P.S.R. ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to Anna University, Chennai)
Accredited by NAAC A+ Grade, NBA and listed Under, 12 (B) of the UGC Act,1956
Sivakasi - 626140, Virudhunagar (dt), Tamilnadu

NEWS LETTER

November 2022
Volume 13 , Issue 1

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Institute Vision and Mission

Vision

To contribute to the society through excellence in technical education with societal values and thus a valuable resource for industry and the humanity.

Mission

- To create an ambience for quality learning experience by providing sustained care and facilities.
- To offer higher level training encompassing both theory and practices with human and social values.
- To provide knowledge based services and professional skills to adapt tomorrow's technology and embedded global changes.

Department Vision and Mission

Vision

To be a technical hub of creating Electrical and Electronics Engineers with superior quality, human values and ethical views

Mission

- To provide an excellent, innovative and comprehensive education in electrical and electronics engineering.
- To create a conducive learning environment and train the students in the latest technological development domain to enhance carrier opportunities
- To produce competent and disciplined engineers suitable for making a successful career in industry/research.

CONTENTS

FACULTY ACTIVITIES

NAME OF THE FACULTY	NAME OF THE WORKSHOP/FDP	FDP/STTP	NAME OF THE INSTITUTE/ INDUSTRY	DATE
Dr. .R MUNIRAJ	The role of Artificial Intelligence in Renewable Energy Applications	International FDP	KPR Institute of Engineering and Technology	01.08.2022 to 05.08.2022
Dr.K.PUNITHA	IEEE Xplore	Webinar	PSR Engineering College	02.09.2022
	The role of Artificial Intelligence in Renewable Energy Applications	International FDP	KPR Institute of Engineering and Technology	01.08.2022 to 05.08.2022
	Simulation Tools in Electrical Engineering	Training Program	Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology	20.06.2022 to 25.06.2022
	Recent Trends in Electric Vehicles and smart grid with Renewable energy Technologies for sustainable Development	STTP	Sri Ramakrishna Engineering College	06.06.2022 to 10.06.2022
	Cyber Physical System-Modelling, Simulation and Analysis	Workshop	IEEE India Council in association with IEEE SRM Student Branch	03.06.2022 to 04.06.2022
Dr.R.MADAVAN	The role of Artificial Intelligence in Renewable Energy Applications	International FDP	KPR Institute of Engineering and Technology	01.08.2022 to 05.08.2022
Dr R.ARUNA	Introduction to Architecting Smart IoT Devices	Naan Mudhalvan - Coursera course	Eit Digital Co funded by the European Union	3 weeks completed this course on November 21, 2022

	The role of Artificial Intelligence in Renewable Energy Applications	International FDP	KPR Institute of Engineering and Technology	01.08.2022 to 05.08.2022
Dr.M.ULAGANATHAN	The role of Artificial Intelligence in Renewable Energy Applications	International FDP	KPR Institute of Engineering and Technology	01.08.2022 to 05.08.2022
Mr.T.BALASUBRAMANIAN	The role of Artificial Intelligence in Renewable Energy Applications	International FDP	KPR Institute of Engineering and Technology	01.08.2022 to 05.08.2022
Ms S KRISHNAVENI	The role of Artificial Intelligence in Renewable Energy Applications	International FDP	KPR Institute of Engineering and Technology	01.08.2022 to 05.08.2022
	Recent Trends in Electric Vehicles and smart grid with Renewable energy Technologies for sustainable Development	STTP	Sri Ramakrishna Engineering College	06.06.2022 to 10.06.2022
Mrs.M.YAMUNA	Challenges and Measures in Evolving Power systems	FDP	Mahatma Gandhi Institute of Technology	06.06.2022 to 11.06.2022
Mr S RAMARAJ	The role of Artificial Intelligence in Renewable Energy Applications	International FDP	KPR Institute of Engineering and Technology	01.08.2022 to 05.08.2022
Mr P SARATH CHANDRAN	The role of Artificial Intelligence in Renewable	International FDP	KPR Institute of Engineering and	01.08.2022 to 05.08.2022
Ms M KANIMOZHI	The role of Artificial Intelligence in Renewable Energy Applications	International FDP	KPR Institute of Engineering and Technology	01.08.2022 to 05.08.2022
	Recent Trends in Electric Vehicles and smart grid with Renewable energy Technologies for sustainable Development	STTP	Sri Ramakrishna Engineering College	06.06.2022 to 10.06.2022
Mr.T.RENGARAJ	The role of Artificial Intelligence in Renewable Energy Applications	International FDP	KPR Institute of Engineering and Technology	01.08.2022 to 05.08.2022

Mr.A.PRABHU	The role of Artificial Intelligence in Renewable Energy Applications	International FDP	KPR Institute of Engineering and Technology	01.08.2022 to 05.08.2022
Mrs.S.VALLIMAYIL	The role of Artificial Intelligence in Renewable Energy Applications	International FDP	KPR Institute of Engineering and Technology	01.08.2022 to 05.08.2022
	IEEE Xplore	Webinar	PSR Engineering College	20.10.2022
Mrs.R.PAL SELVAM	The role of Artificial Intelligence in Renewable Energy Applications	International FDP	KPR Institute of Engineering and Technology	01.08.2022 to 05.08.2022

DEPARTMENT ACTIVITIES

Sl. No	Name of the Event	Date
1.	Guest Lecture on career Guidance for Electrical Engineers	16.08. 2022

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DEPARTMENT of ELECTRICAL AND ELECTRONICS ENGINEERING

IEEE

Cordially invite you for the

GUEST LECTURE

on

Career Guidance for Electrical Engineers
On 16th August 2022
Er.P.Kanaga John Chrust

Senior Testing and Commissioning Engineer,
Shree Abhirami Engineers,
Chennai

Has kindly consented to be the chief guest and delivers keynote address

In the august presence of

Thiru. R. SOLAISAMY
Managing Trustee, P.S.R. Group of Institutions
&
Er. S. VIGNESHWARI ARUNKUMAR
Trustee & Director, P.S.R. Group of Institutions

Dr. B.G.Vishnuram
Principal, P.S.R. Engineering College
Dr.R.MUNIRAJ
Head/EEE

Dr. P. MARICHAMY
Dean, P.S.R. Engineering College
Dr. R. ARUNA
Mr.P.SARATH CHANDRAN
Co-ordinator/EEE Department

All Are Welcome...

		
2.	Value Added Course on Embedded System and IoT 	15.09.2022 To 20.09.2022

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

In association with
PSREC-IEEE SB (62441)

Cordially invite you for the

VALUE ADDED COURSE

On

EMBEDEED SYSTEM AND IoT

From 15th to 20th September 2022

Mr.S.AVINASH

Co-Founder,

Incrix Techlutions LLP,

Kovilpatti-628501

Has kindly consented to be the chief guest and delivers keynote address

In the august presence of

Thiru. R. SOLAISAMY
Managing Trustee, P.S.R. Group of Institutions
&
Er. S. VIGNESHWARI ARUNKUMAR
Trustee & Director, P.S.R. Group of Institutions

Dr. B.G.Vishnuram
Principal, P.S.R. Engineering College

Dr. P. MARICHAMY
Dean, P.S.R. Engineering College

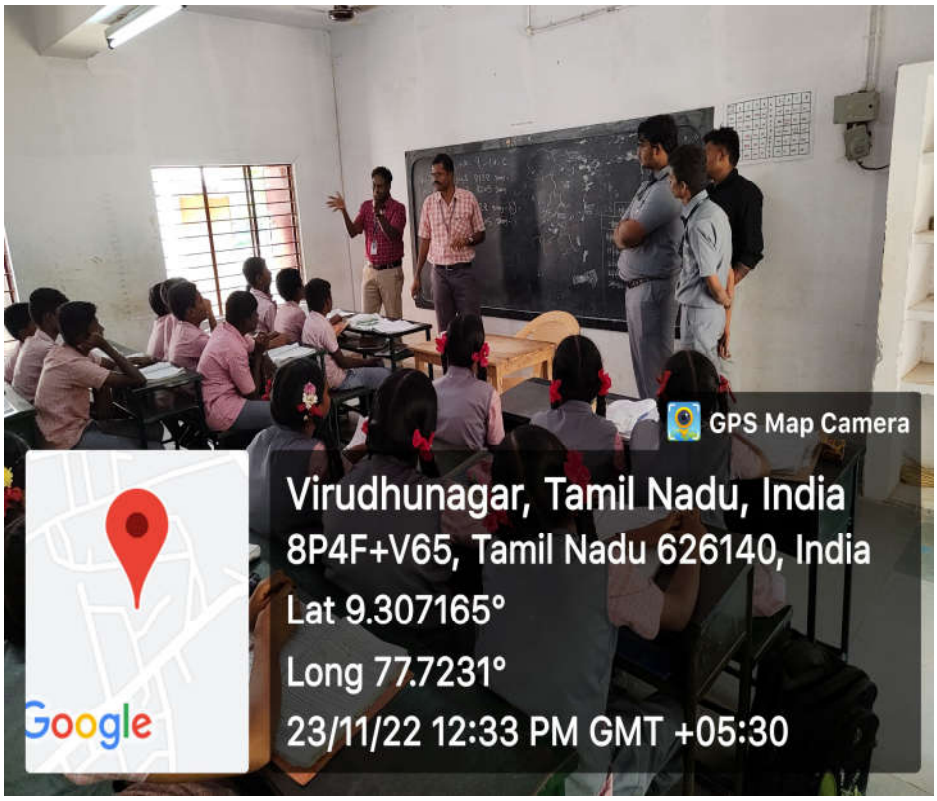
Dr.M.Carmel Sobia ASP/EEE
Mrs.S.Krishnaveni ASP/EEE
Co-ordinators

Dr.R.MADAVAN
ASP/EEE
PSREC- IEEE SB COUNSELOR

Dr. R. MUNIRAJ
HOD/EEE

All Are Welcome…

3.	National Level Technical Symposium – **SYNCHRIONZ 2K22**	11.10.2022

		
4.	Social awareness program on Electrical energy conservation and electrical safety in Govt. Higher Secondary school, Sevalpatti 	23.11.2022


GPS Map Camera
Virudhunagar, Tamil Nadu, India
8P4F+V65, Tamil Nadu 626140, India
Lat 9.307162°
Long 77.723092°
23/11/22 12:36 PM GMT +05:30
Google


GPS Map Camera
Virudhunagar, Tamil Nadu, India
8P4F+V65, Tamil Nadu 626140, India
Lat 9.307165°
Long 77.723094°
23/11/22 12:41 PM GMT +05:30
Google

STUDENT ACTIVITIES

WORKSHOPS ATTENDED:

Name of the student	Date of the event	Title of the event	Institute
A.Nandha Balan	12.06.2022	Combined Annual Training Camp	P.S.R Engineering College
G.Vengadesh	16.07.2022	Circuit Track(ALTANZIA 2K22)	National Engineering College. Kovilpattl
S.Abdul Azeez	16.07.2022	Circuit Track(ALTANZIA 2K22)	National Engineering College. Kovilpattl
J.Gopikannan	23.07.2022	Quiz Series on Electric Vehivles-XXXVIII	KPR Institute of Engineering and Technology
P.Gangatharan	01.08.2022	National Intellectual Property Awareness Mission	Intellectual Property Office and MoE's Innovation cell
S. Rajeshkumar	01.08.2022	Awareness Training Program (NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION)	Intellectual Property Office and MoE's Innovation Cell, India
N.Jeeva Krithika	01.08.2022	Awareness Training Program (NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION)	Intellectual Property Office and MoE's Innovation Cell, India
R.GANESH	01.08.2022	Awareness Training Program (NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION)	Intellectual Property Office and MoE's Innovation Cell, India
P.GOPIKRISHNA	01.08.2022	Awareness Training Program (NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION)	Intellectual Property Office and MoE's Innovation Cell, India
R.MUTHUSELVI	01.08.2022	Awareness Training Program (NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION)	Intellectual Property Office and MoE's Innovation Cell, India

S.Abdul Azeez	01.08.2022	Awareness Training Program (NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION)	Intellectual Property Office and MoE's Innovation Cell, India
S.Sakthivel	01.08.2022	Awareness Training Program (NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION)	Intellectual Property Office and MoE's Innovation Cell, India
P.Yogeshwaran	01.08.2022	Awareness Training Program (NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION)	Intellectual Property Office and MoE's Innovation Cell, India
A.Briskilla Merlin	01.08.2022	Awareness Training Program (NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION)	Intellectual Property Office and MoE's Innovation Cell, India
K.Sudarson	01.08.2022 & 02.08.2022	Simulation of Power Converters using Matlab-Simulink	Sri Sivasubramaniya Nadar College of Engineering
P. Mahesh Boopathi	01.08.2022 & 02.08.2022	Simulation of Power Converters using Matlab-Simulink	Sri Sivasubramaniya Nadar College of Engineering
P.Krishna Moorthy	01.08.2022 & 02.08.2022	Simulation of Power Converters using Matlab-Simulink	Sri Sivasubramaniya Nadar College of Engineering
S.Ramesh	01.08.2022 & 02.08.2022	Simulation of Power Converters using Matlab-Simulink	Sri Sivasubramaniya Nadar College of Engineering
J.Vikram	01.08.2022 & 02.08.2022	Simulation of Power Converters using Matlab-Simulink	Sri Sivasubramaniya Nadar College of Engineering
R.Shanmuga Kumar	01.08.2022 & 02.08.2022	Simulation of Power Converters using Matlab-Simulink	Sri Sivasubramaniya Nadar College of Engineering
J.Gopikannan	01.08.2022 & 02.08.2022	Simulation of Power Converters using Matlab-Simulink	Sri Sivasubramaniya Nadar College of Engineering
V. Jeyasimman	01.08.2022 & 02.08.2022	Simulation of Power Converters using Matlab-Simulink	Sri Sivasubramaniya Nadar College of Engineering

S.Gobi Krishna	01.08.2022 & 02.08.2022	Simulation of Power Converters using Matlab-Simulink	Sri Sivasubramaniya Nadar College of Engineering
A.Nandhabalan	01.08.2022 & 02.08.2022	Simulation of Power Converters using Matlab-Simulink	Sri Sivasubramaniya Nadar College of Engineering
S. Vignesh	01.08.2022 & 02.08.2022	Simulation of Power Converters using Matlab-Simulink	Sri Sivasubramaniya Nadar College of Engineering
R.Saran Kumar	01.08.2022 & 02.08.2022	Simulation of Power Converters using Matlab-Simulink	Sri Sivasubramaniya Nadar College of Engineering
K.Ravikumar	01.08.2022 & 02.08.2022	Simulation of Power Converters using Matlab-Simulink	Sri Sivasubramaniya Nadar College of Engineering
K.Tathindhevesh	01.08.2022 & 02.08.2022	Simulation of Power Converters using Matlab-Simulink	Sri Sivasubramaniya Nadar College of Engineering
A.Pradheeba	01.08.2022 & 02.08.2022	Workshop(Simulation of power converters using MatLab Simulink)	SSN College of Engineering
SIKKANTHAR MYDEEN. R	01.08.2022 & 02.08.2022	Workshop(Simulation of power converters using MatLab Simulink)	SSN College of Engineering
S.Vidhya	01.08.2022 & 02.08.2022	Workshop(Simulation of power converters using MatLab Simulink)	SSN College of Engineering
G.Vengadesh	01.08.2022 & 02.08.2022	Workshop(Simulation of power converters using MatLab Simulink)	SSN College of Engineering
S.Abdul Azeez	01.08.2022 & 02.08.2022	Workshop(Simulation of power converters using MatLab Simulink)	SSN College of Engineering
S.Manoj	01.08.2022 & 02.08.2022	Workshop(Simulation of power converters using MatLab Simulink)	SSN College of Engineering
M.MUHAMEDARSATH	01.08.2022 & 02.08.2022	Workshop(Simulation of power converters using MatLab Simulink)	SSN College of Engineering
S.Sakthivel	01.08.2022 & 02.08.2022	Workshop(Simulation of power converters using MatLab Simulink)	SSN College of Engineering
A.Briskilla Merlin	01.08.2022 & 02.08.2022	Workshop(Simulation of power converters using MatLab Simulink)	SSN College of Engineering

G.Eniyanambirajan	01.08.2022 & 02.08.2022	Workshop(Simulation of power converters using MatLab Simulink)	SSN College of Engineering
V.Rishikesh	01.08.2022 & 02.08.2022	Workshop(Simulation of power converters using MatLab Simulink)	SSN College of Engineering
P.Yogeshwaran	02.08.2022	Electric Vehicle Battery Management System	SKILL LYNC
S.Karthick	03.08.2022	Opportunities for Civil Engineers in HRB Design	SKILL LYNC
M.Manjula	03.08.2022	Opportunities for Civil Engineers in HRB Design	SKILL LYNC
S.Gunadevi	03.08.2022	Opportunities for Civil Engineers in HRB Design	SKILL LYNC
S.Karthick	03.08.2022	Machine Learning for IOT	SKILL LYNC
G.Vengadesh	03.08.2022	Opportunities for Civil Engineers in HRB Design	SKILL LYNC
M.Subash	03.08.2022	Opportunities for Civil Engineers in HRB Design	SKILL LYNC
P.Yogeshwaran	03.08.2022	Machine Learning for IOT	SKILL LYNC
P.Yogeshwaran	03.08.2022	Opportunities for Civil Engineers in HRB Design	SKILL LYNC
A.Briskilla Merlin (2nd Prize)	15.08.2022	Rangoli	Government of TamilNadu
N. Jeeva Karthika (2nd Prize)	15.08.2022	Rangoli	Government of TamilNadu
Gopikrishna	31.08.2022	C++	CppBuzz.com
N.Jeeva Krithika	31.08.2022	C++	CppBuzz.com
S.Karthick	31.08.2022	C++	CppBuzz.com
Muthupradeep.M	31.08.2022	C++	CppBuzz.com
P.Yogeshwaran	31.08.2022	C++	CppBuzz.com
G.Vengadesh	01.09.2022	C++	CppBuzz.com
S.Nambi Arunachalam	01.09.2022	C++	CppBuzz.com
PraveenKumar	02.09.2022	C++	CppBuzz.com

Symposium

Name of the student	**Date of the event**	**Title**	**Institute**
G.Guruvel Sarveshwar	21.06.2022	Knowing Yoga Quiz	NIC
V.Rishikesh	21.06.2022	Quiz	IEEE
G.Vengadesh	23.07.2022	Quiz Series on Electric Vehicles - XXXVII	KPR Institute of Engineering and Technology, Coimbatore.

V.Rishikesh	23.07.2022	Quiz Series on Electric Vehicles-XXXVIII	IEEE
V.Rishikesh	01.08.2022	Quiz	BIET

NPTEL ONLINE COURSES:

Name of the student	Duration of the course	Title of the course
S.Mukeshkanna	12weeks(August 22- October 22)	Basic Electric Ciruits(Elite)

INTERNSHIPS:

Name Of The Student	Date of the event	Institute
Chelladurai Pandian.P Abdul Azeez.S Kaleeswaran.S Yogeshwaran.P Vengadesh.G	05.07.2022 to 18.07.2022	NLC, Neyveli
Gangatharan P Gopalakrishnan M Gurumaharaja A John Solaman S Karankumar S Manikandan A Manishprabhu R Sanjeevi Kumar G	18.07.2022 to 22.07.2022	National Small Industries Corporation.

INPLANT TRAINING:

Name of the Student	Date of the Event	Place
S.Sarankumar	04.07.2022 to 15.07.2022	SALZAR ELECTRONIC LTD,Coimbatore.
S.Arunkumar	04.07.2022 to 16.07.2022	VYZVA TECHNOLOGIES,Coimbatore
S.Gunadevi	05.07.2022 to 16.07.2022	SOLIDMECH ENTERPRISES,Coinbatore.
D.Aravind	06.07.2022 to 11.07.2022	230KV Substation, Kayathar

S.Gowtham Raj P.Balamurali		
M.Subash	07.07.2022 to 14.07.2022	KaaShiv Info Tech
S.Manoj	07.07.2022 to 14.07.2022	KaaShiv Info Tech
R.Dinesh Kumar	07.07.2022 to 14.07.2022	KaaShiv Info Tech
SIKKANTHAR MYDEEN. R	11.07.2022 to 17.07.2022	Substation ,Anupppankulam
S.Harinath	11.07.2022 to 17.07.2022	Substation ,Anupppankulam
M.Mayavinothan	11.07.2022 to 17.07.2022	Sub station Anuppankulam

KNOW YOUR ALUMNI

Surya S

Alumni: 2019

Department of Electrical and Electronics Engineering.

PSR Engineering College,

Sivakasi.

EDUCATION

1. **Course**: Bachelor of Engineering in Electrical and Electronics Engineering

   College: PSR Engineering College, Sivakasi

   Year of Passing: 2019

2. **Course**: Master of Engineering in Power Electronics and Drives

   College: PSR Engineering College, Sivakasi

   Year of Passing: 2021

EXPERINCE SUMMARY

1. **Organization:** Tata Consultancy Services (TCS)

   Designation: System Engineer

   Duration: 2019 – 2022

2. **Organization:** Cognizant Technology Solutions (CTS)

   Designation: Test Lead and Senior Test Analyst

   Duration: 2022 –At Present

PLACEMENT DETAILS

S. No.	Name of the student placed	Name of the Employer
1.	VIGNESH S	TCS , Chennai / Pinnacle Infotech, Madurai
2.	RAJA S	CTS / Mithra Soft
3.	MUTHUKUMAR M	Soft Suave
4.	GOPIKANNAN J	VPG Sensors, Chennai
5.	RAMKUMAR S	VPG Sensors, Chennai
6.	ARAVIND G	VPG Sensors, Chennai
7.	SHANMUGA KUMAR E	VPG Sensors, Chennai
8.	GURUMAHARAJA A	VPG Sensors, Chennai / Pinnacle Infotech, Madurai
9.	ANGURAJ S	VPG Sensors, Chennai
10.	KRISHNAMOORTHY P	VPG Sensors, Chennai
11.	GOBI KRISHNA S	VPG Sensors, Chennai / Pinnacle Infotech, Madurai
12.	SAMPATHKUMAR S	Innowell ,Sivakasi
13.	RAMESH S	Innowell ,Sivakasi
14.	USHANANDHINI N	Aspire Systems
15.	RUKKUMANI S	Renault Nissan
16.	SURYA A	Shree Abirami Engineering Works, Chennai
17.	VINOTH KUMAR M	Shree Abirami Engineering Works, Chennai
18.	ARUMUGAKANI A	Shree Abirami Engineering Works, Chennai

19.	MANORANJITH P	Shree Abirami Engineering Works, Chennai
20.	SURIYA A	Shree Abirami Engineering Works, Chennai
21.	MAHESH BOOPATHI P	Shree Abirami Engineering Works, Chennai
22.	LAKSHMANARAJ P	Shree Abirami Engineering Works, Chennai
23.	POTHIRAJ K	Shree Abirami Engineering Works, Chennai / Pinnacle Infotech, Madurai
24.	VEERAMANIKANDAN S	Shree Abirami Engineering Works, Chennai
25.	SARAN KUMAR.R	Shree Abirami Engineering Works, Chennai
26.	VIKRAM J	Shree Abirami Engineering Works, Chennai
27.	ARULJEEVA A	Shree Abirami Engineering Works, Chennai / Omega Healthcare Management Services Pvt Ltd, Coimbatore
28.	GOPALA KRISHNAN M	Shree Abirami Engineering Works, Chennai
29.	MANIKANDAN A	Shree Abirami Engineering Works, Chennai
30.	SURENDHAR T	Shree Abirami Engineering Works, Chennai
31.	KIRTHICK ROSHAN S	Shree Abirami Engineering Works, Chennai / Pinnacle Infotech, Madurai
32.	NANDHA BALAN A	Shree Abirami Engineering Works, Chennai
33.	SANGILIPANDI M	Shree Abirami Engineering Works, Chennai
34.	PANDI KUMAR S	Shree Abirami Engineering Works, Chennai
35.	SARAVANAN R	Shree Abirami Engineering Works, Chennai
36.	KARANKUMAR S	Pinnacle Infotech, Madurai

37.	JEYAKRISHNA N	Upmost Solution,Chennai
38.	AHAMED ASICK M	Omega Healthcare Management Services Pvt Ltd, Coimbatore

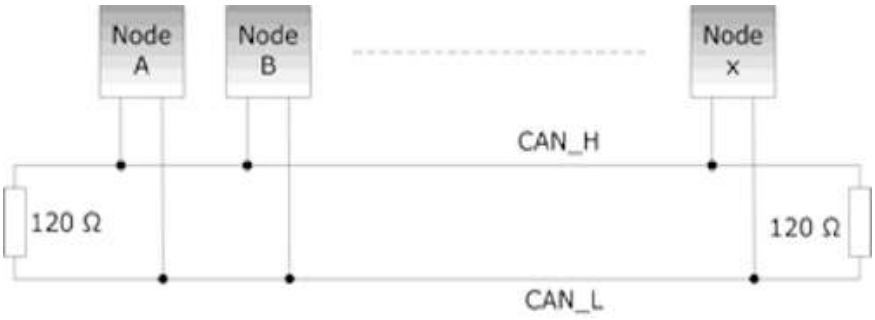
STUDENT ARTICLE

Controller Area Network (CAN)

Controller Area Network (CAN) is a serial network technology that was originally designed for the automotive industry, especially for European cars, but has also become a popular bus in industrial automation as well as other applications. The CAN bus is primarily used in embedded systems, and as its name implies, is a network technology that provides fast communication among microcontrollers up to real-time requirements, eliminating the need for the much more expensive and complex technology of a Dual-Ported RAM.

Introduction

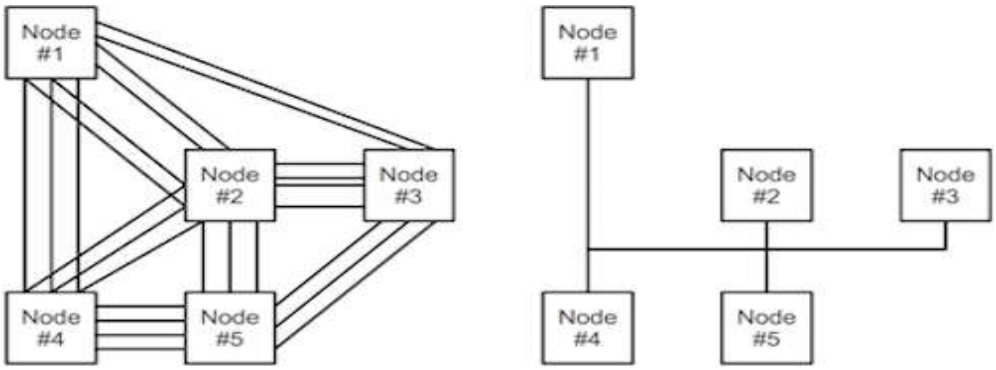
CAN is a two-wire, half duplex, high-speed network system, that is far superior to conventional serial technologies such as RS232 in regards to functionality and reliability and yet CAN implementations are more cost effective.



While, for instance, TCP/IP is designed for the transport of large data amounts, CAN is designed for real-time requirements and with its 1 MBit/sec baud rate can easily beat a 100 MBit/sec TCP/IP connection when it comes to short reaction times, timely error detection, quick error recovery and error repair.

CAN networks can be used as an embedded communication system for microcontrollers as well as an open communication system for intelligent devices. Some users, for example in the field of medical engineering, opted for CAN because they have to meet particularly stringent safety requirements.

Similar requirements had to be considered by manufacturers of other equipment with very high safety or reliability requirements (e.g. robots, lifts and transportation systems) The greatest advantage of Controller Area Network lies in the reduced amount of wiring combined with an ingenious prevention of message collision (meaning no data will be lost during message transmission)



Without CAN - With CAN

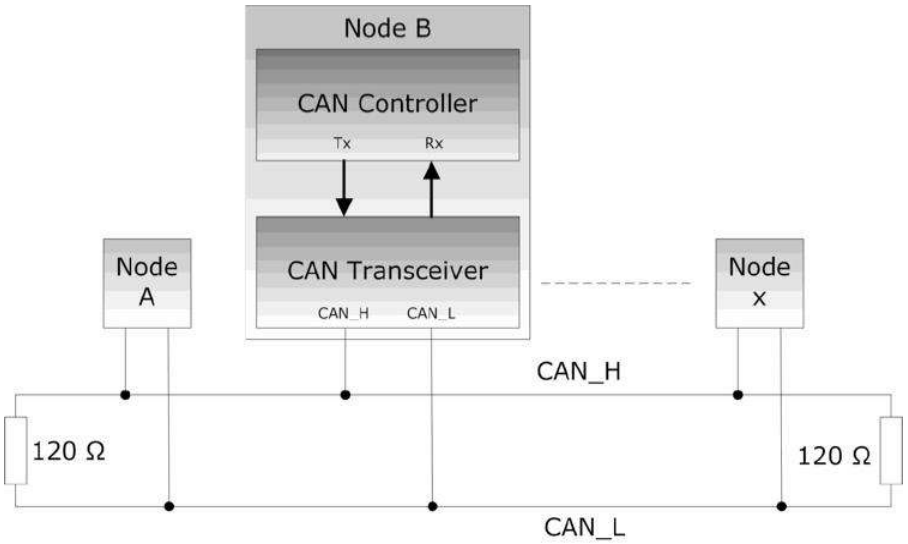
CAN's technical characteristics are

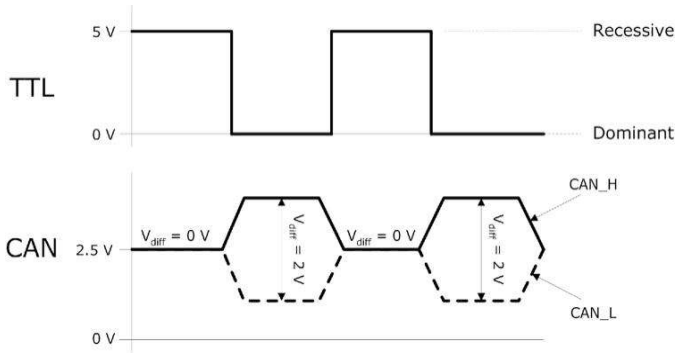
- Is a serial networking technology for embedded solutions.
- Needs only two wires named CAN_H and CAN_L.
- Operates at data rates of up to 1 Megabit per second.
- Supports a maximum of 8 bytes per message frame.
- Does not support node IDs, only message IDs. One application can support multiple message IDs.
- Supports message priority, i.e. the lower the message ID the higher its priority.
- Supports two message ID lengths, 11-bit (standard) and 29-bit (extended)
- Does not experience message collisions (as they can occur under other serial technologies)
- Is not demanding in terms of cable requirements. Twisted-pair wiring is sufficient.

CAN Interface Hardware

A great variety of microprocessor chips, such as the ARM Cortex-M3 processor, provide interfaces such as Ethernet, digital I/O, analog I/O, USB, UARTS, and, last but not least, Controller Area Network. However, that does not mean that you can use the chip "as is" and connect it to a network, sensors, etc. All of these interfaces require some kind of a "hardware driver." In case of serial technologies such as RS232 or CAN, you will need the corresponding transceiver.

In the specific case of the CAN bus controller, we need a line driver (transceiver) to convert the controller's TTL signal to the actual CAN level, which is a differential voltage. The use of differential voltage contributes to the vast reliability of CAN.





The actual signal status, recessive or dominant, is based on the differential voltage between CAN_H and CAN_L (2V during dominant bit time; 0V during recessive bit time)

CAN-Based Higher-Layer Protocols

Even though extremely effective in automobiles and small, embedded applications, CAN alone is not suitable for projects that require a minimum of network management and messages with more than eight data bytes

As a consequence, higher-layer protocols (additional software on top of the CAN physical layer) such as CANopen for industrial automation and SAE J1939 for off-road vehicles were designed to provide an improved networking technology that support messages of unlimited length and allow network management, which includes the use of node IDs (CAN supports only message IDs where one node can manage multiple message IDs)

Ironically, however, it is very well foreseeable that the basic CAN technology will prevail over higher-layer protocols for the automation industry such as CANopen and DeviceNet, specifically due to its

continued use in automobiles. These days, CANopen and DeviceNet are “dead” protocols when it comes to new developments. The only exception is SAE J1939, which is closely connected to the diesel engine technology and that includes, yet again, vehicles.

CAN open

- Is suited for embedded, industrial applications
- Was originally designed for motion control
- Was developed and is maintained by the CAN-in-Automation User Group

Like CAN, the CANopen standard is the responsibility of CiA (CAN-in-Automation)

SAE J1939

- Defines communication for vehicle networks (trucks, buses, agricultural equipment, etc.)
- Is a standard developed by the Society of Automotive Engineers (SAE)

The Society of Automotive Engineers (SAE) Truck and Bus Control and Communications Subcommittee has developed a family of standards concerning the design and use of devices that transmit electronic signals and control information among vehicle components. SAE J1939 and its companion documents have quickly become the accepted industry standard and the Controller Area Network (CAN) of choice for off-highway machines in applications such as construction, material handling, and forestry machines.

Derivatives of SAE J1939 include:

- NMEA 2000 for marine applications.
- ISOBUS (ISO 11783) for agricultural applications.
- MilCAN for military applications.

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