POWER VISION

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

MAGAZINE

Electrifying Solutions for a Brighter Tomorrow!!

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Kongunadu College of Engineering and Technology
(Autonomous)
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Preface

Welcome to Power Vision – Your Gateway to the Dynamic World of Power Engineering! In this premier edition, we invite you to embark on a captivating journey through the electrifying landscapes of innovation, sustainability, and excellence within the realm of power engineering.

Power Vision is not just a magazine; it's a testament to the transformative power of electricity in shaping our world. From cutting-edge technologies to visionary projects, each page is meticulously crafted to inspire and inform, showcasing the latest advancements and trends in the field.

Join us as we explore the forefront of power engineering, uncovering the groundbreaking research, impactful initiatives, and remarkable achievements that are driving progress and shaping the future of energy. Whether you're a seasoned professional, an aspiring engineer, or simply a curious mind eager to learn, Power Vision promises to enlighten and empower.

So, immerse yourself in the illuminating world of power engineering with Power Vision as your guide. Let us ignite your curiosity, spark your imagination, and empower you to make a difference in the electrifying journey ahead. Welcome to Power Vision – where the future of power awaits!

NXP'S I.MX RT700 MCU: POWERING AI AT THE EDGE WITH EFFICIENCY

NXP Semiconductors recently launched the i.MX RT700, a crossover MCU engineered to bring high-performance AI to edge devices with minimal power demands. Targeted for applications such as wearables, smart home systems, and medical devices, the i.MX RT700 tackles the challenge of delivering AI-driven processing without sacrificing battery life.

This MCU integrates a multicore architecture, featuring a primary Cortex-M33 core clocking at up to 325 MHz for real-time tasks and a secondary Cortex-M33 core optimized for low-power, always-on sensing. With additional support from Cadence's HiFi DSPs, the device enhances audio and voice processing capabilities, while its onboard 7.5 MB of low-power SRAM allows for efficient execution of complex AI tasks directly on the MCU.

One standout feature is the inclusion of NXP's eIQ Neutron NPU, an AI accelerator designed to offload machine learning tasks, enabling faster, real-time inference while lowering power usage. NXP claims the NPU accelerates AI tasks up to 172 times compared to traditional cores, supporting applications like image classification and predictive maintenance. Equipped with advanced power management techniques, the i.MX RT700 extends battery life by up to 70% in sleep mode compared to its predecessors, marking a significant advancement for edge AI applications.

Meera P
III YEAR

https://www.allaboutcircuits.com/news/nxp-unwraps-crossover-mcu-aimed-at-the-ai-enabled-edge

GPU MINING: FROM BITCOIN TO THE LATEST TRENDS

Bitcoin was the first cryptocurrency that could be mined, initially with CPUs, and later with GPUs as complexity grew. Today, GPUs remain a popular choice for mining, thanks to their ability to handle complex computations efficiently. Despite legal considerations (it's mostly legal outside of China), GPU mining is thriving, though the market faces challenges like GPU shortages driven by scalpers.

Why Mine with GPUs?

Originally designed for gaming, GPUs excel at mining tasks, outpacing CPUs in solving cryptographic puzzles. This capability makes them ideal for mining coins like Ethereum (ETH), ERGO, and Ravencoin (RVN), though profitability varies with market conditions.

Essentials to Get Started

To mine with a GPU, you'll need a powerful card, ideally in a dedicated mining rig. Key components include a mining motherboard, ample cooling, and power supplies, as each GPU can draw significant energy. Costs add up— a 6-GPU setup can hike up your electricity bill by $500 monthly—so estimating profitability before investing is essential.

Once your rig is set up, join a mining pool for optimized returns. And remember, the crypto mining landscape is dynamic, so stay updated on best practices for mining efficiency.

Prakash S

III YEAR

https://www.coingecko.com/learn/what-is-gpu-mining-how-to-build-gpu-mining-rig

LED LIGHT BULBS USE 75% LESS ENERGY THAN INCANDESCENT BULBS

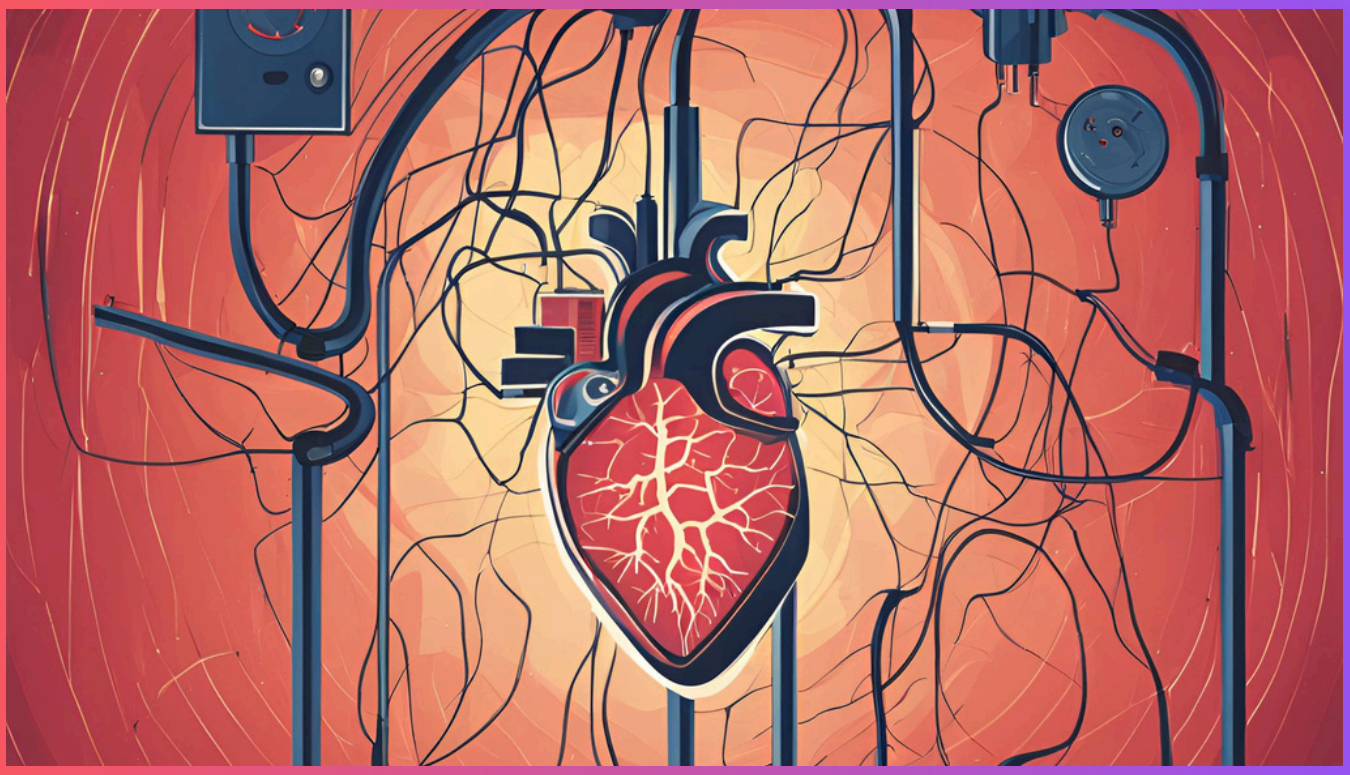
The tiny light-emitting diodes (LEDs) in LED bulbs have revolutionized the way we illuminate our homes and businesses. These compact diodes are much more efficient at converting electricity into light than traditional light bulbs. Incandescent bulbs, which rely on a filament to produce light, are significantly less efficient, requiring about four times more electricity to generate the same amount of light as an LED. This stark difference in energy consumption translates into substantial savings on electricity bills over time.

Beyond energy efficiency, LED bulbs also have impressive longevity, meaning you won't have to replace them as frequently. While their initial purchase price can be higher than traditional bulbs, the long-term savings are substantial. Considering the reduced need for replacements and the significant reduction in energy usage, LED bulbs can save you around 90% compared to the more frequent purchase and operation of regular incandescent bulbs. This makes LEDs both a sustainable and economically wise choice, offering immediate and long-term financial benefits.

Praveena G
IV YEAR

https://thefactfile.org/electricity-facts/

ELECTRICITY AFFECTS OUR HEARTBEATS.



Alongside the firing of electrical signals in our brains, electricity plays a vital role in our bodies, particularly in our hearts. This electric activity is essential for keeping our hearts pumping and maintaining a healthy rhythm. The heart requires a constant supply of energy and oxygen to function correctly, and specific areas within it produce electric impulses to keep it beating in a regular, coordinated manner.

The generation of these electric impulses begins in a specialized area on the right side of the heart called the **sinus node** (or sinoatrial node). Acting as the heart's natural pacemaker, the sinus node sends out electrical signals that prompt the heart muscles to contract and pump blood. This orchestrated process, driven by tiny electrical currents, ensures that our heart beats with precision and efficiency, providing the body with a steady flow of oxygen-rich blood.

Sanjay K
IV YEAR

https://thefactfile.org/electricity-facts/

DIY HOW TO BUILD A RASPBERRY PI NAS

With a Raspberry Pi, you can turn your external hard drives into a NAS for secure backups accessible from anywhere.

Supplies

- Hardware: Raspberry Pi 4 (8GB recommended), power supply, microSD card, Ethernet cable, powered USB hub, and USB storage (SSD or HDD for space).
- Computer for Setup: Another computer connected to your network.

Setup Steps

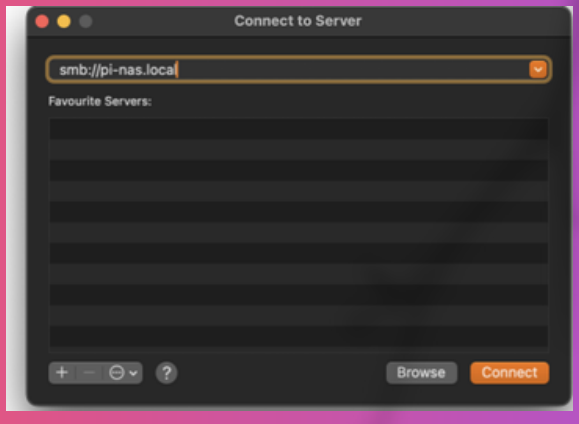
- Prepare Raspberry Pi: Install Raspberry Pi OS Lite (32-bit), set hostname (e.g., "pi-nas"), enable SSH, configure Wi-Fi, and set a username/password.
- Connect Storage: Use a powered USB hub for your USB drive; format and mount it.
- Remote Access: SSH into the Raspberry Pi using ssh <username>@pi-nas.local to control it remotely.
- Set Up Shared Storage:

Set Up Shared Storage:

- Format your drive (`sudo mkfs.ext4 /dev/sda1`), mount it, and add a shared folder (`/mnt/sda1/shared`).
- Install Samba (`sudo apt install samba`) and configure it to share this folder over the network.

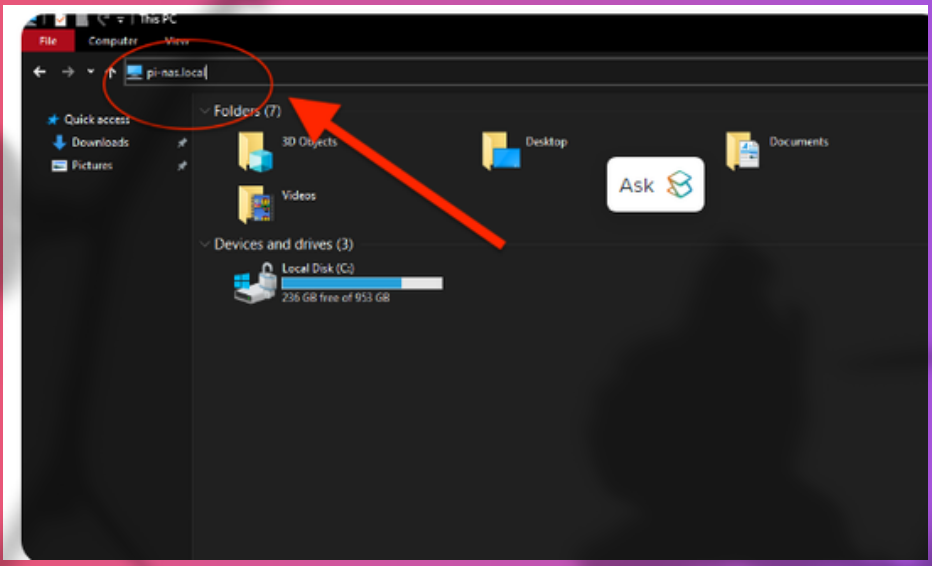
Access from macOS

From your desktop, press Command+K. Type smb://pi-nas.local and press the Enter key.



Access from Windows

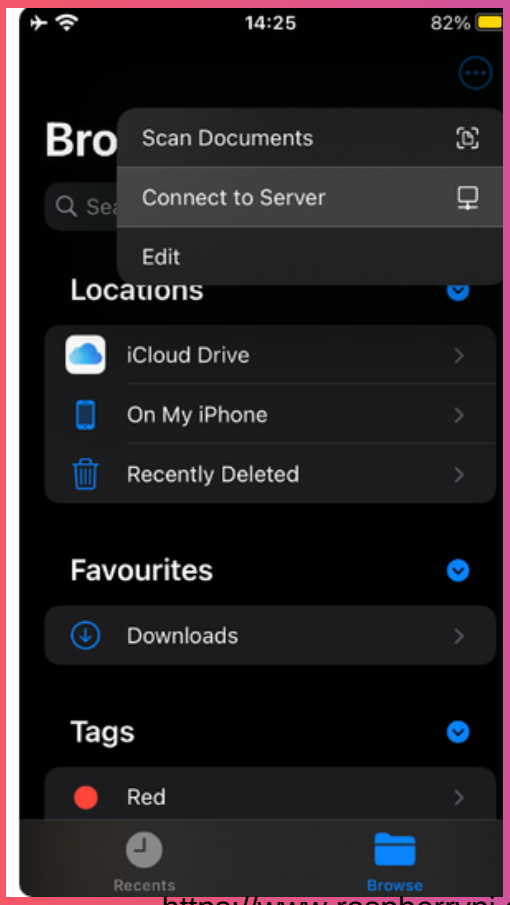
Open Windows Explorer. In the path bar, enter pi-nas.local and press the Enter key



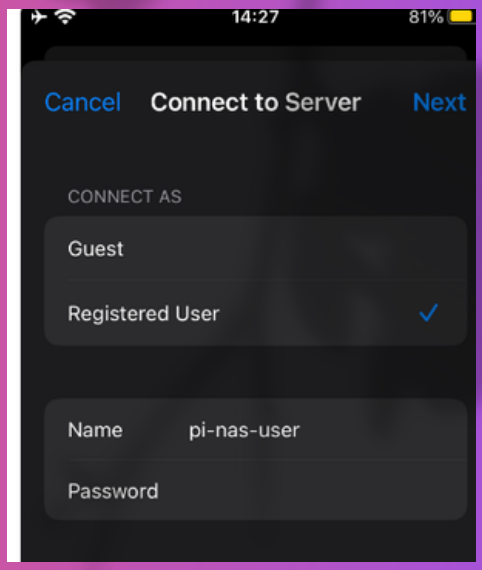
That should create a new entry under Network in the left navigation bar and show its contents. Double-click on the share and enter the username pi-nas-user and the password you chose in the Grant drive access step when prompted

Access from iOS

You can connect your iPhone to your NAS system using the iOS Files app. Open the app, navigate to the Browse view, and select the three dots icon in the top right of the screen

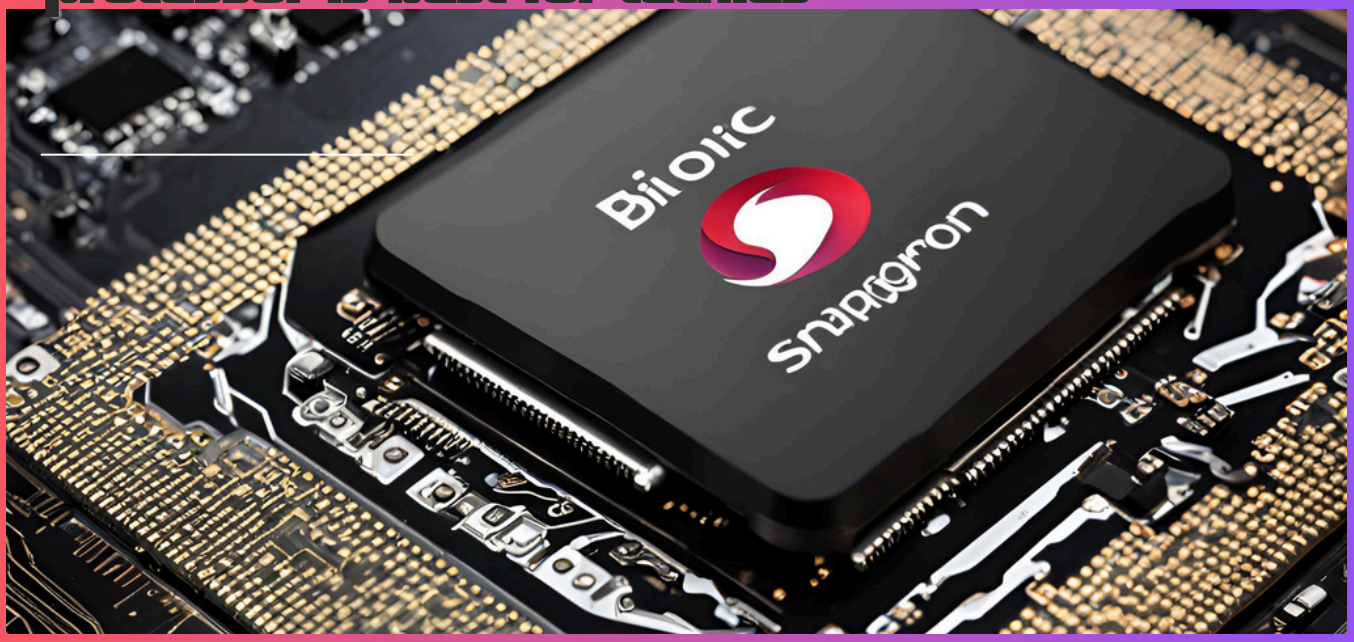


You should see a Connect to Server option. Enter pi-nas.local.
Under Connect as, select Registered User. Enter the username pi-nas-user and the password you chose in the Grant drive access step.



https://www.raspberrypi.com/tutorials/nas-box-raspberry-pi-tutorial/

Snapdragon vs Bionic: Which smartphone processor is best for techies



Snapdragon vs. Bionic Chip: Which is Better for Tech Enthusiasts?

The launch of Apple's iPhone 13 introduced the powerful A15 Bionic chip, prompting a comparison with Qualcomm's Snapdragon 888. Here's a quick breakdown:

1. CPU & GPU: The A15 Bionic uses a hexa-core CPU and Apple-designed 5-core GPU, delivering high performance and efficiency, while Snapdragon 888 features an octa-core Kryo 680 CPU and Adreno 660 GPU, focusing on balanced power.

2. AI & Machine Learning: Snapdragon leads here with its Hexagon 780 DSP, achieving 26 TOPS versus the Bionic's 15.8 TOPS.

3. Image Signal Processor (ISP): The A15 Bionic excels with Apple's 4K HDR Dolby Vision support, while Snapdragon's Spectra 580 ISP enables up to 200 MP photos and 8K video.

4. Connectivity: Both use Qualcomm's X60 5G modem, but Snapdragon 888 supports Wi-Fi 6E for enhanced wireless speed.

In short, A15 Bionic is optimal for Apple's ecosystem, while Snapdragon 888 shines in AI and versatile camera capabilities.

SOULFUL LINES

“கனவுகள் குரல்”

கனவுகள் குரலில் நான் பாடும்,
உன்னில் மூழ்கி ஒரு நாளேறி;
காற்றில் மிதக்கும் வாசனை,
உன் நினைவுகளை தேடும்
போது.
மாலை சூரியன் மறைந்தால்,
உன் உருவம் நீடிக்கிறேன்;
கண்ணீரில் நீயே பிரகாசம்,
என் வாழ்வில் நீ சான்றோ.
அன்பின் சூரியன் திகழ்வான்,
உன் பார்வை என் மனதின் வீடு;
என்னில் ஊற்றும் ஆசைகள்,
காதல் என்றே உன்னுள்
நின்றது.
உன்னுடன் சந்திக்கும் அந்த
நாளில்,
என் இதயம் ஒலிக்கும் இசை;
மலர்களின் வரவேற்பு போல,
உன் அருகில் நிலவாய்
இருகிறாய்.

Jeeva
II YEAR

“வெற்றி ஒளி ”

சிரமத்தில் நிலை நிற்க
வேண்டும்,
வெற்றி தேடும் உழைப்பின்
வாசல்;
உலகம் உனக்காக அமைந்தால்,
தூண்டில் வெற்றியின்
அசைவில்.
வார்த்தைகள் அணுகுமுறை
காத்தால்,
விரல் கூசியாலும் வள்ளல்;
உழைப்பு என்ற குணம் வாழ,
அழகில் நீயே சீர்கொள்வாய்.
கண் திறந்தால் கனவுகள்,
மண் மீது எழும் பூக்கள் போல;
மிதக்கும் வாழ்வின் வழியில்,
வெற்றியுடன் அழகு ஒளிர்ந்தால்.
பாருங்கள், ஒளியாய் இருங்கள்,
மனதில் ஏதும் நம்பிக்கை;
என்னாலும் வெற்றிக்கு இடம்,
கனவுகள் நோக்கி நடைபடிகள்.

Monish
III YEAR

SOULFUL LINES

“ தருமம் காப்போம்”

இரு வழிகள் முன் நிற்கின்றன,
தருமம் என்ற
செம்பொன்மணியின் கண்ணில்;
நியாயம் பின்பற்றும் பாதை,
வாழ்வின் அழகு அதில் உறங்கும்.
வினை நன்மை தரும் வாலிபன்,
அனைவரும் சேர்ந்து நின்றால்;
கை ஒன்றாக இணைந்து,
உலகம் மாறும் புது சந்தோஷம்.
சொல்லில் செயல்பாட்டின்
மதிப்பு,
மனதில் உறுதியாக நிற்கவே;
இணைந்த உணர்வு சுமந்தால்,
தருமம் உலகத்தை அள்ளும்.
மனம் சீர்க்கும் நேரத்தில்,
நம் கண்ணீர் கடந்து சென்றால்;
நமக்குள் நம்பிக்கை துளிர்த்து,
தருமத்தின் ஒளியில் வாழ்வோம்.

Vidhya
IV YEAR

“உயிரின் உன்னதம்”

உலகம் அழகானது,
நிலவின் ஒளி போல,
இலவசம் வாழ்வில் இன்பம்,
மனதில் வதந்தி பெரும்
கவலை.
நேசமும், நேசமுள்ள வீடு,
புது புனிதங்களை தேடும்;
மண் மீது நின்றால் முன்னே,
பார்வை எங்களுக்கே வளம்.
உறவுகள் வாழ்வின் செம்மை,
மழையில் மலர் பூத்தபோது;
இனிய பாதை அணிகலன்,
உலகின் பெருமை நமக்கே.
கண்களில் கனவுகள்
மிதக்கும்,
பிரகாசம் பகலாய் இருக்க;
பண்பேற்றும் இந்த வானம்,
உயிரின் உன்னதம் என்றால்.

Kaviyan
II YEAR

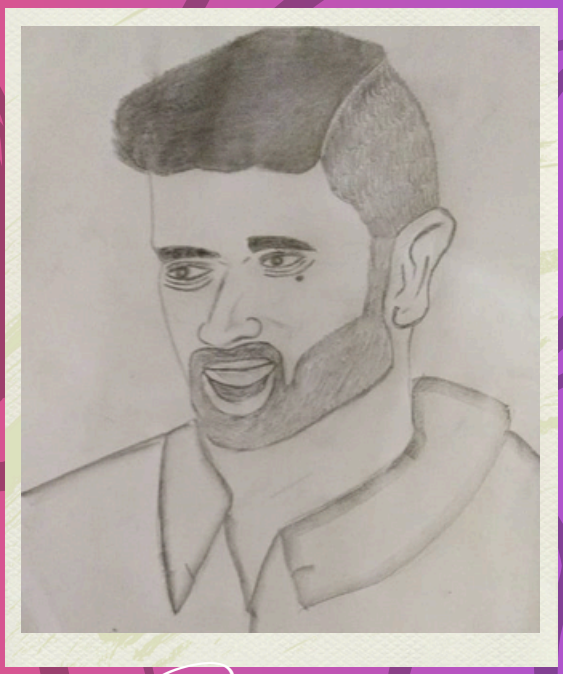
ELEGANT STROKES

Chandru

II YEAR

Manosh

IV YEAR



Shalini

III YEAR

ELEGANT STROKES

Sangavi
IV YEAR

Thomas Maria Jones
II YEAR

Matheshwaran
II YEAR

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Mrs.S.Revathi, AP, EEE

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S Sathish	III Year
R Jeeva	II Year
A Kirubananthan	II Year

College Vision & Mission

VISION

"To become an Internationally Renowned Institution in Technical Education, Research, and Development by Transforming the Students into Competent Professionals with Leadership Skills and Ethical Values."

MISSION

- Providing the Best Resources and Infrastructure.
- Creating a Learner-Centric Environment and Continuous -Learning.
- Promoting Effective Links with Intellectuals and Industries.
- Enriching Employability and Entrepreneurial Skills.
- Adapting to Changes for Sustainable Development.

Department Vision & Mission

VISION

"To be a pioneer in Electrical and Electronics Engineering and to create electrical engineering experts with social responsibilities, for global industry needs."

MISSION

- To facilitate the student's continuous learning with the best infrastructure and environment.
- To provide the students with skills, knowledge, and opportunities to function as members of multi-disciplinary teams.
- To Empower the students towards popular needs of industry, research, and development
- To enable the students to learn ethics, values and contribution to the society.

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