POWER VISION

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

MAGAZINE

Shaping the Future with Electrical Excellence!

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Kongunadu College of Engineering and Technology
(Autonomous)
(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai, Accredited by NBA (CSE, ECE & EEE& MECH), Accredited by NACC with B++ Grade, Recognized by UGC with 2 (f) & 12(B) and ISO 9001:2015 certified Institution)

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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!

THE ROLE OF AI IN ELECTRONICS

The electronics industry has long been a hub of innovation, consistently pushing the boundaries of technology. With the rise of Artificial Intelligence (AI), it is poised for yet another transformative revolution. Companies are increasingly integrating AI into both consumer and industrial electronics, leading to a remarkable wave of smart devices that enhance everyday experiences.

Major players like Samsung and Intel are investing heavily in AI-driven technologies, reshaping product design and manufacturing processes. AI streamlines development cycles, improves product quality, and reduces time-to-market through data-driven insights.

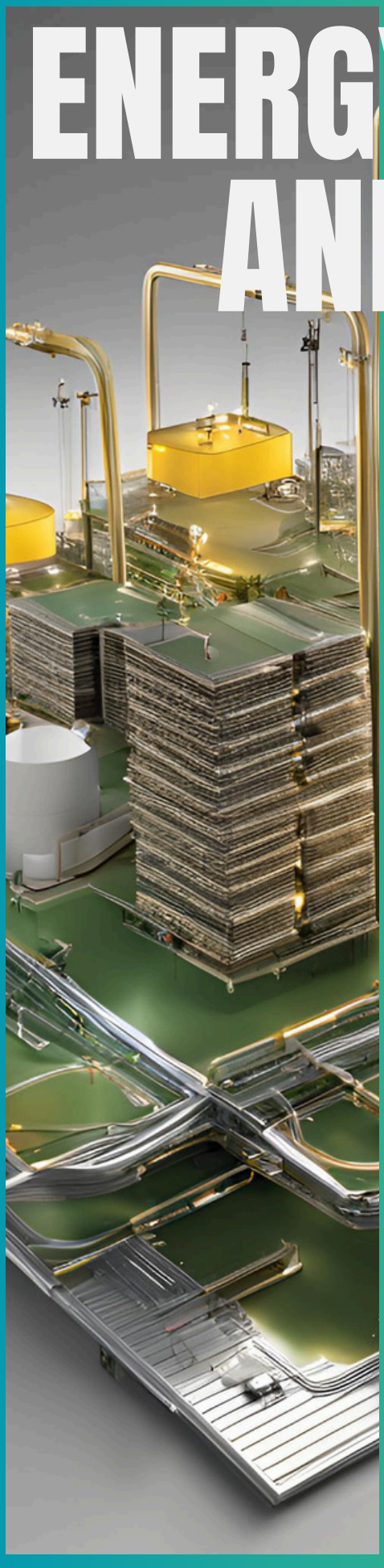
As more devices connect to the Internet, security becomes paramount. AI enhances the security of smart devices by identifying vulnerabilities and protecting against cyber threats in real-time, ensuring user safety.

The future of electronics is undeniably intertwined with AI, offering exciting possibilities for smarter, safer, and more efficient technology. Embracing AI is essential for those aiming to thrive in this dynamic landscape, reimagining what technology can achieve

S. Jawahar
IV YEAR

https://www.softwebsolutions.com/resources/AI-enabled-electronics-manufacturing.html

ENERGY HARVESTING AND STORAGE



Energy harvesting and storage are essential for a sustainable future. Advances in next-gen batteries, wireless power transfer, super-capacitors, and materials research are driving new possibilities for efficient energy use.

a. Next-Gen Battery Technologies

Next-generation batteries like solid-state and sodium-ion offer higher energy density, faster charging, and improved safety. These technologies are crucial for electric vehicles and large-scale renewable energy storage, making energy systems more efficient and reliable.

b. Wireless Power Transfer for IoT Devices

Wireless power transfer and energy harvesting use ambient energy sources like solar or RF to power IoT devices. This enables continuous operation of smart sensors and wearable devices, reducing the need for battery replacements in remote areas.

c. Super-Capacitors in Renewable Energy

Super-capacitors provide fast charging and long cycle life, complementing batteries in renewable systems. Their high power density makes them ideal for electric vehicles, grid balancing, and capturing excess energy from wind and solar.

d. Materials Research for Energy Efficiency

Innovative materials like graphene and perovskites are enhancing energy storage and conversion. These materials improve battery performance and solar cell efficiency, making future energy systems more sustainable and powerful.

V. Myuri
IV YEAR

sites.tufts.edu/eeseniordesignhandbook/2015/wearable-electronics

HUMAN'S FIRST CONTACT WITH ELECTRICITY WAS ELECTRIC FISH

The first human contact with electricity which goes all the way back to ancient Egypt. In 2750 BC, Ancient Egyptians referred to the electric catfish Malapterurus electricus as the Thunderer of the Nile and considered it the protector of other fish in the Nile.

Ancient texts revealed that Egyptians used an electric marine ray, a torpedo, as an electrotherapy treatment for epilepsy. In 1200 AD, Abd al-Latif discovered another type of electric catfish stronger than the torpedo ray in the river Nile.

Philosophers Plato and Aristotle also mentioned the torpedoes in 300 BC. Another philosopher named Plutarch spoke about the experiments on torpedo ray fish, noting that when the electric fish came ashore, people poured water on them and experienced numbing shock. Roman doctors also utilized electric fish to shock their patients with an electric current, seemingly to cure chronic headaches.

R. Gokul
III YEAR

https://www.trvst.world/renewable-energy/electricity-facts/

ELECTRIC CURRENTS DON'T TRAVEL AT THE SPEED OF LIGHT.

A common misconception about electric current is that electricity travels at the speed of light. While this idea is widespread, it is actually incorrect. Electricity is the result of electron movement within a conductor, and unlike light, it cannot travel through a vacuum; it needs a material medium to propagate.

The actual speed of electricity is defined by **drift velocity**—the average speed at which electrons move through a conductor when influenced by an electric field. This drift velocity is much slower than the speed of light. However, the effect of electricity, or the propagation of the electric field itself, can indeed occur at a high speed, typically around 90% of the speed of light, or approximately 270,000 kilometers per second, depending on the properties of the conductor. This high propagation speed allows for the near-instantaneous activation of devices across a circuit, but the actual movement of individual electrons remains relatively slow in comparison.

K. Srinitha
II YEAR

https://www.livescience.com/facts-about-electricity

DIY BUILD YOUR OWN WEATHER STATION

Creating a Bluetooth-controlled car using Arduino allows you to drive your car wirelessly. Follow these steps to build your own.

Step 1: What you will make

A weather station for collecting local climate and environmental data. First of all you will develop and build a prototype weather station using a breadboard and jumper wires. Once you've got everything running and tested, you can turn this prototype into a more robust build so that you can deploy it outside and it will be reliable in the long term.

Step 2 What you will need

Hardware

- A Raspberry Pi, either one that has built-in wireless connectivity or has a WiFi dongle
- A BME280 pressure, temperature, and humidity sensor
- A DS18B20 digital thermal probe (with 1m lead)
- Two 4.7 KOhm resistors
- Some 5mm-pitch PCB mount screw
- A breadboard, some jumper wires An anemometer, wind vane, and rain gauge
- Two RJ11 breakout boards (optional)
- A MCP3008 analogue-to-digital convertor integrated circuit Weatherproof enclosures; recommended products are this 75x75x37mm

Software

- The Oracle Raspberry Pi Weather Station software. You don't need to install it, but you'll use some of the Python programs. Clone the GitHub repository by opening a Terminal window and typing:

```
git clone https://github.com/RaspberryPiFoundation/weather-station
```

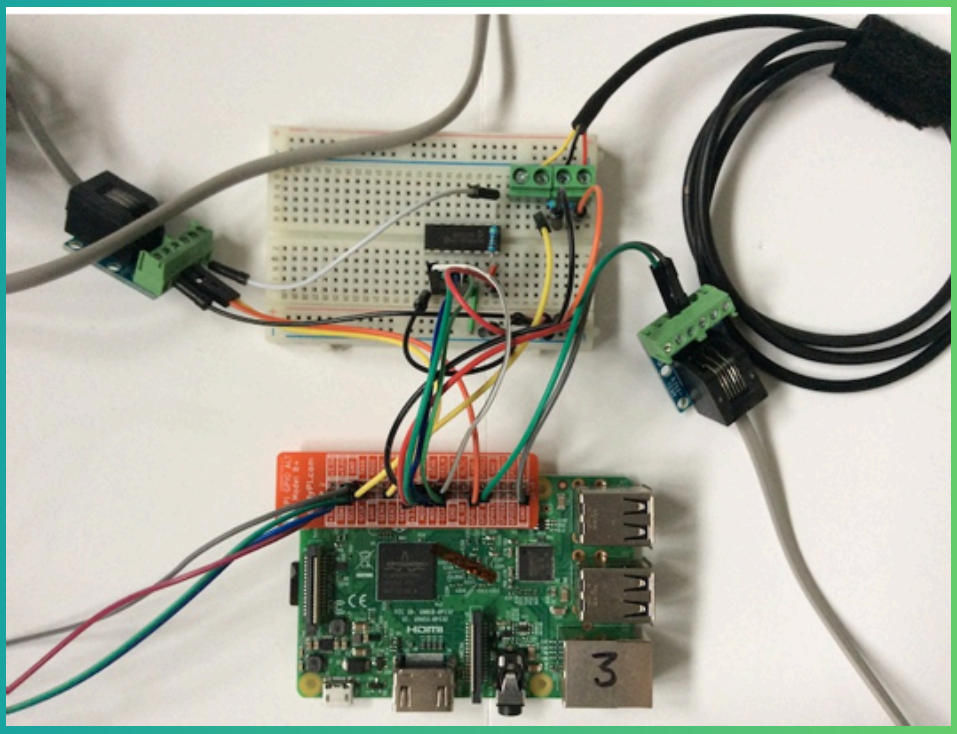
- The BME280 Python library:

```
sudo pip3 install RPi.bme280
```

- The MariaDB database server software:

```
sudo apt-get install -y mariadb-server mariadb-client libmariadbclient-dev
sudo pip3 install mysqlclient
```

Step 3: Assembling everything for outdoors



To set up wireless connectivity for your Raspberry Pi weather station, you can either use WiFi or ethernet depending on your location and accessibility. WiFi is often easier and can be configured by following the Raspberry Pi wireless setup guide. For a more permanent solution, you can build a weather station HAT using the Adafruit Perma-Proto HAT kit. This involves soldering the 40-pin header and connecting sensors such as the BME280, DS18B20, and rain gauge to GPIO pins. Each sensor should be tested individually using scripts like `bme280_sensor.py`, `ds18b20_therm.py`, and `rainfall.py` to ensure proper functionality before assembling the final setup.

For a complete and robust build, additional components like the MCP3008 ADC can be included to interface with analog sensors, such as those used for wind direction. This requires careful soldering and wiring, paying attention to potential shorts, particularly around the HDMI port of the Pi. Ensure all connections are well insulated and secure. Once the HAT is assembled and mounted on the Pi, thoroughly test the entire weather station setup using the full program developed earlier. You can enhance the system by storing weather data for long-term monitoring or linking it to cloud platforms for remote access and analysis.

Future Trends in Electric Vehicle Technology

source: Current Trends and Future Prospects Raghav Bharadwaj

In 2023, electric vehicle (EV) technology is experiencing significant growth, driven by climate concerns and advancements in the automotive sector. Global EV sales surged by 40% in the first half of the year, with projections suggesting EVs will comprise 35-40% of new car sales by 2030. Key trends shaping the industry include AI-powered health checks, advanced driver assistance systems (ADAS), improved connectivity through vehicle-to-everything (V2X) technology, and the development of charging infrastructure. Innovations in battery technology, such as solid-state and lithium-sulfur batteries, promise enhanced energy density and affordability. However, challenges remain, including safety concerns with ADAS, fragmented connectivity standards, and battery limitations. Addressing these issues through robust testing, enhanced cybersecurity, and ongoing innovation in battery technologies is essential. As stakeholders actively engage with these trends and challenges, they can pave the way for a greener, more sustainable future in transportation

Key points on Future Trends in Electric Vehicle Technology:

- Enhanced Battery Technologies: Development of solid-state batteries for greater energy density and faster charging.
- Wireless Charging Solutions: Introduction of inductive charging to eliminate the need for physical connectors.

https://bolt.earth/blog/ev-trends-in-india

SOULFUL LINES

“மழையின் மந்திரம்”“பழமியின் மந்திரம்”

மழை வந்தால், பூமி அயலே,
பளிங்கு போல, கனிகளால்
மூடுமே.
மண்ணின் வாசல் திறந்து,
உயிர்கள் பொங்க,
மழையின் இசையில், கண்கள்
களித்தோன.
வானவில் பூக்கும், குழந்தை
போல சிரிக்கும்,
மண்ணின் அழகே, மனதில்
மிதக்கும்.
பூக்களின் மணம், காதலின்
இறகுகள்,
இயற்கையின் கீதம்,
உணர்வில் எழும்.
இது நமது சந்திப்பு, பரிசின்
உவமைகள்,
மழை நம்மை இணைக்கும்,
இனிமையான யுகங்கள்.

S. Purushothaman
IV YEAR

பழம் கொட்டும் காடுகள்,
இனிய கதைச் சொல்லும்,
சுவையோடு சந்தோசம்,
உயிரின் நிறத்தை ஊட்டும்.
காடுகளின் நமிதி,
நினைவுகளின் ஊர்,
அழகான குளம், மனதின்
சுகமாய்.
வானில் தேனீகள், பாடும்
இசை ஓசை,
பொங்கும் அன்பின் புகழ்,
உலகம் சூழ்ந்தது.
மௌனத்தினில் மகிழ்ச்சி,
பழமியின் அலை,
அவளே என் கனவு,
இதயத்தில் மாறி.

E.M Harish
III YEAR

SOULFUL LINES

“ விடியலின் வரவு”

விடியலின் வரவு, புதிய
நம்பிக்கை,
கதிரவனின் ஒளி,
சுடுகாட்டின் அடியாய்.
பாதையில் பூக்கும்,
சுடுகாட்டின் கண்ணீர்,
என் மனதை அடிக்க,
வாழ்வின் கோலமாய்.
பூக்கள் மலரும் நேரம்,
காதல் நகைகள்,
நீங்களும் என் வாழ்வில்,
நிறைந்த வர்ணங்கள்.
என் உயிரின் இசை,
உன்னைச் சந்தித்தால்,
எதிர் கொண்டு வரும் நாள்,
காதல் அழகு போல

P. Muthamil Pandiyan
IV YEAR

“கடலின் காற்று”

கடலின் காற்றில்,
புதுமலர்கள் வந்து,
அழகின் தகடு, உன்
கைகளில் உணர்வு.
கடல் அலையோடு,
துளிகள் பறக்கும்,
உள்ளத்தின் இசை,
அன்பின் பெருமை
செல்வம்.
கதிர் பொலிவு, மிதக்கும்
வெள்ளம்,
மனிதனின் வாழ்வு,
கடலில் கரைந்து.
இந்த உலகில்
உன்னோடு, காதல்
ஓடுவது,
மனதின் அருகில்,
அழகின் இசைபாடும்

M. Shalini
III YEAR

ELEGANT STROKES

Maha Lakshimi

II YEAR

Dinesh Murugan

II YEAR

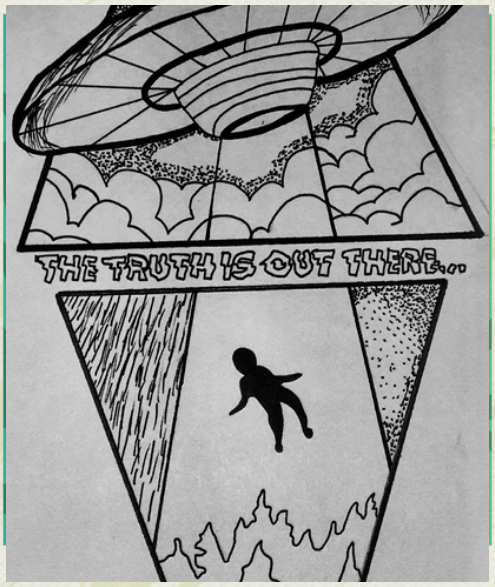
Dharshini

III YEAR

ELEGANT STROKES

Malini
III YEAR

Thangamani
III YEAR



Balaji
III YEAR

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Dr.R.Shankar, HOD, EEE

EXECUTIVE EDITOR:
Mrs.S.Revathi, AP, EEE

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S Sathish	IV Year
B Sureka	IV Year
R Jeeva	III Year
A Kirubananthan	III Year
P Dinesh Murugan	II Year
M Srikanth	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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