May-Aug 2019 Issue– 2

NEWS LETTER

Department of Electronics & Communication Engg.,

Electronics &

Communication

BUZZ…..

About The College

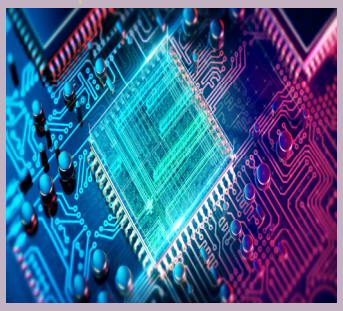
DNR College of Engineering & Technology (DNRCET) established in the year 2010, is one of the constituent colleges of DNR Association established in 1945, playing a significant role in imparting technical education and having excellent infrastructure and modern laboratories, internet with Wi-Fi facility, Central library and Digital library.

DNR College Association got approved from AICTE, New Delhi to run PG, UG, and Diploma courses in DNRCET. The college offers CE, EEE, ME, ECE and CSE at UG level, M.Tech specializations in STRUCTURES, MACHINE DESIGN, CSE and DECS. The college offers diploma courses in DECE, DEEE, DCE and DME. It has acquired good reputation in terms of infrastructure, placements and in providing quality technical education within a short span of time

About The Department

The Department of Electronics and Communication Engineering was established in the year 2010 to start a 4-year B.Tech. Degree program affiliated to Jawaharlal Nehru Technological University, Kakinada with an intake of 60. The intake was increased to 120 from the academic year 2012-13.The department offers PG course, M.Tech in Digital Electronics and Communication Systems with an intake of 18 seats and Diploma course, DECE with an intake of 60 seats.

The Department has contributed much through its committed academic legacy. The department of ECE has well qualified and rich experienced faculty with excellent infrastructural facilities. The department has all the laboratories with both hardware/ software and fully established with versatile equipments.



Vision

Producing innovative, creative and ethical Electronics and Communication Engineers with research focus to meet socio-economic needs of the society.

Mission

➢To provide the students with the state of art technologies to meet the growing challenges of the industry and society.

➢To promote research and consultancy through constant interaction with outside world.

➢To inculcate self learning abilities, team spirit and professional ethics among the students to serve the society.

Faculty Training & Publications

1. Dr. S.Koteswari has participated in One-week FDP on "Research Methodology" Organized by Department of MECH during 8th to 12th July, 2019 at SRKR Engineering College, Bhimavaram.
2. NSVL Sowjanya has participated in One-week FDP on "Research Methodology" Organized by Department of MECH during 8th to 12th July, 2019 at SRKR Engineering College, Bhimavaram.
3. V. Balaji has participated in Two week FDP on "Next Generation Wireless Systems and Networks - Theory to Practice" Organized by Department of ECE held from 1-14 August, 2019 at SVECW, Bhimavaram
4. K. Venkanna Naidu has participated in Two week FDP on "Next Generation Wireless Systems and Networks - Theory to Practice" Organized by Department of ECE held from 1-14 August, 2019 at SVECW, Bhimavaram.

One day FDP on Application Specific Integrated Circuits (ASICS)

during 7th June 2019

Resource person: T.Chandra Sekhar (Ph.D), GIET Engineering College, Rajahmundry

Programme Description:

The abbreviation ASIC stands for Application Specific Integrated Circuits. Compared with standard circuits an ASIC is designed and manufactured according to specifications resulting from its application. The ASIC user is able to specify the circuit function at design level and/or by means of configuration options. If the function of an IC is only controlled by software then it is not called an ASIC. Many of the digital electronic subsystems in defence applications require the small-size and power efficiency of application-specific integrated circuits (ASICs). Unfortunately, the high price and long design time of ASICs make them prohibitively expensive for low-volume DoD applications or systems requiring a rapid response time.

This study introduces the concept of a "structured ASIC" that is an array of building blocks (microprocessors, signal processors, logic blocks, and memories) connected by an interconnection network.

Topics covered: Introduction to ASICS and programmable logic, overview of ASIC design options, Full Custom Design, semi Custom Design, Standard Cell Design, Gate Array Design, Field Programmable Logic, ASIC fabrication technologies, comparison of technologies, ASIC packaging, system level ASIC design issues, behavioural modelling and synthesis, mixed signal ASICS.

One day Seminar on 5G Wireless Technologies during 27th June 2019

Resource Person: Mr. S.SURENDRANADH, SR ENGINEER,
BHEL, HYDERABAD.

Convener: Dr.S.Koteswari Ph.D
Professor & HOD
Department of ECE

5G stands for fifth generation, meaning the next step in the progression of technology to replace the current 4G system. 4G was the replacement for 3G which came after 2G, and so on. The new 5G system promises more of the same. It is expected to permit more users to do more things at a faster rate.

Higher internet speeds and larger network capacity should result in better performance for device users connected to 5G. in this 5G NR signaling test in sub-6 GHz (FR1) and mm wave (FR2) frequency bands, modular and scalable Hw-Architecture support of stand-alone mode, Non-Stand –alone mode Upgrade your existing LTE setup by R&S CMX500 5G signaling support modern Web-Based User Interface for RF, Functional, Application-and Protocol test

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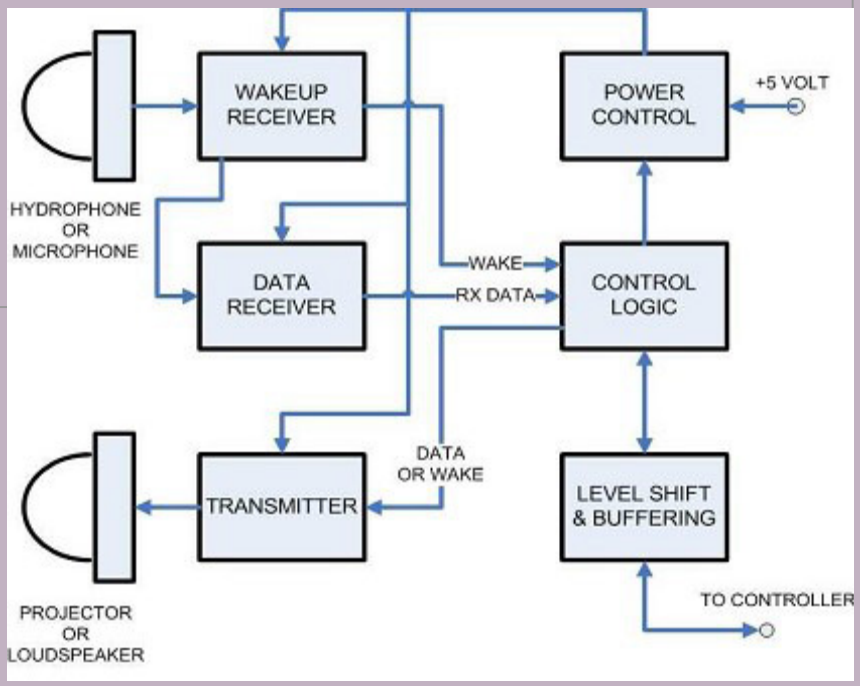
Technical Article

Aqua Communication using Modem

Introduction:- Sensor networks are beginning to revolutionize data collection in the physical world, relatively little work has been done to explore how sensor networks apply underwater. wireless communication, dense deployments (each sensor may have eight or more neighbors), self-configuration and local processing, and maximizing the utility of any energy consumed. Our primary application is seismic monitoring, with alternative applications including assis-tance during underwater construc-tion, pipeline and leak monitoring, biological data collection, or under-water robot communication. Sensor networks typically consist of many battery-powered nodes, densely de-ployed in an area for close observa-tion and long -term monitoring.



Circuit Design and Implementation:- The modem hardware is split into three main portions: a wake-up receiver, a data receiver, and a single transmitter. The transmitter has three output frequencies, which correspond to the data mark, data space, and wake-up tone. It is not possi-ble to transmit data and the wake-up tone simultaneously. The entire circuit operates from a 5-volt power supply. Level shifters are used to provide compatibility with CMOS logic levels be-tween 2.8 and 5.0 Volts. Our current prototype contains all the hardware on a single printed cir-cuit board measured as 4 by 5 inches.

Wakeup Receiver:-The principal goals for the wakeup receiver are good sensitivity and very low power consumption. The only purpose of the receiver is to monitor the total energy level present in a narrow band of frequencies and to produce an interrupt.

Technical Article

Aqua Communication using Modem

Data Receiver:- The data receiver is a conventional design based on a commercial FM intermediate frequency demodulator chip, the Philips SA604A. Whenever the data receiver is turned on, the first stage of the wakeup receiver is also powered. Due to the channel char-acteristics in the underwater environment, we are sending wideband FM. This requires sev-eral changes in the way we apply the SA604A. First, we use a simple, single pole low pass and single pole high pass filter to couple between the stages of the SA604A. A narrow band design typically uses an LC resonator or ceramic band pass filter.

Transmitter:- The transmitter uses a Linear Technology LTC6900 low power oscillator as a voltage controlled oscillator (VCO).The circuit design is based on Linear Technology Design. The oscillator output feeds into a Texas Instruments TPA2000D1 Class-D Audio Power Amplifier. This is capable of delivering 2 watts into a 4 Ohm load. By selecting lower gains we reduce the output power level but extend battery life. We hope that the combination of RSSI and variable output power will encourage the development of energy efficient com-munication protocols. The transmitter efficiency ranges from 80 to 90 percent.

Transducers:- In the ultimate application of underwater communications, we will use piezoelectric transducers. These are high impedance devices, and the modem circuitry is de-signed for high impedance operation. At the present time, we are using Audax brand hi-fi tweeters, both as a transmitter and as microphones. Switching over to hydrophones will only require changing the input and output impedance matching networks.

Department of ECE

Editorial Board:

Dr. S. Koteswari

Dr. S. Koteswari

Professor & HOD

https://www.dnrcet.org/departments_ece.php