to anyone. Even the short videos have been in existence for the past ten years. The challenging part is adopting an instructional design in a video. Even today there are many videos that fail to adopt such design. There were several constraints while creating a video which make implementation of instructional design difficult such as

- Purpose
- Quality
- Cost

Usually, videos would just contain long lectures or a live event. These videos fail terribly as sitting for 30-60 minutes is not an option. These days people prefer videos that are

- Short in length
- Engaging
- To the point

Apart from on-job skills, the videos these days also focus on various professional development subjects. Additionally, videos have become even more professional to make them useful across departments.

Mobile Learning

The traditional classroom training and learning will always have its value. However, it fails when learners need to access information from anywhere anytime. The only solution for this problem is "mobile". It is assumed that people will easily have access to the content through the web. However, it is not as easy as it looks from the outside.

For example, most of the videos are not mobile optimized as they are flash based. There are many other issues but once these issues are covered there is no doubt that mobile learning is the best on-the-go training solution.

While these technologies have the power to change the game of e-learning, there are other technologies such as Big Data, VR and much more that might also have an effect on e-learning and training. However, these technologies will not be implemented unless any business need arises.

INTANGIBLE SOFT SKILLS: AN ENGINEERS KEY TO STAND OUT AND SUCCEED

Today's era is the era of engineers. The field of engineering is very vast and provides a lot of opportunities. So far there has been a simple career formula for peaceful life.

Peaceful life = Bachelor's degree + Experience + Pension + Retirement

However, the formula is not applicable in the current competitive world. Apart from technical skills, the companies look forward to additional skills in every candidate. Soft skills are one among those important additional skills.

Is Soft Skill Really Important?

There is no doubt that soft skills really matter to an engineer. There have been several cases where extremely talented engineers have failed in teamwork, client communication or maintaining professionalism. Studies found that people with soft skills outperform those who only rely on technical skill. Therefore, employers value engineers who master both technical and dynamic skills.

Mastering Soft Skill

The basic thing to understand is the way work is done in any engineering environment. The way work is done today has also become a critical factor. The engineering field includes highly mobile teams and handling multigenerational workforce and projects. On a daily basis, engineers encounter fresh graduates as well as highly experienced professionals. Employees need to bridge the gap between such differences and efficiently communicate with all the individuals encountered during their work. On a global basis, projects require a high level of collaboration. An engineer might have to work with other members working miles away. Several differences might stand as an obstacle in any global project such as

- Language
- Culture
- Time zone
- Working hours and many others

An employee without the right soft skill will find it hard to adapt to such project which might affect both the individual and the employers.

In the world of project-centric work, only the employees with intangible skills can dodge various pitfalls throughout the lifetime of the project. The employers look for candidates who can

- Successfully complete a job which will highly depend on the tangible skills of an individual
- Skilfully manage any project is a skill that every employer looks in a candidate
- Handle complex projects rather than just be a part of it are more preferred

Whether you are looking for an engineering role or trying to move up your career, marketing your soft skills as an asset will pitch your capability and help you to achieve your goals. It is a differentiator that will put you in the spotlight.

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