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MACET MYSTICA

MAULANA AZAD COLLEGE OF ENGINEERING & TECHNOLOGY

EDITORIAL

Technical education plays a pivotal role in shaping the future of societies by equipping individuals with the skills and knowledge required to navigate the complex and rapidly evolving landscape of technology. In an era dominated by technological advancements, the importance of technical education cannot be overstated. Technical education fosters a culture of innovation by encouraging problem-solving and critical-thinking skills. Students in technical programs are often exposed to real-world challenges, encouraging them to apply their knowledge to create practical solutions. This approach not only enhances creativity but also cultivates an entrepreneurial mind-set, laying the groundwork for the development of groundbreaking technologies and solutions.

Technical education opens up a diverse range of career opportunities for individuals. Whether in fields like engineering, computer science, healthcare technology, or renewable energy, the skills acquired through technical education programs are versatile and applicable across various industries. This versatility allows individuals to explore and pursue careers that align with their interests and passions.

EDITOR

SAIMA FARZEEN

EDITORIAL TEAM

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FRUGAL ENGINEERING

Md. Sarfaraz Akhter, Department of CE

INTRODUCTION

Frugal engineering is the process of reducing the complexity and cost of goods and its production. Designing products may also call for an increase in durability and selling them and reliance on unconventional distributions channels, sold to so-called "overlooked consumers".

HISTORY

Frugal innovation today isn't solely the domain of large multinational corporations, however, as small, local firms have themselves chalked up a number of home grown solutions.

The concept has gained popularity in the South Asian region, particularly in India. The US Department of Commerce has singled out this nation for its innovative achievements saying in 2012 that "there are many Indian firms that have learned to conduct R&D in highly resource-constrained environments and who have found ways to use locally appropriate technology..."

Mobile banking solutions in Africa, like Safaricom's M-Pesa, allow people access to basic banking services from their mobile phones. Money transfers done through mobiles are also much cheaper than using a traditional method.

Solar light bulb

In some Philippine slums, solar skylights made from one litre soda bottles filled with water and bleach provide light equivalent to that produced by a 55 watt bulb and may reduce electricity bills by US$10 per month.

Tata Nano

Designed to appeal to the many Indians who drive motorcycles, the Tata Nano was developed by Indian conglomerate Tata Group and is the cheapest car in the world.

PRINCIPLES OF FRUGAL ENGINEERING

With a vision of mass manufacturing 'the People's Car' Tata Motors set out to design the least expensive production car in the world for under Rupees 100,000 (around $ 2,000). When it was launched in late 2009, it made headlines around the globe; the Nano was heralded a new breed of transportation. Since then, sales of the Tata Nano have been disappointing leading many observers to brand it as a failure.

In our research, we found that India was building a capability for frugal engineering. Given that this appears to be a practice that is taking roots in China and other emerging markets, we conducted extensive research on frugal engineering. We discovered many examples that in turn led us to identify six underlying principles or pillars on which such frugal engineering efforts often seem to rest. We describe these principles in this article.

1. Robustness

India is a harsh environment in terms of the huge variances that occur in operating conditions in this country. Such a setting affects the priorities that drive product development and innovation, this means not just extremes of temperature, but an erratic supply of electricity and peak-load ratios unheard of in the West. Nokia has gained a dominant share of the Indian market and has hired more people than in any other country except for its home base of Finland. Each of Nokia's three Indian R&D centres is an integral part of the firm's global R&D infrastructure.

2. Portability

Space constraints and the need to transport products to rural areas over poor transportation links highlight the importance of portability in India. Small and lightweight become highly desirable product attributes. Think again of the MAC 4001 ECG, and consider the miniaturization efforts that are necessary to achieve this kind of portability in a product class that typically ascribes no value at all to portability.

3. Defeaturing

Defeaturing consists of feature rationalization, or "ditching the junk DNA" that tends to accumulate in products over time. With Indian consumers, firms can avoid implementing features that do little to enhance the actual product. Siemens supports its innovation efforts in India with a billion-euro investment devoted entirely to developing and adapting products for the local market. Currently, Siemens employs seventeen thousand people who work on 42 products that eventually will be sold in India and exported to other markets.

4. Megascale production

With its massive population, India has market segments that if captured, can help firms drive costs down so that they can produce on a massive scale-mega production. The costs of component manufacturing for the Nano, for alternative energy products, or mobile handsets in India, similarly reflect the scale at which these products can be produced. The health sector in India is another example, where having one billion plus potential patients lead to process revolutions that lower the costs dramatically compared to prevailing world prices.

5. Service Ecosystems

The conventional wisdom in marketing is that reaching demanding cost targets requires low variability, or a one-size-fits-all mentality. Selling large volumes requires that a product appeal to multiple segments, each with slightly different needs. Displaying innovative thinking, Indian firms resolve the dilemma by using efficient service ecosystems. While these ecosystems achieve low costs, they also highlight product features and thus broaden the product's appeal. THE IMPORTANCE OF FRUGAL ENGINEERING

Frugal engineering is an overarching philosophy that enables a true "clean sheet" approach to product development. Cost discipline is an intrinsic part of the process, but rather than simply cutting existing costs, frugal engineering seeks to avoid needless costs in the first place. It recognizes that merely removing features from existing products to sell them cheaper in emerging markets is a losing game. That's because emerging-market customers have unique needs that usually aren't addressed by mature market products, and because the cost base of developed world products, even when stripped down, remains too high to allow competitive prices and reasonable profits in the developing world. Frugal engineering recalls an approach com m on in the early days of U.S. assembly-line manufacturing: Henry Ford's Model T is a prime example. But as industries grew and matured over the decades, and as consumers prospered to levels few would have predicted a century ago, product development processes became hardwired and standard operating procedures worked against frugality. In addition, the profit structure in mature markets reduced incentives for major change. Constant expansion of features available to consumers in the developed world, frivolous or not, has provided m any businesses with their richest profit margins. Mature-market customers continue to accept price premiums for new features, leading companies to over- engineer their product lines at least from the point of view of emerging-market customers. The virtual extinction of manual car windows in the United States is just one example.

News Update

Geeky Macet Inspires Next Generation of Programmers at MACET

Md Al Fahad Ahmad CSE 2022 (GeekyMacet Admin)

In an exciting turn of events, the coding enthusiasts of the 23rd batch and diploma students at Maulana Azad College of Engineering and Technology were treated to an enlightening seminar hosted by the dynamic Geeky Macet coding club. The seminar, led by enthusiastic Geeky Macet members, provided a glimpse into the struggles and triumphs of establishing the first coding club in the college.

Geeky Macet, known for fostering a vibrant community of programmers, opened its doors to share insights on how the club operates and plays a pivotal role in shaping the programming landscape within the college. The Geeky Macet members passionately discussed the club's mission and encouraged students to embrace the world of coding and programming.

The seminar delved into the rich history of programming, highlighting key milestones and technological advancements that have shaped the industry. Students were not only inspired by the journey of Geeky Macet but also gained valuable knowledge about the evolution of programming languages and methodologies.

One of the seminar's highlights was the invitation extended to all attendees to join the Geeky Macet coding club. The call to become a part of this thriving community resonated with many aspiring programmers, eager to enhance their skills and contribute to the coding culture at Maulana Azad College of Engineering and Technology.

Geeky Macet has set the stage for a new wave of programming enthusiasts, igniting a passion for coding that will undoubtedly leave a lasting impact on the college's technological landscape.

As the seminar concluded, the air buzzed with excitement, and the future of programming at Maulana Azad College of Engineering and Technology looks brighter than ever, thanks to the inspiration provided by Geeky Macet.

Impact of Artificial Intelligence (AI) on Manufacturing Process

Dr. Naushad Hasin Khan, Asst. Professor, ME Department &
Rana Arbaj Haider, ME, 2022 Batch

Industrial enterprises continually seek methods to increase revenue and decrease expenses. However, achieving this manually is impractical, which is why they're integrating Artificial Intelligence into manufacturing processes.

AI involves machines replicating human intelligence processes, especially within computer systems. AI technology efficiently handles vast data volumes unlike humans. The aim of AI is to mimic human abilities like recognizing patterns, decision-making, and judgment.

The integration of AI is transforming the manufacturing sector, enabling companies to enhance efficiency, accuracy, and productivity across various operations. Its applications span a wide spectrum, including predictive maintenance, supply chain optimization, quality control, and demand forecasting. Manufacturers should consider adopting AI to propel their business growth.

AI finds application in diverse manufacturing areas such as:

1. **Supply Chain Management**: This plays a pivotal role in revolutionizing manufacturing processes. AI enhances efficiency, accuracy, and cost-effectiveness by enabling predictive analytics, optimizing inventory, improving demand forecasting, and streamlining logistics. Companies like Amazon leverage AI algorithms to expedite deliveries and reduce distances between products and customers.
2. **Factory Automation**: AI integration, including Machine Learning (ML), significantly transforms factory automation. AI-powered robots equipped with computer vision and machine learning algorithms excel in assembly, quality control, inspections, and seamless collaboration with human workers.

Moreover, AI handles various tasks in factories such as warehouse management, predictive maintenance, new product development, performance optimization, quality assurance, streamlined paperwork, and demand prediction.

FDPs / Research Papers

Mechanical Engineering Department

Mr. Md. Shabbeer Ansari

- Successfully completed an FDP on "**Professional Values and Ethics**" from NITTTR Kolkata during 04/12/23 to 08/12/23.

Civil Engineering Department

Mr Md. Ehraz Akhtar

- Successfully Completed 5 days "**National level Online Teachers Training Program**" organized by the Association of Muslim Professionals in collaboration with Maulana Azad University, Jodhpur, conducted from 6th Nov. to 10th Nov. 2023
- Successfully Completed One Week Faculty Development Programme on "**Professional Values and Ethics**" organized by NITTTR Kolkata, conducted from 4th December to 10th December, 2023.
- Successfully Completed 5 Days Faculty Development Programme on "**Round-2-Accreditations- Way Forward to Quality Education "**,conducted from 11th December to 15th December, 2023

Computer Science & Engineering Department

Successfully Completed 5 days Faculty Development Program on "**NAAC Accreditation – way Forward to Quality Education**" from 11th to 15th December, conducted by the Association of Muslim Professionals in collaboration with AMU, Centre Malapuram, Kerala.

- Mr. Mazhar Eqbal
- Mr. Rakesh Ranjan
- Mr.Hasibul Hasan Mansoori
- Mr.S.M Abbas

Successfully completed an FDP on "**Professional Values and Ethics**" from NITTTR Kolkata during 04/12/23 to 10/12/23.

- Mr.S.M Abbas
- Mr.Shabab Zahra

Mr. Zaffar Abbas

- Participate 5 days National Faculty Development Program on "**NLP, Computer Vision and Artificial Intelligence**" organized by Andhra Pradesh State Skill Development Corporation (APSSDC) in collaboration with ExcelR Edtech Pvt. Ltd. From 4th Dec. to 8th Dec. 2023.
- Participate 5 days National Faculty Development Program on "**ChatGPT and Prompt Engineering**" organized by Bharti Vidyapeeth College of Engineering – Navi Mumbai, NRI Institute of Technology, Vijayawada and Sreenidhi Institute of Science & Technology – Hyderabad in collaboration with ExcelR Edtech Pvt. Ltd. From 18th Dec. to 22nd Dec. 2023.

FDPs / Research Papers

Electronics and Communication Engineering Department

Mr. Md. Nadeem Enam

- Successfully completed "**Case study and industry applications in data science**" conducted by CDAC held on 25th September 2023.
- Participated in FDP on "**Python Basic"**, organized by DYPIMS in association with IACSD Akurdi, PUNE, on 8th Oct. 2023.
- Successfully completed "**Microsoft 365 fundamentals**" conducted by Microsoft held on 27th October 2023.
- Successfully completed "**AZ-204:Implement Azure App Service web apps**" conducted by Microsoft held on 31th October 2023.
- Successfully Completed "**Developing Solution for Microsoft Azure**" conducted by Microsoft held on 31th October 2023,
- Successfully completed "**Designing and Implementing Microsoft devOps solution**" conducted by Microsoft held on 10th November 2023.
- Successfully completed "**AZ – 400: Get started on DevOps transformation journey** " conducted by Microsoft on 10th November 2023.
- Successfully completed "**Microsoft Azure fundamental** "conducted by Microsoft on 17th November 2023,
- Successfully completed 5 days "**Professional values and Ethics"** conducted by NITTTR Kolkata from 4th December - 10th December 2023.
- Successfully completed 5 days "**Round 2- NAAC Accreditation – Way Forward to Quality Education**" conducted by Association of Muslim Professionals in collaboration with Aligarh Muslim University Centre, Malappuram , Kerala from 11th to 15th Dec. 2023

Student Corner

Digital Duet: Embracing Tech

Saumya Rani, EEE, 2023 batch

In realms where wires weave a modern song,
And circuits hum to tunes both bright and strong,
Technology, a wizard's potent wand,
Unveils the future's tapestry, far beyond.

Behold, the marvels of innovation's dance,
In pixels' glow, a digital romance.
Through screens, the world converges close and near,
Where distances dissolve, and voices cheer.

From ancient scrolls to bytes that swiftly soar,
It spins a tale of progress, evermore.
In bytes and bits, the secrets of the earth,
A universe within, of boundless worth.

Yet shadows loom in this electric age,
As hearts entwine with screens, a silent cage.
Connection lost amidst the wireless streams,
A paradox unfolds within our dreams.

The marvels, too, unveil a cautionary call,
As power wields its might, both great and tall.
For every innovation's gleaming light,
A shadow hides, unseen, beyond our sight.

But in this dance of silicon and soul,
Let wisdom guide, to keep the balance whole.
For technology, a canvas yet unrolled,
A tapestry of hope and stories untold.

Embrace the tools that craft the future's lore,
Yet cherish human touch, forevermore.
Let not the wires sever our embrace,
For in this balance lies our saving grace.

In bytes and bits, in circuits that entwine,
May harmony prevail, a sacred shrine.
For technology, a beacon in the night,
May it illuminate our world, in wisdom's light.

Maulana Azad College of Engineering & Technology
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