IEEE Brainwaves

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IEEE Brainwaves Feature Events :

Industrial Visit at MTNL Powai

An Industrial Visit to MTNL (Mahanagar Telephone Nigam Limited) was organised by IEEE Brainwaves for giving insight to the 2nd year students about the world of telecommunication. The training centre of MTNL was located at Powai which is actually CETTM - Centre for Excellence in Telecom Training and Management which is public sector Undertaking of Government of India under the ministry of communications which provides platform for training program and courses

related to communication sector. The industrial visit included total of 5 lectures including introduction on the operation of MTNL services.

The sessions were based on 1) Mobile Communication 2) Telephone Communication and Fibre Optics 3) Multiplexing and Telephone Exchange 4) Internet Service Providing and Broadband

After introductory session on MTNL which gave us insight above various services provided by MTNL and the future services that MTNL are planning, 4 sessions on various topics of telecommunication were held separately.

1) Mobile Communication and Antenna: This part focused on mobile communication which included TDMA, GSM, and CDMA technologies. The actual process i.e. from transmitting signal via antenna to operating circles till the receiving of signal on mobile was explained in detail. Afterward the actual hands-on demonstration of the same was held where we dealt with actual antenna and other machinery.

2) Telephone Communication and Fibre Optics: This part focused on fibre optics and how it is used in landline communication. The entire process about breaking the voice signal into multiple parts and transferring the data in the form of light using LASERS and transmitting them via fibre optics and decoding the same light signal back to voice was shown along with interactive question and answer session.

3) Telephone Exchange and Multiplexing: This session included all the details about the control logic of the connection of two users that need to be connected. Comparison with old techniques, where everything was handled manually i.e. by person (a person who wants to talk with another person needed to 1st contact telephone exchange in charge who will then manually connect the line with the desired person with whom1st person needs to talk) to the present technologies where everything is handled by computer systems, was explained in this session.

4) Internet Service and Broadband This session included the most important part i.e. internet connection. Everything i.e. from machinery to D.N.S to broadband was included in this session When DNS was not into existence; one had to download a Host file containing host names and their corresponding IP address. But with increase in number of hosts of internet, the size of host file also increased. This resulted in increased traffic on downloading this file. To solve this problem the DNS system was introduced.

IEEE Spectrum Article :

The Multiple Lives of Moores Law

Why Gordon Moores grand prediction has endured for 50 Years

A half century ago, a young engineer named Gordon E. Moore took a look at his fledgling industry and predicted big things to come in the decade ahead. In a four-page article in the trade magazine *Electronics*, he foresaw a future with home computers, mobile phones, and automatic control systems for cars. All these wonders, he wrote, would be driven by a steady doubling, year after year, in the number of circuit components that could be economically packed on an integrated chip.

A decade later, the exponential progress of the integrated circuit—later dubbed “Moore’s Law”—showed no signs of stopping. And today it describes a remarkable, 50-year-long winning streak that has given us countless forms of computers, personal electronics, and sensors. The impact of Moore’s Law on modern life can’t be overstated. We can’t take a plane ride, make a call, or even turn on our dishwashers without encountering its effects. Without it, we would not have found the Higgs boson or created the Internet.

But what exactly is Moore’s Law, and why has it been so successful? Is it evidence of technology’s inevitable and unstoppable march? Or does it simply reflect a unique time in engineering history, when the special properties of silicon and a steady series of engineering innovations conspired to give us a few decades of staggering computational progress?

I would argue that nothing about Moore’s Law was inevitable. Instead, it’s a testament to hard work, human ingenuity, and the incentives of a free market. Moore’s prediction may have started out as a fairly simple observation of a young industry. But over time it became an expectation and self-fulfilling prophecy—an ongoing act of creation by engineers and companies that saw the benefits of Moore’s Law and did their best to keep it going, or else risk falling behind the competition.

I would also argue that, despite endless paraphrasing, Moore’s Law is not one simple concept. Its meaning has changed repeatedly over the years, and it’s changing even now. If we’re going to draw any lessons from Moore’s Law about the nature of progress and what it can tell us about the future, we have to take a deeper look.

In the early 1960s, before Silicon Valley became known as Silicon Valley, Gordon Moore was director of research and development at Fairchild Semiconductor. He and others had founded the company in 1957 after defecting from Shockley Semiconductor Laboratory, where they’d done some of the early work on silicon electronic devices.

Fairchild was one of a small group of companies working on transistors, the now ubiquitous switches that are built by the billions onto chips and are used to perform computations and store data. And the firm quickly started carving out a niche.

At the time, most circuits were constructed from individual transistors, resistors, capacitors, and diodes that were wired together by hand on a circuit board. But in 1959, Jean Hoerni of Fairchild invented the planar transistor—a form of transistor that was constructed in the plane of the silicon wafer instead of on a raised plateau, or mesa, of silicon.

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