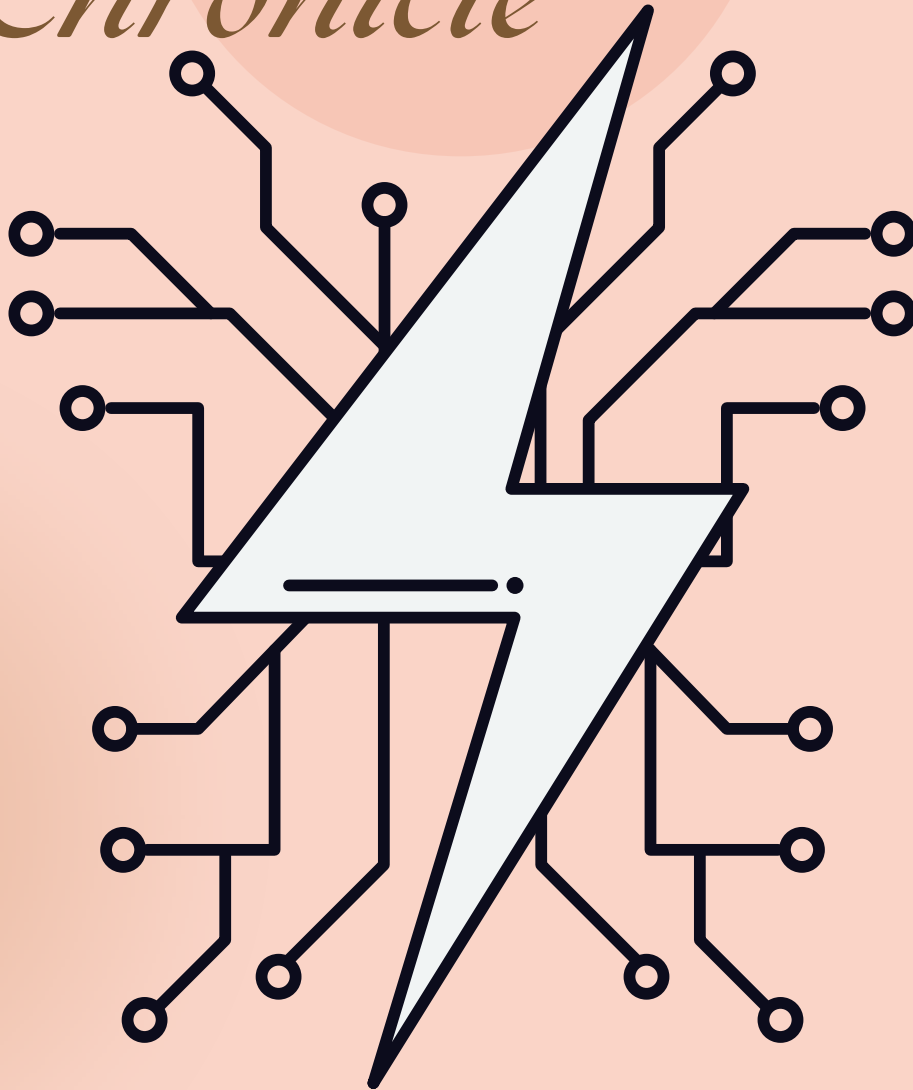


Edition : 2022-23

Part - 1

ECE

*Techno  
Chronicle*



Department Of Electronics & Communication Engineering



**DR.K.V SUBBA REDDY  
INSTITUTE OF TECHNOLOGY  
(AUTONOMOUS)  
NH-44, Kurnool, Andhra Pradesh**

# **TECHNO CHRONICAL**

**2022-2023**

## **INSTITUTE VISION**

To Be A Global Leader In Imparting Quality Technical Education To Produce Competent, Technically Innovative Engineers Imbued With Research Aptitude, Entrepreneurship And Social Responsibility.

## **INSTITUTE MISSION**

1. To Nurture The Students With Fundamental Engineering Knowledge Enriched With Technical Skills.
2. To Create Conducive Environment To Nurture Innovation And Interdisciplinary Research.
3. To Develop Professionals Through Innovative Pedagogy Focusing On Individual Growth, Discipline, Integrity, Ethics And Social Responsibility.
4. To Foster Industry-Institution Partnerships Leading To Skill Development And Entrepreneurship.

## **ECE DEPARTMENT VISION:**

To Strive Towards Excellence In Electronics And Communication Engineering Through Teaching, Experimental Learning And Research To Meet Industrial And Societal Needs

## **ECE DEPARTMENT MISSION:**

**M1:** To Provide Appropriate Facilities And Environment For Effective Teaching- Learning Process.

**M2:** To Create Interdisciplinary Research Ambience To Nurture Innovative And Research Skills.

**M3::** To Incorporate Interpersonal Skills, Professional Integrity, Ethics And Societal Responsibility.

**M4:** To Imbibe Entrepreneurship Skills And Leadership Qualities.

## **About ECE Department :**

The Department Of Electronics And Communication Engineering Has Been Playing A Vital Role In Producing Quality Engineers Ever Since It Was Established In The Year 2007. The Department Runs One Under Graduate Program And Two Post Graduate Programs To Cater To The Ever – Changing Needs Of Technical Excellence In All Areas Of Electronics And Communication Engineering Such As VLSI & Embedded Systems, Telecommunications, Signal Processing Etc. The Intake For Under Graduate Program (B. Tech) Is 120. The Department Also Offers Post Graduation Programs With Specialization In Digital Electronics And Communication Systems (DECS) With An Intake Of 18 And VLSI & Embedded Systems Design With An Intake Of 24.

The Department Headed By The Professors, Associate Professors, Assistant Professors Who Are Experts In Their Respective Disciplines. The Department Has Got Every Facility To Groom The Students As Per The Demands Of The Industries And Mncs. The Department Has Highly Modernized Laboratories With Sophisticated Equipment, Which Improves The Practical Working Competency In The Students And The Confidence.

The Department Aims At Educating And Training Students With Sound Knowledge And Awareness In The Latest Trends In Electronics And Communication Engineering. The Regular Interaction Session With Eminent Professors From Reputed Universities Create Awareness In The Student About The Latest Developments In The Field Of Science And Technology. This Helps Students To Fix Up Their Right Goals For Their Bright Future.

## **PROGRAM EDUCATIONAL OBJECTIVES (PEO)**

**PEO1:** Graduates Of The Program Will Have Strong Fundamental Knowledge In Electronics And Communication Engineering, Analytical, Critical Reasoning And Problem-Solving Skills To Develop Innovative Solutions (Continuing Education).

**PEO2:** Graduates Of The Program Will Be Professionally Progress In Electronics, Communication, Signal Processing, VLSI, Embedded Systems And Related Areas With An Inclination Towards R&D And Lifelong Learning (Excellence In Career).

**PEO3:** Graduates Of The Program Will Have Entrepreneurship Skills, Leadership Qualities To Work With Diversified Teams In Multidisciplinary Environment (Leadership And Multi-Disciplinary).

**PEO4:** Graduates Of The Program Will Be Professionally Deft And Intellectually Adept To Develop Solutions To Complex Engineering Problems With Professional Ethics And Societal Responsibility (Contribution To Society).

## **PROGRAM SPECIFIC OUT COMES (PSOS)**

**PSO1:** Design Problems Related To Electronics, Communications, Signal Processing, VLSI And Embedded Systems.

**PSO2:** Analyze And Solve The Complex Communication Engineering Problems In Architecture Design And Computer Networking.

**PSO3:** An Ability To Use Modern Software Tools To Analyze, Synthesize And Evaluate VLSI And Communication Engineering Systems For Multidisciplinary Tasks.

## **ACKNOWLEDGEMENT**

We Extend Our Sincere Thanks To

Honorable Chairman  
**Dr.K.V.SUBBA REDDY**

Secretary & Correspondent  
**SMT.S.VIJAYALAKSHMAMMA**

Principal  
**Dr.J.KANNA KUMAR**

HOD  
**Dr.M.V. SRUTHI**

All Our Staff Members For Their Humble  
Co- Operation And Involvement In Their Creation Of Bytes,  
For The Year 2023-2024



## **MESSAGE FROM THE CHAIRMAN**

It's Been A Real Pleasure To Know That The Department Of ECE Is Hosting Their First Ever National Level Technical Symposium "TECHNO CHRONICAL", AND I' Am Glad To Hear That It Is Being Organized Wholly For The Students With Guidance Of The Staff Members. Such Combined Effort Is Always Encouraged And Bring Out Good Results.

The Department Of "Electronics And Communication Engineering" Has Always Conducted Activities Which Helps In Development Of Students Into Leaders, I Hope "TECHNO CHRONICAL"2024 Is A Huge Success And Adds A New Star In The History Of The Department.

With Regards  
Dr. K.V. Subba Reddy ,Founder–Chairman,  
Dr.K.V.Subba Reddy Institute Of Technology,  
Kurnool-518218,



### **MESSAGE FROM THE CORRESPONDENT**

I Feel Very Proud That The Department Of ECE Is Organizing Nation Level Technical Symposium“ TECHNO CHRONICAL”On2024The 21st Century Is Advancing Rapidly By Multipronged Scientific Inventions And Discoveries In That The Electronics And Communication Engineering Is Playing They It All Role In All Scientific Developments. The Has Com That Without Electronics And Communication Engineering Nothing Is Going To Move I This Universe. In This Perspective The Contribution. The Development Of Society By This Departments Vital In All Sphere Of Life. I Heartily Wish The Staff And Students Of The Department In Their Endeavor To Bring In A House Magazine Which Will Otherwise Contribute To The Highest Learning Of This Magnificent Engineering.

With Regards

Secretary &Correspondent

**SMT.S.VIJAYALAKSHMAMMA,**

Dr. K.V.Subbareddy Institute Of Technology,

Kurnool- 518218





## **MESSAGE FROM THE PRINCIPAL**

Dear Friends, Greetings From DR.KVSRIT, Kurnool. Engineering Is A Human Activity Aimed At Creating New Artifacts, Algorithms, Processes And Systems That Serve Humans. An Engineer Seeks To Create What Never Did Exist. It Is A Privilege In Any One's Career To Embark On Engineering Education. At Dr.K.V, Subba Reddy Institute Of Technology, Our Vision Is "To Be A Global Leader In Imparting Quality Technical Education To Produce Competent, Technically Innovative Engineers Imbued With Research Aptitude, Entrepreneurship And Social Responsibility. On The Academic Front, We Have Provided The Best Quality Class Rooms, Laboratories, And Library Facilities.

With Regards  
Dr.J.Kannakumar,  
Principal  
Dr.K.V.Subbareddy Institute of Technology,  
Kurnool- 518218,



### **MESSAGE FROM THE HOD**

The Department Of Electronics And Communication Engineering Believe In Imparting Excellence In Education By Keeping Our Students In Pace With Industry Demands. The Department Is Equipped With Best Lab Facilities Having Latest Software And Hardware To Provide Industry-Oriented Knowledge To Our Students. The Department Consists Of Highly, Energetic, Dynamic, Well-Experienced, Qualified As Well As Young Faculty Members Who Also Work As Mentors To Turn Students To Professionals By Grooming Their Technical Skills As Well As Their Innovative Capabilities.

With Regards

Dr.M.V. Sruthi,

ECE-HOD

Dr.K.V.Subbareddy Institute Of Technology,

Kurnool- 518218,

## **ABOUT DRKVSRLT:**

Dr. K. V .Subba Reddy Institute Of Technology Is Promoted By Vaibhav Educational Society (VES) With The Motto Of “Work Is Worship“. Its Prime Objective Is To Offer Quality Education For The Betterment Of Society. It Persistently Seeks And Adopts Innovative Methods To Improve The Quality Of Higher Education On A Consistent Basis. The Campus Has A Cosmopolitan Atmosphere Of Attracting Students From All Corners Of Andhra Pradesh. Faculty Are Continuously Encouraged To Conduct Research, Pursue Higher Education And Nurture The Students. Our Memoranda Of Understanding With Various Industries Are Our Major Strength. Many Of Our Students, Who Pursue Their Jobs In Various Industries Bring High Quality To Their Work And Add Value And Esteem To Their Organizations. With Steady Steps, We Continue Our March Forward.

## **HISTORY OF DRKVSRLT**

Established In 2007, DRKVSRLT Is Affiliated To Jawaharlal Nehru Technological University (JNTU), Ananthapuramu, And Is Approved By The All India Council For Technical Education (AICTE), New Delhi. The College Is Headed By Its Founder And Chairman, Dr. K. V. Subba Reddy. In Recognition Of His Outstanding Service To India In Offering Quality Education, He Is Conferred With Jewel Of India Award By Indian Solidarity Council On 13<sup>th</sup> March 2006. He Is Also Conferred Life Time Achievement Gold Medal Award By International Institute Of Education And Management On 13<sup>th</sup> March 2016. Smt. Vijaya Lakshamma Is The Secretary And Correspondent. Dr.J.KANNA KUMAR Is The Principal.

**TECHNICAL MAGAZINE**  
**2022-2023**



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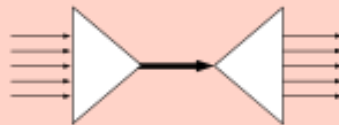
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3	SOLAR CELL
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## 1. SOFTWARE-DEFINED RADIO

Dr. M.V. Sruthi,  
Associate Professor  
Department Of ECE



**Software Defined Radio (SDR)** Is A Radio Communication System Where Components That Have Been Traditionally Implemented In Hardware (E.G. Mixers, Filters, Amplifiers, Modulators/Demodulators, Detectors, Etc.) Are Instead Implemented By Means Of Software On A Personal Computer Or Embedded System. While The Concept Of SDR Is Not New, The Rapidly Evolving Capabilities Of Digital Electronics Render Practical Many Processes Which Were Once Only Theoretically Possible.



A Basic SDR System May Consist Of A Personal Computer Equipped With A Sound Card, Or Other Analog-To-Digital Converter, Preceded By Some Form Of RF Front End. Significant Amounts Of Signal Processing Are Handed Over To The General-Purpose Processor, Rather Than Being Done In Special-Purpose Hardware (Electronic Circuits). Such A Design Produces A Radio Which Can Receive And Transmit Widely Different Radio Protocols (Sometimes Referred To As Waveforms) Based Solely On The Software Used.

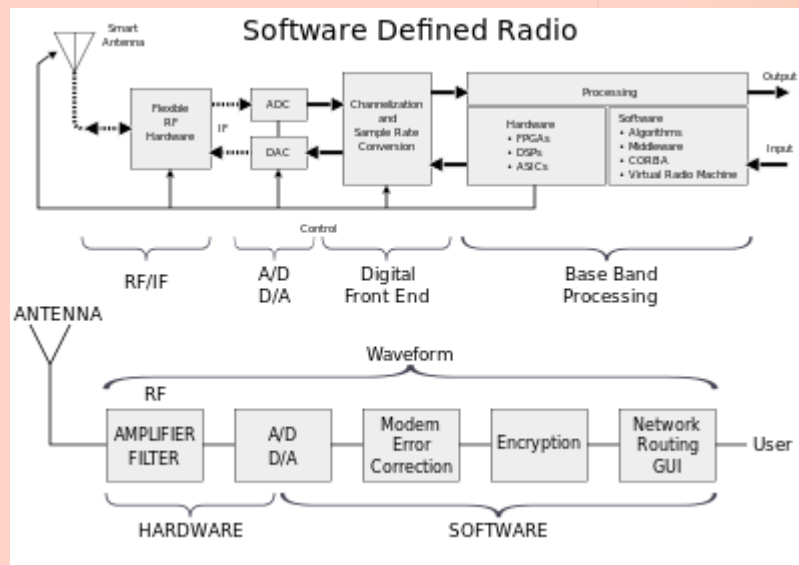
Software Radios Have Significant Utility For The Military And Cell Phone Services, Both Of Which Must Serve A Wide Variety Of Changing Radio Protocols In Real Time.

In The Long Term, Software-Defined Radios Are Expected By Proponents Like The SDR Forum (Now The Wireless Innovation Forum) To Become The Dominant Technology In Radio Communications. Sdrs, Along With Software Defined Antennas Are The Enablers Of The Cognitive Radio.

A Software-Defined Radio Can Be Flexible Enough To Avoid The "Limited Spectrum" Assumptions Of Designers Of Previous Kinds Of Radios, In One Or More Ways Including:<sup>[2]</sup>

- Spread Spectrum And Ultra Wide Band Techniques Allow Several Transmitters To Transmit In The Same Place On The Same Frequency With Very Little Interference, Typically Combined With One Or More Error Detection And Correction Techniques To Fix All The Errors Caused By That Interference.
- Software Defined Antennas Adaptively "Lock Onto" A Directional Signal, So That Receivers Can Better Reject Interference From Other Directions, Allowing It To Detect Fainter Transmissions.
- Cognitive Radio Techniques: Each Radio Measures The Spectrum In Use And Communicates That Information To Other Cooperating Radios, So That Transmitters Can Avoid Mutual Interference By Selecting Unused Frequencies. Alternatively, Each Radio Connects To A Geo-Location Database To Obtain Information About The Spectrum Occupancy In Its Location And, Flexibly, Adjusts Its Operating Frequency And/Or Transmit Power Not To Cause Interference To Other Wireless Services.
- Dynamic Transmitter Power Adjustment, Based On Information Communicated From The Receivers, Lowering Transmit Power To The Minimum Necessary, Reducing The Near-Far Problem And Reducing Interference To Others, And Extending Battery Life In Portable Equipment.

- Wireless Mesh Network Where Every Added Radio Increases Total Capacity And Reduces The Power Required At Any One Node. Each Node Only Transmits Loudly Enough For The Message To Hop To The Nearest Node In That Direction, Reducing Near-Far Problem And Reducing Interference To Others.



### Ideal Concept

The Ideal Receiver Scheme Would Be To Attach An Analog-To-Digital Converter To An Antenna. A Digital Signal Processor Would Read The Converter, And Then Its Software Would Transform The Stream Of Data From The Converter To Any Other Form The Application Requires.

An Ideal Transmitter Would Be Similar. A Digital Signal Processor Would Generate A Stream Of Numbers. These Would Be Sent To A Digital-To-Analog Converter Connected To A Radio Antenna.

The Ideal Scheme Is Not Completely Realizable Due To The Current Limits Of The Technology. The Main Problem In Both Directions Is The Difficulty Of Conversion Between The Digital And The Analog Domains At A High Enough Rate And A High Enough Accuracy At The Same Time, And Without Relying Upon Physical Processes Like Interference And Electromagnetic Resonance For Assistance.

### Receiver Architecture

Most Receivers Use A Variable-Frequency Oscillator, Mixer, And Filter To Tune The Desired Signal To A Common Intermediate Frequency Or Baseband, Where It Is Then Sampled By The Analog-To-Digital Converter. However, In Some Applications It Is Not Necessary To Tune The Signal To An Intermediate Frequency And The Radio Frequency Signal Is Directly Sampled By The Analog-To-Digital Converter (After Amplification).

Real Analog-To-Digital Converters Lack The Dynamic Range To Pick Up Sub-Microvolt, Nano Watt-Power Radio Signals. Therefore, A Low-Noise Amplifier Must Precede The Conversion Step And This Device Introduces Its Own Problems. For Example, If Spurious Signals Are Present (Which Is Typical), These Compete With The Desired Signals Within The Amplifier's Dynamic Range. They May Introduce Distortion In The Desired Signals, Or May Block Them Completely. The Standard Solution Is To Put Band-Pass Filters Between The Antenna And The Amplifier, But These Reduce The Radio's Flexibility. Real Software Radios Often Have Two Or Three Analog Channel Filters With Different Bandwidths That Are Switched In And Out

## 2. Boosting Of Energy Capacity Of Lithium Batteries

Mr. T. Vijaya Kumar, Assistant  
Professor  
Department Of ECE

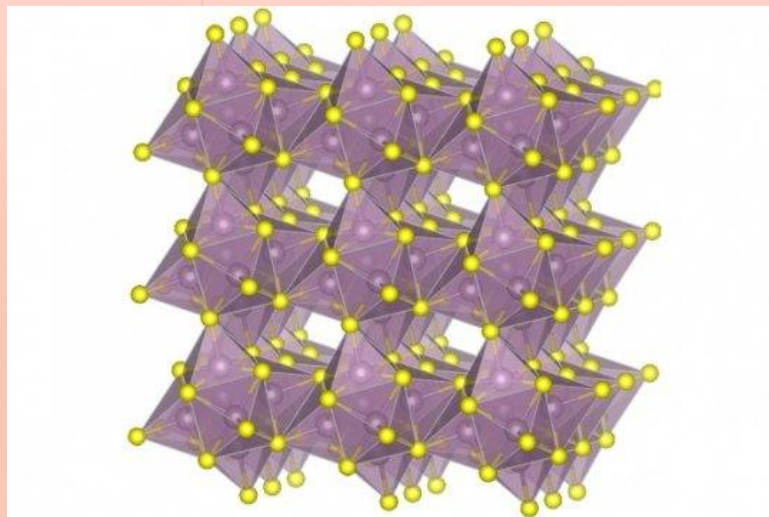


Researchers Around The Globe Have Been On A Quest For Batteries That Pack A Punch But Are Smaller And Lighter Than Today's Versions, Potentially Enabling Electric Cars To Travel Further Or Portable Electronics To Run For Longer Without Recharging. Now, Researchers At MIT And In China Say They've Made A Major Advance In This Area, With A New Version Of A Key Component For Lithium Batteries, The Cathode.

The Team Describes Their Concept As A "Hybrid" Cathode, Because It Combines Aspects Of Two Different Approaches That Have Been Used Before, One To Increase The Energy Output Per Pound (Gravimetric Energy Density), The Other For The Energy Per Liter (Volumetric Energy Density). The Synergistic Combination, They Say, Produces A Version That Provides The Benefits Of Both, And More.

The Work Is Described Today In The Journal *Nature Energy*, In A Paper By Ju Li, An MIT Professor Of Nuclear Science And Engineering And Of Materials Science And Engineering; Weijiang Xue, An MIT Postdoc; And 13 Others.

Today's Lithium-Ion Batteries Tend To Use Cathodes (One Of The Two Electrodes In A Battery) Made Of A Transition Metal Oxide, But Batteries With Cathodes Made Of Sulfur Are Considered A Promising Alternative To Reduce Weight. Today, The Designers Of Lithium-Sulfur Batteries Face A Tradeoff.



The Cathodes Of Such Batteries Are Usually Made In One Of Two Ways, Known As Intercalation Types Or Conversion Types. Intercalation Types, Which Use Compounds Such As Lithium Cobalt Oxide, Provide A High Volumetric Energy Density -- Packing A Lot Of Punch Per Volume Because Of Their High Densities. These Cathodes Can Maintain Their Structure And Dimensions While Incorporating Lithium Atoms Into Their Crystalline Structure.

The Other Cathode Approach, Called The Conversion Type, Uses Sulfur That Gets Transformed Structurally And Is Even Temporarily Dissolved In The Electrolyte. "Theoretically, These [Batteries] Have Very Good Gravimetric Energy Density," Li Says. "But The Volumetric Density Is Low," Partly Because They Tend To Require A Lot Of Extra Materials, Including An Excess Of Electrolyte And Carbon, Used To Provide Conductivity.

In Their New Hybrid System, The Researchers Have Managed To Combine The Two Approaches Into A New Cathode That Incorporates Both A Type Of Molybdenum Sulfide Called Chevrel-Phase, And Pure Sulfur,

Which Together Appear To Provide The Best Aspects Of Both. They Used Particles Of The Two Materials And Compressed Them To Make The Solid Cathode. "It Is Like The Primer And TNT In An Explosive, One Fast-Acting, And One With Higher Energy Per Weight," Li Says.

Among Other Advantages, The Electrical Conductivity Of The Combined Material Is Relatively High, Thus Reducing The Need For Carbon And Lowering The Overall Volume, Li Says. Typical Sulfur Cathodes Are Made Up Of 20 To 30 Percent Carbon, He Says, But The New Version Needs Only 10 Percent Carbon.

The Net Effect Of Using The New Material Is Substantial. Today's Commercial Lithium-Ion Batteries Can Have Energy Densities Of About 250 Watt-Hours Per Kilogram And 700 Watt-Hours Per Liter, Whereas Lithium-Sulfur Batteries Top Out At About 400 Watt-Hours Per Kilogram But Only 400 Watt-Hours Per Liter. The New Version, In Its Initial Version That Has Not Yet Gone Through An Optimization Process, Can Already Reach More Than 360 Watt-Hours Per Kilogram And 581 Watt-Hours Per Liter, Li Says. It Can Beat Both Lithium-Ion And Lithium-Sulfur Batteries In Terms Of The Combination Of These Energy Densities.

With Further Work, He Says, "We Think We Can Get To 400 Watt-Hours Per Kilogram And 700 Watt-Hours Per Liter," With That Latter Figure Equaling That Of Lithium-Ion. Already, The Team Has Gone A Step Further Than Many Laboratory Experiments Aimed At Developing A Large-Scale Battery Prototype: Instead Of Testing Small Coin Cells With Capacities Of Only Several Milliamp-Hours, They Have Produced A Three-Layer Pouch Cell (A Standard Subunit In Batteries For Products Such As Electric Vehicles) With A Capacity Of More Than 1,000 Milliamp-Hours. This Is Comparable To Some Commercial Batteries, Indicating That The New Device Does Match Its Predicted Characteristics.

So Far, The New Cell Can't Quite Live Up To The Longevity Of Lithium-Ion Batteries In Terms Of The Number Of Charge-Discharge Cycles It Can Go Through Before Losing Too Much Power To Be Useful. But That Limitation Is "Not The Cathode's Problem"; It Has To Do With The Overall Cell Design, And "We're Working On That," Li Says. Even In Its Present Early Form, He Says, "This May Be Useful For Some Niche Applications, Like A Drone With Long Range," Where Both Weight And Volume Matter More Than Longevity.



### 3. SOLAR CELL

Mr. K. Kishore Kumar,  
Assistant Professor  
Department Of ECE



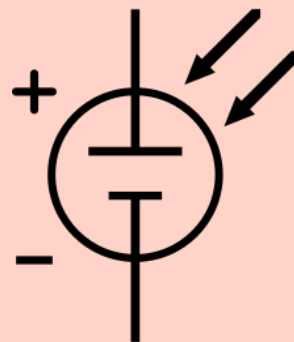
A **Solar Cell**, Or **Photovoltaic Cell**, Is An Electrical Device That Converts The Energy Of Light Directly Into Electricity By The Photovoltaic Effect, Which Is A Physical And Chemical Phenomenon.<sup>[1]</sup> It Is A Form Of Photoelectric Cell, Defined As A Device Whose Electrical Characteristics, Such As Current, Voltage, Or Resistance, Vary When Exposed To Light. Individual Solar Cell Devices Can Be Combined To Form Modules, Otherwise Known As Solar Panels. In Basic Terms A Single Junction Silicon Solar Cell Can Produce A Maximum Open-Circuit Voltage Of Approximately 0.5 To 0.6 Volts.

Solar Cells Are Described As Being Photovoltaic, Irrespective Of Whether The Source Is Sunlight Or An Artificial Light. They Are Used As A Photo-Detector (For Example Infrared Detectors), Detecting Light Or Other Electromagnetic Radiation Near The Visible Range, Or Measuring Light Intensity.

The Operation Of A Photovoltaic (PV) Cell Requires Three Basic Attributes:

- The Absorption Of Light, Generating Either Electron-Hole Pairs Or Excitons.
- The Separation Of Charge Carriers Of Opposite Types.
- The Separate Extraction Of Those Carriers To An External Circuit.

In Contrast, A Solar Thermal Collector Supplies Heat By Absorbing Sunlight, For The Purpose Of Either Direct Heating Or Indirect Electrical Power Generation From Heat. A "Photo-Electrolytic Cell" (Photo-Electrochemical Cell), On The Other Hand, Refers Either To A Type Of Photovoltaic Cell (Like That Developed By Edmond Becquerel And Modern Dye-Sensitized Solar Cells), Or To A Device That Splits Water Directly Into Hydrogen And Oxygen Using Only Solar Illumination.



#### Applications:

Assemblies Of Solar Cells Are Used To Make Solar Modules That Generate Electrical Power From Sunlight, As Distinguished From A "Solar Thermal Module" Or "Solar Hot Water Panel". A Solar Array Generates Solar Power Using Solar Energy.

## **Cells, Modules, Panels And Systems**

*Main Article: Photovoltaic System*

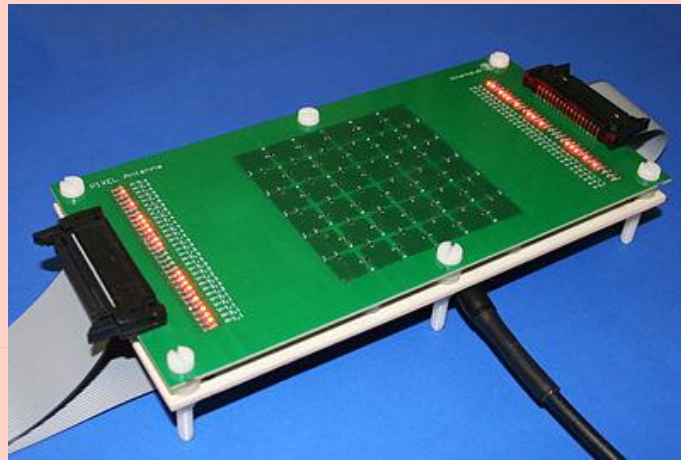
Multiple Solar Cells In An Integrated Group, All Oriented In One Plane, Constitute A Solar Photovoltaic Panel Or Module. Photovoltaic Modules Often Have A Sheet Of Glass On The Sun-Facing Side, Allowing Light To Pass While Protecting The Semiconductor Wafers. Solar Cells Are Usually Connected In Series And Parallel Circuits Or Series In Modules, Creating An Additive Voltage. Connecting Cells In Parallel Yields A Higher Current; However, Problems Such As Shadow Effects Can Shut Down The Weaker (Less Illuminated) Parallel String (A Number Of Series Connected Cells) Causing Substantial Power Loss And Possible Damage Because Of The Reverse Bias Applied To The Shadowed Cells By Their Illuminated Partners. Strings Of Series Cells Are Usually Handled Independently And Not Connected In Parallel, Individual Power Boxes Are Often Supplied For Each Module, And Are Connected In Parallel. Although Modules Can Be Interconnected To Create An Array With The Desired Peak DC Voltage And Loading Current Capacity, Using Independent Mppts (Maximum Power Point Trackers) Is Preferable. Otherwise, Shunt Diodes Can Reduce Shadowing Power Loss In Arrays With Series/Parallel Connected Cells.

## 4. RECONFIGURABLE POLARIZABLE ANTENNA

Mr. P. Jayarami Reddy,  
Assistant Professor  
Department Of ECE



A **Reconfigurable Antenna** Is An Antenna Capable Of Modifying Its Frequency And Radiation Properties Dynamically, In A Controlled And Reversible Manner. In Order To Provide A Dynamic Response, Reconfigurable Antennas Integrate An Inner Mechanism (Such As RF Switches, Varactors, Mechanical Actuators Or Tunable Materials) That Enable The Intentional Redistribution Of The RF Currents Over The Antenna Surface And Produce Reversible Modifications Of Its Properties. Reconfigurable Antennas Differ From Smart Antennas Because The Reconfiguration Mechanism Lies Inside The Antenna, Rather Than In An External Beam Forming Network. The Reconfiguration Capability Of Reconfigurable Antennas Is Used To Maximize The Antenna Performance In A Changing Scenario Or To Satisfy Changing Operating Requirements.



### Types Of Antenna Reconfiguration

Reconfigurable Antennas Can Be Classified According To The Antenna Parameter That Is Dynamically Adjusted, Typically The Frequency Of Operation, Radiation Pattern Or Polarization.

#### Frequency Reconfiguration

Frequency Reconfigurable Antennas Can Adjust Their Frequency Of Operation Dynamically. They Are Particularly Useful In Situations Where Several Communications Systems Converge Because The Multiple Antennas Required Can Be Replaced By A Single Reconfigurable Antenna. Frequency Reconfiguration Is Generally Achieved By Physical Or Electrical Modifications To The Antenna Dimensions Using RF-Switches, Impedance Loading Or Tunable Materials.

#### Radiation Pattern Reconfiguration

Radiation Pattern Reconfigurability Is Based On The Intentional Modification Of The Spherical Distribution Of The Radiation Pattern. Beam Steering Is The Most Extended Application And Consists Of Steering The Direction Of Maximum Radiation To Maximize The Antenna Gain In A Link With Mobile Devices. Pattern Reconfigurable Antennas Are Usually Designed Using Movable/Rotatable Structures Or Switchable And Reactively-Loaded Parasitic Elements. In The Last 10 Years, Metamaterial-Based Reconfigurable Antennas Have Gained Attention Due Their Small Form Factor, Wide Beam Steering Range And Wireless Applications.

#### Polarization Reconfiguration

Polarization Reconfigurable Antennas Are Capable Of Switching Between Different Polarization Modes. The Capability Of Switching Between Horizontal, Vertical And Circular Polarizations Can Be Used To Reduce Polarization Mismatch Losses In Portable Devices. Polarization Reconfigurability Can Be Provided By Changing The Balance Between The Different Modes Of A Multimode Structure.

### **Compound Reconfiguration**

Compound Reconfiguration Is The Capability Of Simultaneously Tuning Several Antenna Parameters, For Instance Frequency And Radiation Pattern. The Most Common Application Of Compound Reconfiguration Is The Combination Of Frequency Agility And Beam-Scanning To Provide Improved Spectral Efficiencies. Compound Reconfigurability Is Achieved By Combining In The Same Structure, Different Single-Parameter Reconfiguration Techniques Or By Reshaping Dynamically A Pixel Surface.



## 9. PLASMA DISPLAY

Dr. T. Syed Akheel Professor  
Department Of ECE

A Type Of Flat-Panel Display That Works By Sandwiching A Neon/Xenon Gas Mixture Between Two Sealed Glass Plates With Parallel Electrodes Deposited On Their Surfaces. The Plates Are Sealed So That The Electrodes Form Right Angles, Creating Pixels. When A Voltage Pulse Passes Between Two Electrodes, The Gas Breaks Down And Produces Weakly Ionized Plasma, Which Emits UV Radiation. The UV Radiation Activates Color Phosphors And Visible Light Is Emitted From Each Pixel.

Also Called "Gas Discharge Display," A Flat-Screen Technology That Uses Tiny Cells Lined With Phosphor That Are Full Of Inert Ionized Gas (Typically A Mix Of Xenon And Neon). Three Cells Make Up One Pixel (One Cell Has Red Phosphor, One Green, One Blue). The Cells Are Sandwiched Between X- And Y-Axis Panels, And A Cell Is Selected By Charging The Appropriate X And Y Electrodes. The Charge Causes The Gas In The Cell To Emit Ultraviolet Light, Which Causes The Phosphor To Emit Color. The Amount Of Charge Determines The Intensity, And The Combination Of The Different Intensities Of Red, Green And Blue Produce All The Colors Required.

Today, Plasma Displays Are Becoming More And More Popular. Compared To Conventional CRT Displays, Plasma Displays Are About One-Tenth The Thickness--Around 4", And One-Sixth The Weight--Less Than 67 Pounds For A 40" Display. They Use Over 16 Million Colors And Have A 160 Degree-Viewing Angle. Companies Such As Panasonic, Fujitsu, And Pioneer Manufacture Plasma Displays.

Plasma Displays Were Initially Monochrome, Typically Orange, But Color Displays Have Become Very Popular And Are Used For Home Theater And Computer Monitors As Well As Digital Signs.

The Plasma Technology Is Similar To The Way Neon Signs Work Combined With The Red, Green And Blue Phosphor Technology Of A CRT. Plasma Monitors Consume Significantly More Current Than LCD-Based Monitors.

### What Is Plasma?

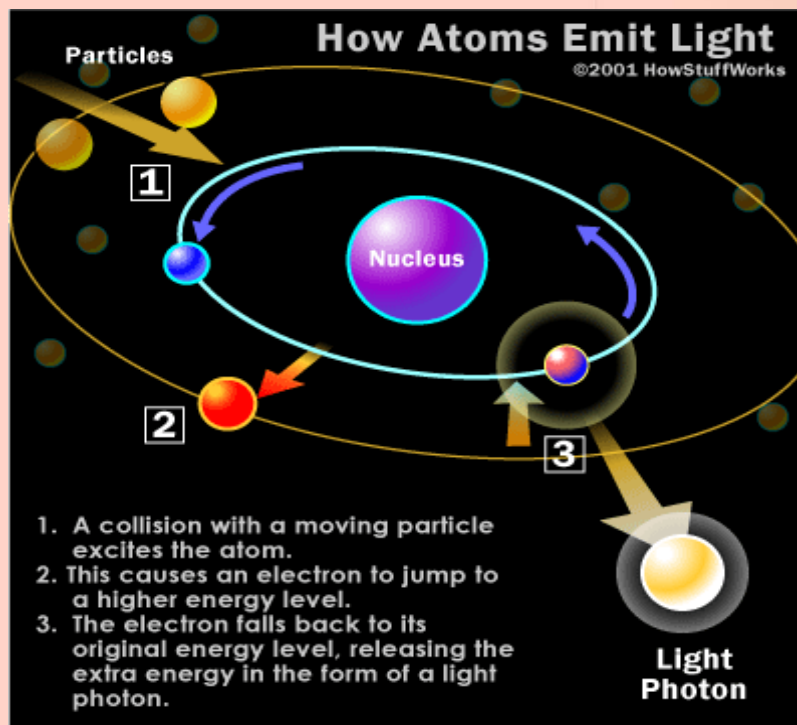
The Central Element In A Fluorescent Light Is A Plasma, A Gas Made Up Of Free-Flowing Ions (Electrically Charged Atoms) And Electrons (Negatively Charged Particles). Under Normal Conditions, A Gas Is Mainly Made Up Of Uncharged Particles. That Is, The Individual Gas Atoms Include Equal Numbers Of Protons (Positively Charged Particles In The Atom's Nucleus) And Electrons. The Negatively Charged Electrons Perfectly Balance The Positively Charged Protons, So The Atom Has A Net Charge Of Zero.

If You Introduce Many Free Electrons Into The Gas By Establishing An Electrical Voltage Across It, The Situation Changes Very Quickly. The Free Electrons Collide With The Atoms, Knocking Loose Other Electrons. With A Missing Electron, An Atom Loses Its Balance. It Has A Net Positive Charge, Making It An Ion.

In A Plasma With An Electrical Current Running Through It, Negatively Charged Particles Are Rushing Toward The Positively Charged Area Of The Plasma, And Positively Charged Particles Are Rushing Toward The Negatively Charged Area.

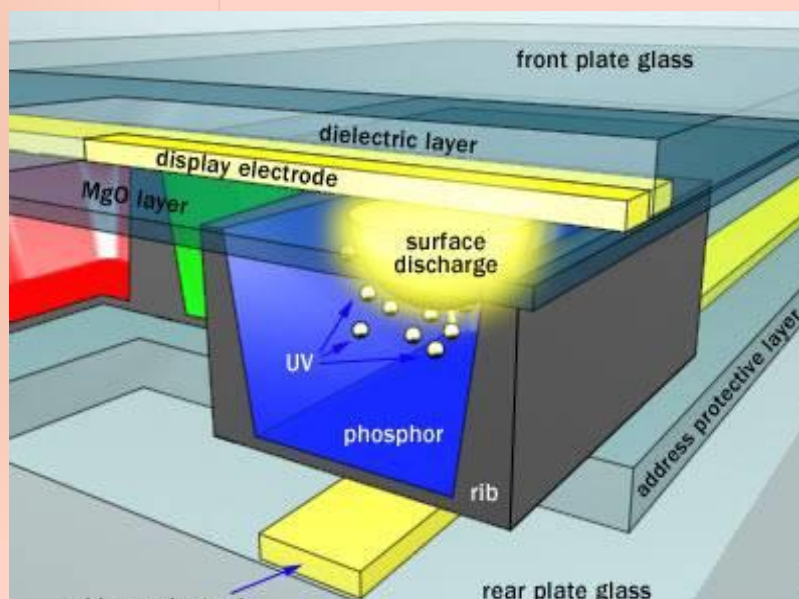
In This Mad Rush, Particles Are Constantly Bumping Into Each Other. These Collisions Excite The Gas Atoms In The Plasma, Causing Them To Release Photons Of Energy. Xenon And Neon Atoms, The Atoms Used In Plasma Screens, Release Light Photons When They Are Excited. Mostly, These Atoms Release

Ultraviolet Light Photons, Which Are Invisible To The Human Eye. But Ultraviolet Photons Can Be Used To Excite Visible Light Photons.



### Inside The Display

The Xenon And Neon Gas In A Plasma Television Is Contained In Hundreds Of Thousands Of Tiny Cells Positioned Between Two Plates Of Glass. Long Electrodes Are Also Sandwiched Between The Glass Plates, On Both Sides Of The Cells. The Address Electrodes Sit Behind The Cells, Along The Rear Glass Plate. The Transparent Display Electrodes, Which Are Surrounded By An Insulating Dielectric Material And Covered By A Magnesium Oxide Protective Layer, Are Mounted Above The Cell, Along The Front Glass Plate.



Both Sets Of Electrodes Extend Across The Entire Screen. The Display Electrodes Are Arranged In Horizontal Rows Along The Screen And The Address Electrodes Are Arranged In Vertical Columns. As You Can See In The Diagram Below, The Vertical And Horizontal Electrodes Form A Basic Grid.

## **The Basics Of Plasma Displays**

Plasma Display Technology Is A New "Emissive" Flat Panel Display Technology Which Gives You The Rich, Accurate Color Fidelity Of Conventional Cathode Ray Tube (CRT) Monitors In A Large Display That Is Thin Enough To Hang On The Wall. It's The Best Way To Achieve Flat Panel Displays With Excellent Image Quality And Large Screen Sizes Viewable In Any Environment. This Technology Known As "Plasma Vision" Is An Array Of Cells, Known As Pixels, Which Are Composed Of 3 Sub-Pixels, Corresponding To The Colors Red, Green And Blue.

Gas In A Plasma State Is Used To React With Phosphors In Each Sub-Pixel To Produce Colored Light (Red, Green Or Blue). These Phosphors Are The Same Types Used In Conventional Cathode Ray Tube (CRT) Devices Such As Televisions And Standard Computer Monitors. You Get The Rich, Dynamic Colors You Expect. Each Sub-Pixel Is Individually Controlled By Advanced Electronics To Produce Over 16 Million Different Colors. You Get Perfect Images That Are Easily Viewable In A Display That Is Less Than 4 Inches Thick.

Step 1: Address Electrode Causes Gas To Change To Plasma State. Step 2: Gas In Plasma State Reacts With Phosphors In Discharge Region. Step 3: Reaction Causes Each Subpixel To Produce Red, Green, And Blue Light.

## **Conventional Plasma Displays**

Basic Plasma Display Technology Has Been Around Since The 1960's, And Works This Way: A Mixture Of Neon And Xenon Gas Fills The Space Between Two Parallel Sheets Of Glass, Which Contain Millions Of Tiny Cells Filled With The Gas Mixture. This Mixture Is Stimulated By Electrical Current And Is Changed Into A Plasma. As A Result, Ultraviolet (UV) Light Is Emitted. Red, Blue, And Green Fluorescent Substances In The Cells Absorb This UV Light, Then Re-Radiate This Energy As Visible Light To Produce The Colors And Images You See On The Screen.

This Process Creates A Bright, Vibrant Picture. And Since These Individual Cells Are Creating Light And Color, There's No Need For The Large Cathode Ray Tubes (CRT's) Used In Conventional And Projection TV's, And The Display Can Be Very Thin And Relatively Lightweight. Plus, The Flat Screen Eliminates The Problem Of Images Bending At The Edge Of The Picture, As Seen In Conventional TV's.

## 5. PEDIATRICS LEEP STAGE CLASSIFICATION



**S Feroz Shah Ahmed**  
**Assistant Professor**

### **INTRODUCTION:**

At Present, Most Of The Computing Tasks Of The Remote Sleep Monitoring (Such As Sleep Staging) Are Deployed On Platforms With Large-Scale Computing Resources Such As Computing Centers, Which Largely Limit The Convenience To People. Sleep Induced Diseases Such As In Somnia, Drowsiness, Obstructive Sleep Apnea (Osa) And Other Sleep Disorders Are Becoming More And More Common And Have Become A Major Medical Challenge. For Children, High-Quality Sleep Helps Children's Intellectual Development And Is Closely Related To Children's Cognitive Function, Learning And Attention. If School-Age Children Are Not Able To Get Enough And Good Sleep, It Will Affect Their Mental Development And Cause Emotional, Behavioral, And Attention Problems. Polysomnography (Psg) Recordings is used to diagnose sleep-Related diseases, Which Include Electroencephalogram (Eeg), Electrooculogram (Eog), Electrocardiogram (Ecg), Electro Myogram (Emg), Breathing Exercises (Chest And Abdominal), Oral And Nasal Airflow, Body Movement, Blood Oxygen Saturation (Sao<sub>2</sub>) And Other Physiological Parameters. Sleep Stage Scoring Is To Divide The Physiological Parameters In The Polysomnography Chart Into 30 S Continuous Epochs According To The Time Axis, And Divide These Epochs Into Different Sleep Stages According To The American Academy of sleep Medicine (Aasm) Rules . Sleep Stage Scoring Can Be Performed Using Single-Channel Eeg or multiple Physiological Parameters. The hypnogram Obtained from The Results Of Sleep Staging Can intuitively Reflect the Sleep of Subjects throughout The Night, And Is Used To Evaluate Sleep Quality and sleep-Related problems.



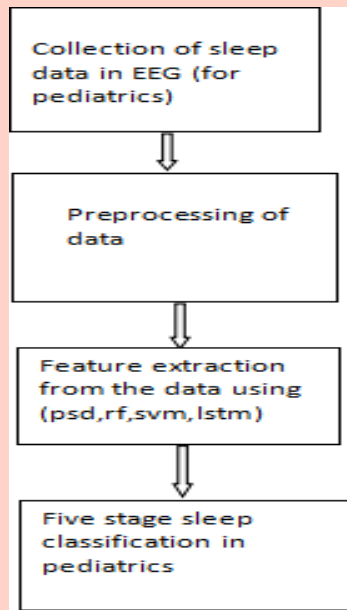


Fig1:Flow Chart

The HNN-Based Classifier Yields The Best Performance Metrics Using 30 S Time Series In Combination with an instantaneous frequency using a 19-Channel, Three-Stage classification, with an overall accuracy, F1 Score, and Cohen's Kappa, equal to 92.21%, 0.90, and 0.88, respectively. An effective combination of temporal and spatial time domain clues with time-varying frequency domain information plays a pivotal role in pediatric, automatic sleep staging. Sufficiently reasonable performance of the HNN-Based approach coping with highly complicated pediatric EEG signatures hopefully sheds light on the clinical feasibility of DNN-based automatic sleep staging for pediatric neurology.

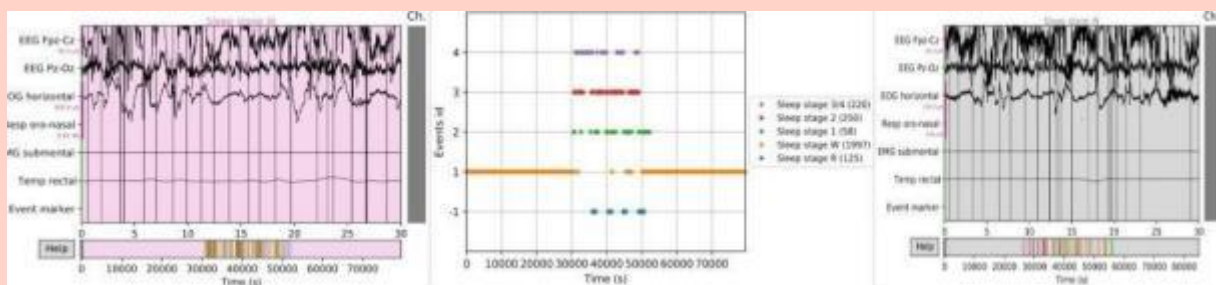


Fig2:Simulation result

EOG, EMG and EKG are considered as input signals and all the sleep stage classification is done accordingly. We demonstrated the influences of the length of input signals, number of channels, and types of input signals on the HNN-based automatic sleep-stage classification for pediatric scalp EEG datasets in the time and frequency domains.

## 6.OBJECT DETECTION USING ULTRASONIC SENSOR



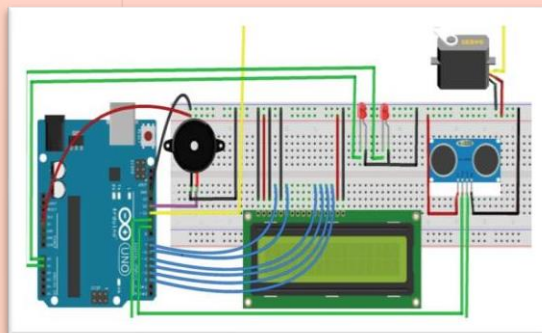
**S. Imran Basha**

**Assistant Professor**

### **Introduction:**

Target/Object Detection, Recognition, Position, Movement Speed, Etc. Is Easy When The Object Is Near Or Easily Visible. But The Same Doesn't Stand True Especially When The Object Is Far Or Not Visible Due To So Many Factors Like Weather Conditions, Day/Night Cycle, Etc. Therefore, Radio Detection and ranging (RADAR) Was Invented, Which Uses Radio Waves To Determine The Range, Angle, Or Velocity of objects.

This Project Provides A Method In Which The Ultrasonic Sensor (HC-SR04) Acts As RADAR. The HC-SR04 Is Connected To Servo Motor (SG90) For The Rotation/Movement Purpose. These Modules Are Also Used To Notify Object Detection Via Message On LCD. These Components Are Connected To Arduino Uno And For Being Processed To Detect And Notify The Object, The Range Of Ultrasonic Wave Is 20kHz But The HC-SR04 Range Is 3cm To 4m As It Is Smaller In Terms Of Project Usage. Advantages are: It is not Affected By Color Or Transparency Of Objects, Can Be Used In Dark Environments, Not Highly Affected by dust, Dirt, Or High-Moisture environments, Etc.



**Fig1: Circuit diagram**

Ultrasonic Sensors Measure The Distance By Using Ultrasonic Sound Waves Which Are Above The Human Audible Range 20kHz. The Sensor Emits An Ultrasonic Wave And Receives The Wave Reflected Back From The Target. Ultrasonic Sensors Measure The Distance To The Target By Measuring The Time Between The Emission And Reception. The Advantages Of Ultrasonic Sensors Are That They Are Cheap, Easy To Set Up And Handle, Can Be Interfaced With Any IOT Module, High Frequency, Sensitivity, Penetrating Power, Great Accuracy, Easily Sense The Nature, Shape, Orientation Of The Object, They Are Independent Of Light, Smoke, Color, Dust, Material, Etc.

Therefore, They Are Used For Liquid Level Control, Car Parking System, Distance Measurement And Almost All The Applications Of RADAR. Therefore, In The Proposed Work, Ultrasonic sensor, HC-SR04 Is Used which Is Made To Act As RADAR.

The HC-SR04 Uses Sonar to Determine the Distance to an Object. The Transmitter (Trig Pin) Sends a signal: A High Frequency Sound, When The Signal Finds An Object, It Is Reflected And The Transmitter (Echopin) Receives It. For The RADAR Like Movement/Rotation, Servo Motor SG90 Is Used. For Notifying The object detection via message on LCD with its location. As one can see that with these cheap, Light weight, Easy To Setup and Handle Modules, The RADAR Can Be Replaced And Even Then all the application can be handled.

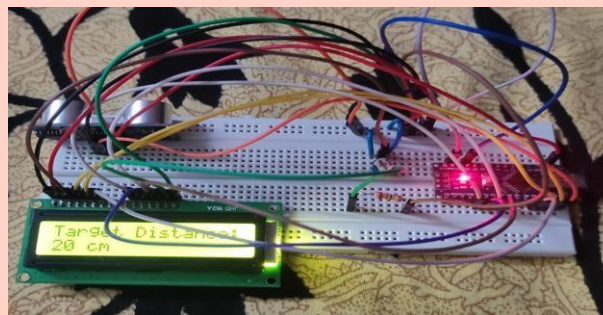


Fig2: Hard ware prototype

In this project, the work. E. Radar based object detector using ultrasonic sensor has been successfully Carried Out. It gives solution for easy object detection with ultrasonic, working like radar instead of Using actual RADAR Which is Costly and Tough To Handle. The Work Included Iot devices And Software For The Connection. Data Was Processed By The Computer And Arduino Uno Board. object Detection Was Done Via The Ultrasonic Sensor With Servo Motor Attached To The Boards And The distance, Angle, Timestamp Of Object Detected Was Sent To The Given Number Via Message On The LCD module. The Results Included Sample Test Cases To Check Range Of The Object Detection. Therefore, The work Provides Easy To Setup And Handle Solution For Object Detection As There Are Lot Of Advantages Of ultrasonic Over RADAR As Mentioned In The Introduction Section. In Future, Higher Range Ultrasonic sensor Can Be Used With 360o Angle Rotation For Large Area Coverage. Also, Different Types Of Camera can be fixed to identify the Object Clearly.

## 7.GEO-FENCING AND OVERSPEED ALERT SMS SYSTEM WITH EMERGENCY RIDING GLOVE



**Dr.S.Govindarajulu**  
Professor

### INTRODUCTION:

Higher Performance And Speed Vehicles Are More Prone To Accidents Than Ever Before. A Person can drive recklessly, which affects the safety of the public. Speed limits and other preventative measures have been put in place, but traffic accidents continue to occur every day. Geofencing (Geofencing) is a powerful feature of software programs that use the Global Positioning System (GPS) or User audio Frequency Identification (RFID) to define geographic boundary features. Geo fences are in fact virtual barriers. Geo fencing is a revolutionary technology. Tracking and monitoring systems based on global satellite navigation services, including geo fencing capabilities, may also help determine the precise location of your child. The main issue with the geo fencing approach is that parents and care takers find it difficult to use, therefore they do not utilize it. To make the geo fencing technique simpler and easier to use by everyone, this research work intends to develop an app and attach it to the built prototype. The proposed task is to develop devices that control speeding and reckless driving accidents and provide safety in emergencies, and also an app is developed to make it easy to use and set the speed limits, max distance etc. The device can detect speeding, emergency gestures, virtual geological barriers and is programmed to send SMS alerts. This device model was developed using the Arduino MEGA, Global System for Mobile Communication (GSM), Global Positioning System "GPS", and flex sensor

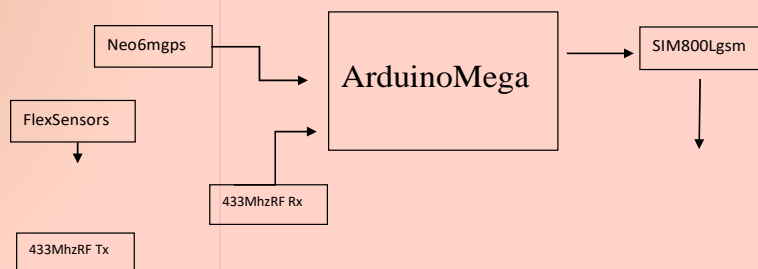


Fig1:Blockdiagram

A Geofence Is A Virtual Geographical Boundary Or Fence Defined By GPS Technology. This allows



The Software To Trigger An Alarm When An Object Enters Or Exits A Designated Area And Can be used to monitor live stock and other animals. Parents can use it to monitor their children. That is a Great Feature Of A Software Program That Uses The Global Positioning System (GPS) Defines geographic boundary features. Any time when the child crosses the virtual barrier, The system will Send an sms notification to the parent's phone

Fig2: Vehicle inside Fence      Fig3: Vehicle Outside fence



Fig4: Hard ware model

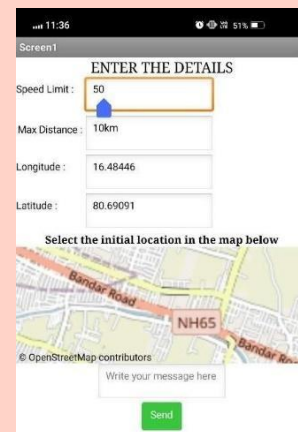


Fig5: Geofencing settings

This initiative will help reduce traffic deaths caused by speeding and abrupt driving by installing such a device. The speed of the driver is continuously monitored and broadcast, alerting authorities when crossing borders. Not only promotes road safety for people, not only drivers, but also pedestrians. Therefore, this work will reduce the number of fatalities from traffic accidents. The main reasons are excessive speed and hasty driving. The proposed system can handle geofence detections and alert them. It also avoids accidents by providing a warning system that can be overcome by stopping the vehicle. The hand glove lets the authorities respond quickly by recognizing her gesture. There is a quick response by police and there might be a chance of reducing risk with the help of this emergency gesture recognizer, especially for women's safety.

## 8. INVESTIGATION AND IMPLEMENTATION OF DIELECTRIC RESONATOR ANTENNA FOR SUB-6GHZ NEW RADIO BAND FOR VEHICLE-TO-VEHICLE APPLICATIONS



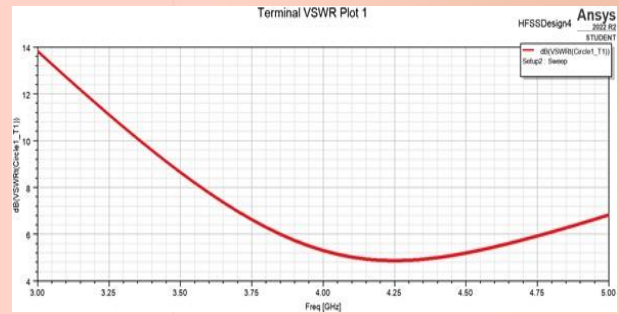
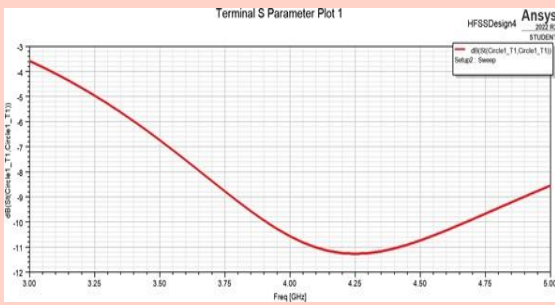
**Dr.K.Murali Babu**

**Associate Professor**

### **Introduction:**

A singly fed wideband circularly polarized dra, including a rectangular dra, conformal metal strip of roman three shape for excitation purpose, parasitic strip, and the ground plane made up of pec. the size of the dra is kept similar a sin[20], where having a height (h), width (b) and depth of (c) 26.1 mm, 25.4 mm, and = 14.3 mm, respectively. Additionally, the relative permittivity of dra has  $\epsilon_r = 10$ . Conformal metal feed comprises up to 5 separate strips used to excite the antenna. After the numerous parametric sweeps, the optimized dimensions of the feeds are  $h_3 \& h_4 = 12$  mm,  $w_1 = 7.0$  mm,  $h_5 \& h_6 = 4$  mm. The widths of all the strips are optimized at 1 mm. For the pec ground plane, a square plate of  $35 \times 35$  cm<sup>2</sup> has been used dra has been placed in the middle of the ground plane.

The proposed antenna can be used vehicle to infrastructure and vehicle to vehicle applications. We designed circularly polarized dielectric resonator antenna (dra) is proposed for future 5g new radio applications. A roman feed circularly polarized dra was introduced of operating frequency 3.7-4.2ghz and excited by different higher order modes to cover the whole 5g new radio bands. Parasitic metal strips are introduced for novel feed mechanism to get good characteristics parameters for 5g new radio band sub-6ghz frequency application. S parameters: s-parameters (or scattering parameters) are used to describe how energy can propagate through an electric network. S-parameters are used to describe the relationship between different ports, when it becomes especially important to describe a network in terms of amplitude and phase versus frequencies, rather than voltages and currents. From the parameter matrix, you can calculate characteristics of linear networks such as gain, loss, impedance, phase group delay, and voltage standing wave ratio (vswr). The operating frequency of the above antenna is 4.5ghz.



VSWR Plot: VSWR (Voltage Standing Wave Ratio) Is A Measure Of How Efficiently Radio-Frequency Power Is transmitted From A Power Source, Through A Transmission Line, Into A Load (For example, From A Power Amplifier Through A Transmission Line, To An Antenna). In An Ideal System, 100%Of The Energy Is Transmitted. VSWR Value Under 2 Is Considered Suitable For Most Antenna Applications. The Antenna Can Be Described As Having A “Good Match”. So When Someone Says That The Antenna is poorly matched, very often It Means That the vswr Value exceeds 2 For a frequency of interest.

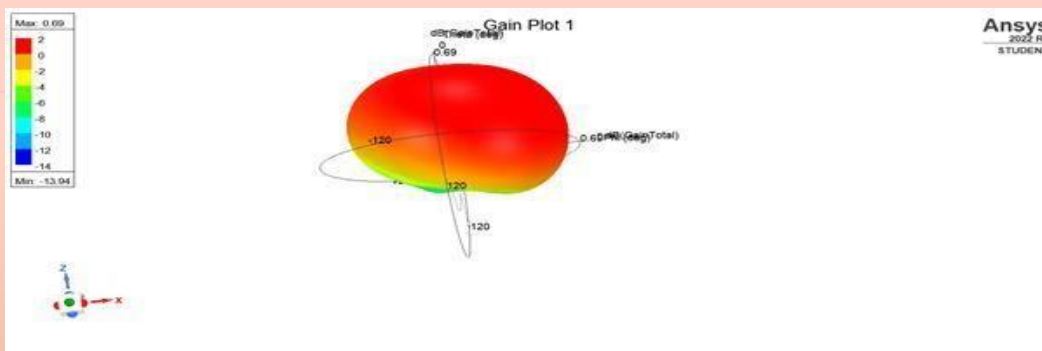


Fig3: Gain Plot

In This Article, We Are Designed Basic Micro strip Patch Antenna And Dielectric Resonator Antenna. In dielectric Resonator Antenna A Novel Roman Three-Feed CP DRA For Sub-6 Ghz 5G NR Band Wasexamined And Has Been Successfully Investigated In This Article Initially, The Proposed Antenna Hasproduced A Very Narrow S11 And CP Bandwidth. It Has Been Revealed That By Just Deploying A Parasiticmetallic Strip On The Wall Of The DRA Nearby The Novel Feed, The Antenna Has Exhibited A Very Broad10-Db Impedance Operation Of 27.73% (3.26 – 4.35 Ghz) And CP Waves Of 23.71% (3.37–4.23 Ghz) That can Easily Cover 5G NR Band (N77/N78). Because The Proposed Wideband CP DRA Has A Simple structure And Feeding Mechanism And Stable Gain And Radiation Patterns, It Is A Good Candidate For 5gnrband (Sub-6 Ghz)Applications.



## 9. ARDUINO BASED WHEELCHAIR FALL DETECTION SYSTEM USING GPS AND GSM MODULE



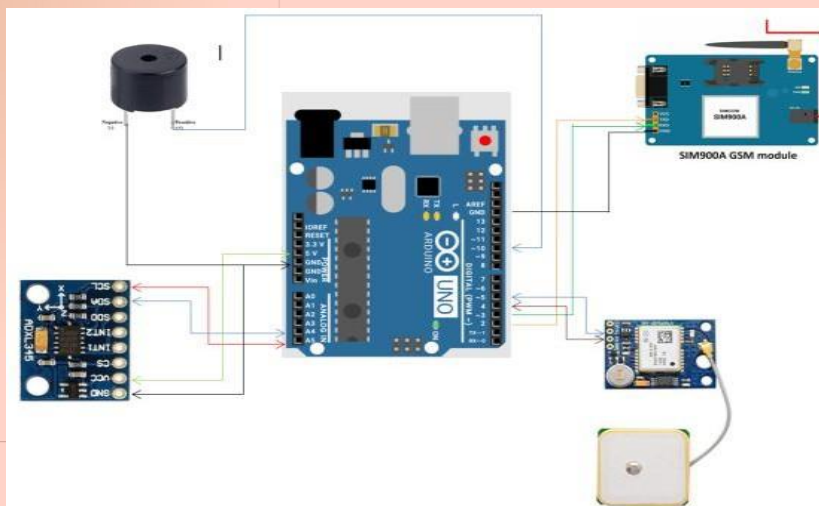
**Dr. Tanveer Alam Khaji**

Associate Professor

### Introduction:

Every country in the world was focused on improving their country, which included increasing the population. As the population grows, so does the number of elderly and sick people. As the number of these people grows, so does the demand for health care services. Those with health issues or the elderly frequently do not have enough strength to walk, so a wheelchair is employed. Those who use a wheelchair but live alone are at a higher risk of falling. Furthermore, falling repeatedly can create psychological and physiological damage, which can lead to severe injury and even death if medical assistance is not immediately provided. Medical treatment is required to lessen the danger of these people being injured by a fall. So, a reliable fall detection system can help in the identification of senior falls as well as the search for support and assistance. Commercial and smart or motorised wheelchairs are the two types of wheelchairs that are currently available. Commercial wheelchairs, which lack any form of technology and are used extensively worldwide. In order for the wheelchair to go to the destination automatically, a smart or powered wheelchair has a controller device that enables the user to input information via a joystick, voice command, etc. Smart or powered wheelchairs are generally less frequently employed in traditional family or health care settings due to their high cost.

### System block Diagram



**ALGORITHM:**

The Algorithm Used For The Fall Detection System Is

Mentioned Below

step1:Start

step2:Read data from the accelerometer sensor

step3:Check if fall occurred or not

step4:If yes-Activate the buzzer

step 5: The Check Time Will Be For 2

Min

step6:If no-The buzzer will be deactivated

step7:If yes-Activate GSM and GPS Module

step8:Send the location of fall and message to the registered mobile number of concerned persons for help/Assistance

step9:Stop

**FLOWCHART:**

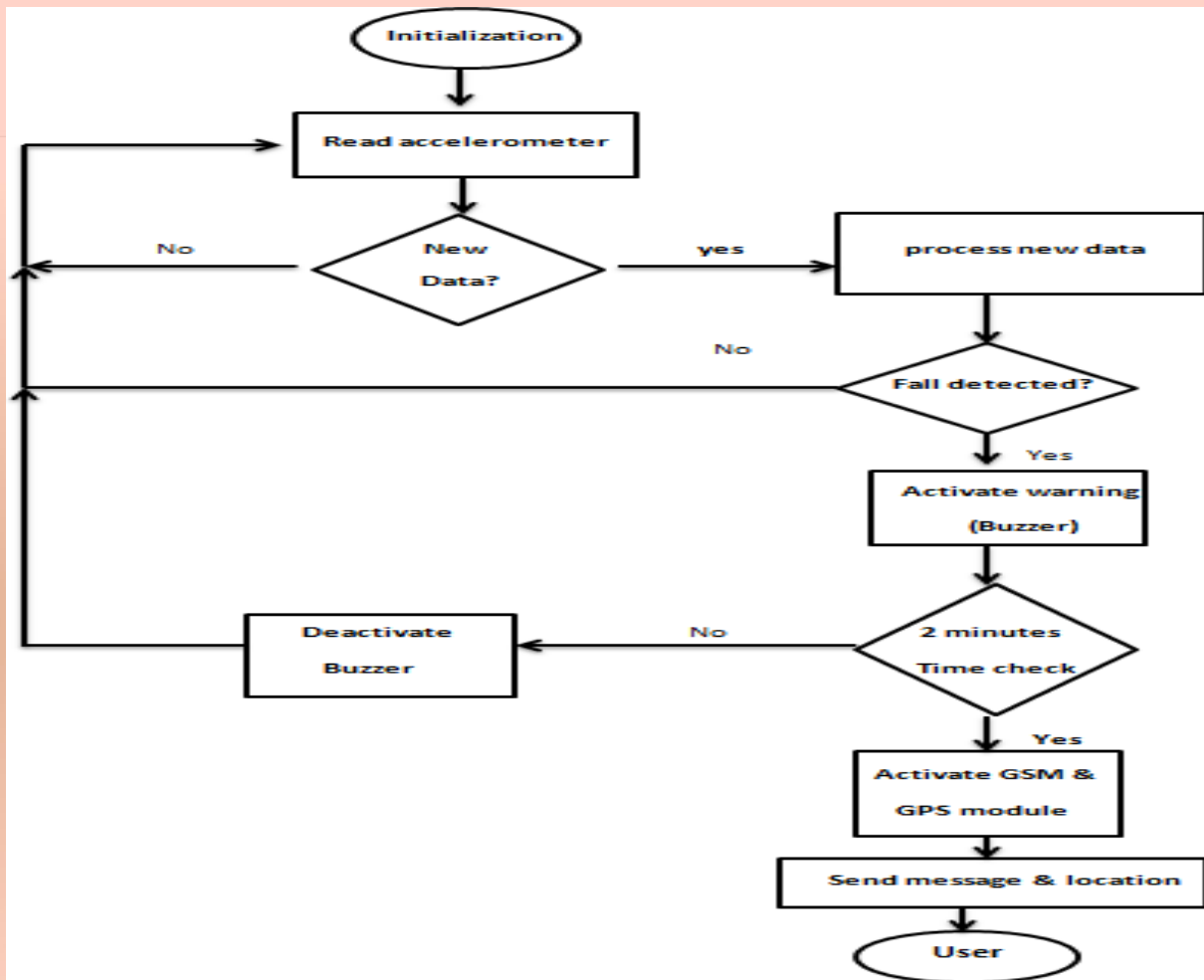


Fig2:Flowchart

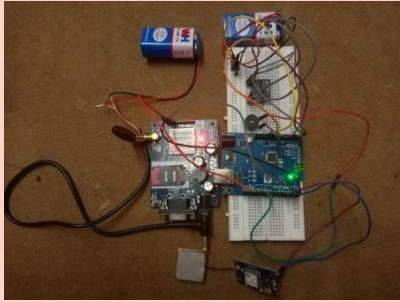


Fig3: Connected Circuit



Fig4: Wheel chair attachable kit

**Conclusion:**

With The ADXL345 Accelerometer, GSM SIM900A Module, And GPS Neo6m Module, Arduino-Based Wheelchair Fall Detection Systems Can Provide A Low-Cost And Adaptable Solution For Detecting falls And Issuing Notifications. Fall Detection Approaches Such As Threshold-Based Techniques, Machine learning Techniques, And Pattern Recognition Techniques Can All Be Applied. The GSM Module Can Beused To Send Messages Or Make Calls To Alert Caregivers Or Emergency Services, While The GPS Modulecan Provide Location Information. Further Research Is Needed To Evaluate The Accuracy And Effectivenessofthesystems In Real-World Scenarios.

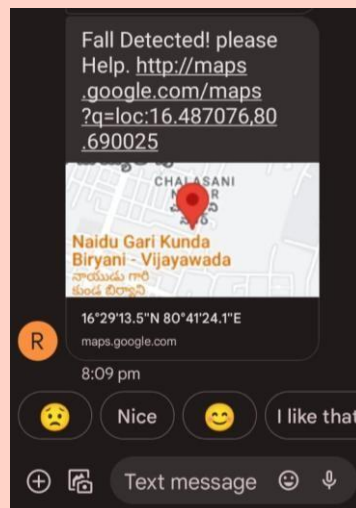


Fig5:Location As Textmsg

Wheelchair Fall Detection Systems Can Be Extremely Beneficial To Wheelchair Users, Particularly Theelderly, Who Are At A Higher Risk Of Falling. These Technologies Can Detect Falls And Provide A Warning To carriers Or Emergency Personnel. Arduino-Based Fall Detection Systems Have Grown In Popularity In recent Years Because To Their Low Cost, Ease Of Use, And Adaptability. The Purpose Of This Literature Review is to provide an overview of arduino-Based wheel chair fall detection systems that use the adxl345

Accelerometer, gsm sim900 module, and gps neo6m module. Arduino-based fall detection systems: Arduino is an open-source microcontroller platform that provides a versatile and low-cost alternative for building electronic projects. In Arduino-based fall detection systems, an accelerometer, a sensor that senses acceleration, is typically employed. The ADXL345 accelerometer is a popular choice for Arduino-based fall detection systems because of its high accuracy and low power consumption. The accelerometer can detect the orientation of the wheelchair as well as the acceleration caused by a fall.

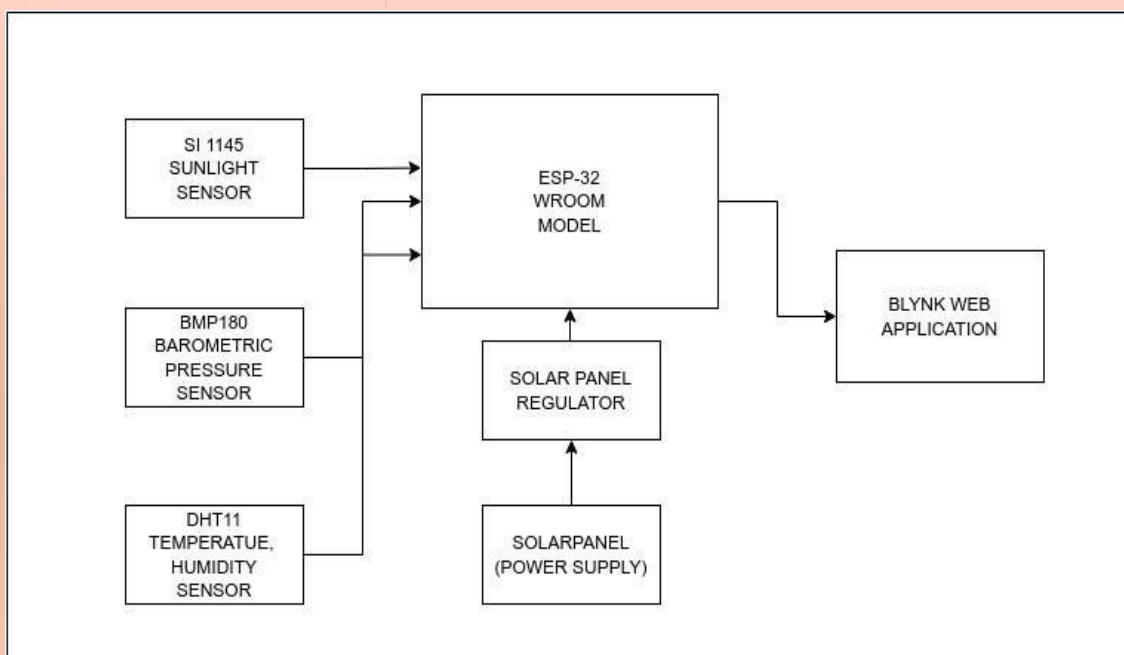
## 10. REAL TIME ANALYSIS OF WEATHER STATISTICS USING WEATHER STATION BASED ON ESP-32



**T Ravi Kumar**  
Assistant Professor

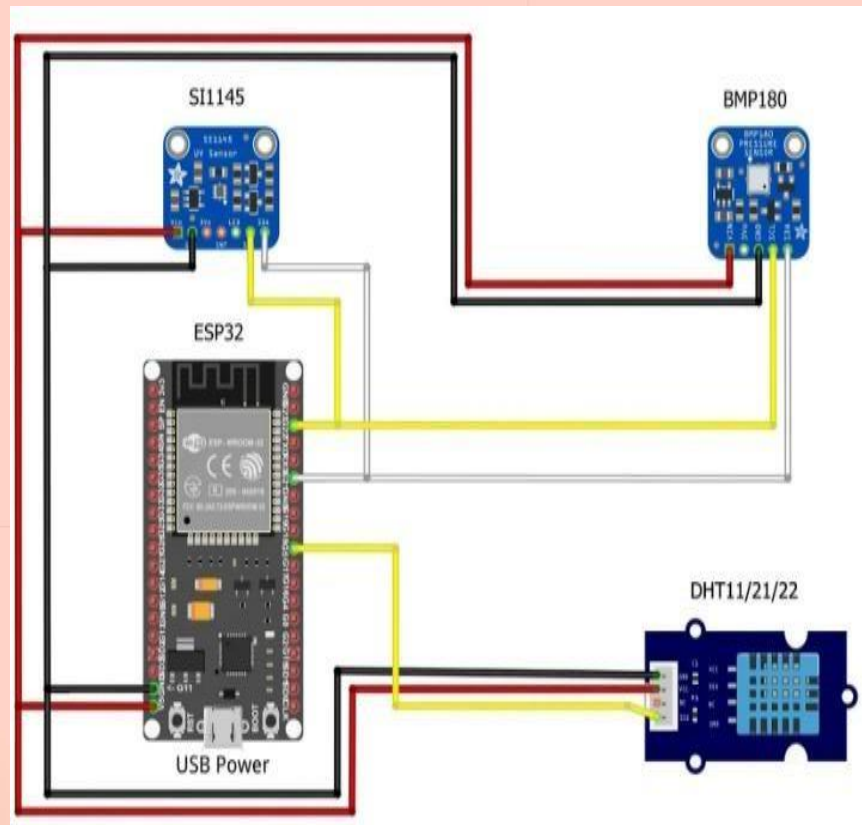
### Introduction:

The Proposed System Puts Forward An IOT Based Weather Station Which Helps In Measuring Various weather Parameters And Analyzing Them Over A Period Of Time. In This System We Will Mainly Use ESP32 microcontroller, Sensors And Software Requirements Such As ARDUINO IDE Software For Running And dumping Code And BLYNK Web Application For Creating A User Interface That Displays The Obtained Data and Get Updated Time To Time And Data Can Be Analyzed On Each Parameter In The Form Of Graphs Over A period of time. This project is an extension of simple weather stations and their applications. We aim to Design A System That Is Unique In Its Own Way By Creating Up The More Effective Process And Its applications. In This Project We Aim To Build A More Efficient, User-Friendly System And Make Sure It Is cost effective.



**SYSTEM BLOCK DIAGRAM**

Figure1-Flowchart Ofweatherstation



**Methodology:**

Sdsdsddasdsadsdsddsp32 Is Highly-Integrated With In-Built Antenna Switches, RF Balun, Power Amplifier, Low-Noise receive Amplifier, Filters, and Power Management Modules. ESP32 Adds Priceless Functionality And versatility To Your Applications With Minimal Printed Circuit Board (PCB) Requirements. ESP32 Canperform As A Complete Standalone System Or As A Slave Device To A Host MCU, Reducing Communication stack Overhead On The Main Application Processor. ESP32 Can Interface With Other Systems To Provide wi-Fiand Bluetoothfunctionalitythrough Itsspi/ Sdioori2c /UART Interfaces.

## RESULT

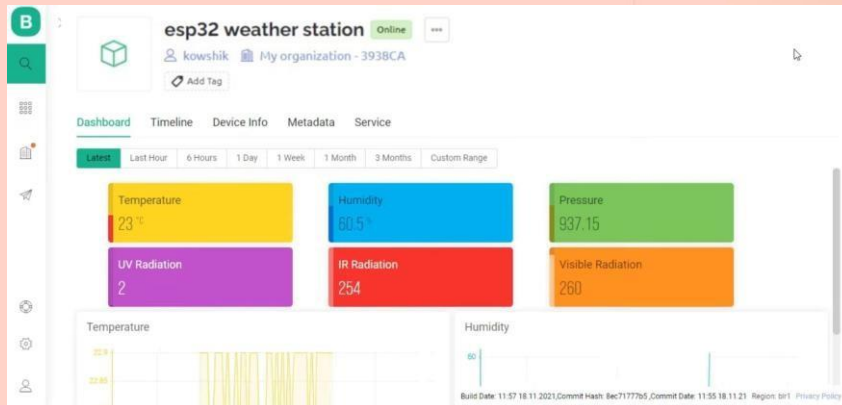


Figure3:Blynkinterface

From fig.3, We can see that the blink application software can run online, Through this interface so that, We can ensure the required Details About The Weather condition.



Fig4: Nodem cuconnection to arduinoide

## CONCLUSION

In This Project, The Main Function Our Project- 'Real Time Analysis Of Weather Statistics Using weather Station Based On ESP32' Is To Record And Observe The Weather Conditions In Live Time Using Aremotely Accessed Through WIFI Using ESP-32 Kit That We Have Developed And This Target (Project Goal)Has Been Successfully Carried Out. It Gives Solution For Weather Condition Detection With ESP32 And Other weather condition detecting Modules, Which is easy And not so costly and simple to handle.Other author's Work Is Mainly Focused On The Either Of The Things. The Work Included Iot Devices And Software for the Connection. Data was Processed By the Computer And ESP-32.

# Dr.K.V Subba Reddy Educational Institutions

Courses : B.Tech., M.Tech., MBA., MCA., Pharm.D., B.Pharm., M.Pharm., D.Pharm & Polytechnic  
NH-44, Kurnool, Andhra Pradesh



## Lion **Dr.K.V Subba Reddy** *Chairman*

M.A.(Lit.), M.Ed., P.G.C.T.E., M.Phil., Ph.D., L.L.B.



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