BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE · ODALAREVU ·

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BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE

(AUTONOMOUS)

ODALAREVU

ELECTRONIC PULSE

DEPARTMENT OF

ELECTRONICS AND COMMUNICATION ENGINEERING

INNOVATION | RESEARCH | TECHNOLOGY | EXCELLENCE

ELECTRONIC PULSE | VOLUME NO. 17 | ISSUE NO. 1 | 2022-23

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Assistant Professor,
Department of ECE

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01

Bireddy Vijay Kumar
III B.Tech - ECE
Roll No. : 20221A0419

02

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III B.Tech - ECE
Roll No. : 20221A04C3

03

Allaka Chaitanya Naga Sai
II B.Tech - ECE
Roll No. : 21221A0410



ABOUT BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE

Building Future Engineers Through Excellence & Innovation

Bonam Venkata Chalamayya Engineering College (**Autonomous**) is committed to providing quality technical education through academic excellence, innovation, research, and industry collaboration.

The institution fosters an ecosystem that encourages creativity, ethical values, leadership, and lifelong learning while preparing students to excel in a rapidly evolving technological world.

Autonomous
Academic Excellence

NAAC Accredited
Quality Education

Industry Connect
Strong Collaborations

Excellent Placements
Career Opportunities

ACADEMIC EXCELLENCE
Outcome-based education with modern curriculum and digital learning

INNOVATION & RESEARCH
State-of-the-art labs and research-driven environment to encourage innovation

INDUSTRY COLLABORATION
Strong partnerships with industries for internships, projects and placements

STUDENT DEVELOPMENT
Holistic development through technical clubs, activities and leadership programs

ABOUT ECE DEPARTMENT

The department of Electronics & Communication Engineering bestows the value based technical education and train students to be qualified with an global qualification applicable for building a fortunate career either in Industry/Research or higher education i.e, from A.Y 1997-98 with an intake of 60 students. Presently, the intake of the ECE Department is 180 students. The department is strengthened with 33 well qualified, experienced and dedicated Post graduates with 7 Doctorates and some of them are pursuing Ph.D in different streams.

Zeal and Enthusiasm are the two words which defines the faculty of ECE Department and always been on a high growth path with strong commitment towards engineering education. The Department impulse is to provide a vivid and optimum learning environment to the students in order to help them transcend in today's competition globally. To keep in pace with the current technological trends, the department has established few centre of excellences to incorporate all advancements in collaboration with industries.

The faculty members and students of the department presented research papers in the referred International conference in India and abroad. Research articles were published in International journals. The ECE department has good infrastructure with different labs namely Microwave Engineering lab, Microprocessor Lab, Digital ICs Lab, Communications Lab, EDC Lab, ECA Lab, PDC Lab, LIC Lab, DSP & VLSI Lab. All the labs are fully equipped to cater the present day advanced technology. The department consists of a smart class room facility and department library comprising of different textbooks, magazines and competitive exam preparation books.

Vision of the Department of Electronics and Communication Engineering

To produce globally competent and ethically responsible Electronics and Communication Engineers capable of developing innovative, sustainable, and intelligent communication and electronic technologies to meet industrial and societal needs.

Mission of the Department of Electronics and Communication Engineering

M1

To provide a robust academic environment through learner-centric pedagogy, state-of-the-art laboratory infrastructure, and exposure to emerging technologies like VLSI, IoT, and AI-driven communication systems.

M2

To bridge the gap between academia and industry by fostering collaborative research, innovation, and entrepreneurship through hands-on technical training and real-world problem-solving in electronic and communication technologies.

M3

To instill a strong sense of professional ethics, leadership, and lifelong learning in students, enabling them to develop sustainable and intelligent engineering solutions that address global societal and environmental challenges.

Program Educational Objectives (PEO's)

PEO1:

Graduates will apply strong fundamentals of electronics and communication engineering to analyze, design, and develop innovative electronic and communication systems using modern engineering tools for industrial and societal applications.

PEO2:

Graduates will pursue successful careers in industry, research organizations, and entrepreneurship or engage in higher education, demonstrating innovation, technical competence, and adaptability in emerging areas such as VLSI, IoT, and intelligent communication systems.

PEO3:

Graduates will demonstrate professional ethics, leadership, teamwork, and lifelong learning while developing sustainable engineering solutions to address global technological and societal challenges.

Program Specific Objectives (PSO's)

PSO 1

"Graduates will be able to analyze, design, and implement complex electronic systems and communication networks using modern hardware-software tools in the areas of VLSI, Embedded Systems, IoT, and AI-driven signal processing."

PSO 2

"Graduates will be able to apply ECE principles to develop innovative, cost-effective, and sustainable solutions for real-world industrial and societal problems, while adhering to professional ethics and environmental standards."

Program Outcomes (POs)

PO1: Engineering Knowledge: Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization respectively to develop to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development.

PO3: Design/Development of Solutions: Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required.

PO4: Conduct Investigations of Complex Problems: Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions.

PO5: Engineering Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems.

PO6: The Engineer and The World: Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment.

PO7: Ethics: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws.

PO8: Individual and Collaborative Team work: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.

PO9: Communication: Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences

PO10: Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.

PO11: Life-Long Learning: Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change.

MESSAGE FROM
CHAIRMAN



Dr. Bonam Krishna Satish
Chairman

It gives me immense pleasure to learn that the Department of Electronics and Communication Engineering is bringing out its Technical Magazine. A magazine is a mirror that reflects the ideas, innovativeness, technical competence and the collective efforts of the students and faculty members. It is indeed a matter of pride that our young minds are showcasing their creativity, research insights, and technical skills through this platform.

At our institution, we believe in empowering students with quality education, strong values and a spirit of innovation so that they can excel in a rapidly evolving world. I am confident that this magazine will inspire many more students to explore new ideas, stay curious, and contribute meaningfully to society and the nation.

I extend my heartfelt appreciation to the editorial team, faculty members and students for their dedication and hard work in bringing out this publication. I congratulate everyone involved in this initiative and wish the Department of ECE continued success in all its future endeavors.

May this magazine be a source of knowledge, inspiration and pride for all.

Dream, Innovate, Achieve
Together We Build The Future

MESSAGE FROM SECRETARY



Sri Bonam Kanakayya
Secretary

I am delighted to know that the Department of Electronics and Communication Engineering is bringing out its Technical Magazine. Such initiatives play a vital role in encouraging students to think beyond the classroom, explore new ideas and exhibit their technical expertise.

This magazine is a platform that highlights the academic achievements, innovative projects, research activities and creative talents of our students and faculty members. It reflects the vibrant learning ecosystem and the spirit of excellence that our institution stands for.

Education is not just about gaining knowledge, but also about developing values, leadership qualities and a sense of responsibility towards society. I am confident that through this magazine, our students will be inspired to keep learning, keep innovating and contribute to the progress of the nation.

I appreciate the sincere efforts of the editorial team, faculty and students who have worked dedicatedly to bring out this publication. My best wishes to the Department of ECE for its continuous success and for achieving greater milestones in the years ahead.

May this magazine serve as a source of knowledge, inspiration and pride for everyone associated with it.

Inspire • Innovate • Integrate • Elevate

MESSAGE FROM
PRINCIPAL



Dr. Chandra Mouli VSA.
M. Tech., Ph.D.

Principal

Bonam Venkata Chalamayya
Engineering College
(Autonomous), Odalarevu

I am delighted to present the latest issue of the Department of Electronics and Communication Engineering Technical Magazine. This magazine is a wonderful platform that captures the ingenuity, creativity and technical excellence of our students and faculty.

In a world driven by rapid technological advancements, it is essential for aspiring engineers to stay curious, think innovatively and apply their knowledge to solve real-world problems. This publication reflects the spirit of exploration and the pursuit of excellence that we continuously encourage in our department.

I congratulate the editorial team, faculty coordinators and all contributors for their dedicated efforts in bringing out this issue. Their commitment to sharing knowledge and ideas will motivate many and contribute significantly to the academic and professional growth of our readers.

I encourage all students to actively participate in such initiatives, as they not only enhance technical skills but also develop confidence, teamwork and leadership qualities.

I extend my best wishes to the entire team for the success of this magazine and for many more impactful editions in the future. May it continue to inspire young minds to innovate, excel and make a positive difference in society.

Dr. Chandra Mouli VSA.
M. Tech., Ph.D.
Principal
Bonam Venkata Chalamayya
Engineering College
(Autonomous), Odalarevu

MESSAGE FROM HOD



Dr. Akula Pravin
B.Tech., M.Tech., Ph.D.
Head of the Department
Electronics and Communication Engineering

It gives me immense pleasure to present the latest edition of the Department of Electronics and Communication Engineering Technical Magazine. This magazine is a beautiful blend of knowledge, innovation and creativity reflected through the contributions of our talented students and dedicated faculty members.

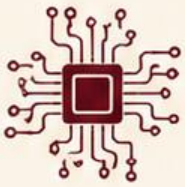
In today's fast-evolving world, technical competence, research aptitude and continuous learning are essential to meet the challenges of tomorrow. Our department strives to provide a conducive environment that nurtures curiosity, encourages innovation and promotes holistic development of every student.

This magazine serves as an excellent platform for showcasing academic excellence, innovative projects, research activities, technical articles and other achievements. It not only highlights our departmental activities but also inspires others to explore new ideas and push the boundaries of technology.

I sincerely appreciate the efforts of the editorial team, faculty coordinators and student contributors for their hard work and commitment in bringing out this publication. I congratulate everyone associated with this initiative and wish the Department of ECE continued success in all its future endeavors.

Let this magazine be a source of knowledge, inspiration and motivation for all the readers.

INNOVATE Think Beyond | **LEARN** Continuously | **ACHIEVE** Excellence | **INSPIRE** The Future

S. NO	TOPIC
1	FOOTSTEP POWER GENERATION SYSTEM 
2	FAST BINARY COUNTERS AND COMPRESSORS GENERATED BY SORTING NETWORK 
3	IOT BASED ACCIDENT PREVENTION, DETECTION AND REPORTING SYSTEM USING ARDUINO 
4	INTELLIGENT HELMET FOR BIKE RIDER'S SAFETY 
5	IOT BASED AUTOMATED HORTICULTURE SYSTEM FOR FARMERS 
6	DETECTION OF LUNG CANCER BY IMAGE PROCESSING USING MATLAB 

FOOTSTEP POWER GENERATION SYSTEM



ABSTRACT

The system generates voltage using footstep force. The system serves as a medium to generate electricity using non conventional sources (force) and /store/use it. The project is designed to be useful at public places like railway stations where a lot of people keep walking through all day. At such places these systems are to be placed at any entry points where people travel through entrance or exits and they have to step on this device to get through.

These devices may then generate a voltage on every footstep and when mounted in series they will produce a sizeable amount of electricity. For this purpose we here use piezoelectric sensors that use piezoelectric effect in order to measure acceleration, force, pressure by
its conversion into electric signals. We here attach a voltmeter in order to measure its output and small led lights for demonstration.

We also use a battery and weight measurement unit for better demonstration of the system.

FAST BINARY COUNTERS AND COMPRESSORS GENERATED BY SORTING NETWORK

ABSTRACT

The summation of multiple operands in parallel forms part of the critical path in various digital signal processing units. To speed up the summation, high compression ratio counters and compressors are necessary. In this project, we present a method of fast saturated binary counters and exact/approximate (4:2) compressors based on the sorting network. The inputs of the counter are asymmetrically divided into two groups and fed into sorting networks to generate reordered sequences, which can be solely represented by one-hot code sequences. Between the reordered sequence and the one-hot code sequence, three special Boolean equations are established, which can significantly simplify the output Boolean expressions of the counter. Using the above method, we construct and further optimize the (7,3) counter that can perform 27.0%, 26.2%, and 52.0% better in maximum than other designs in delay, area–delay product, and power–delay product, respectively.

Similarly, the (15,4) counter is constructed, and it achieves approximately 35.3% shorter delay, while it significantly consumes less power and area. The constructed (31,5) counter has approximately 26.7% higher performance with the area increasing instead. When the counters are embedded in a 16 × 16-bit multiplier, the performance of the multiplier in area delay product and power delay product is 31.8% and 32.1% higher than that embedded in other counter designs, respectively.

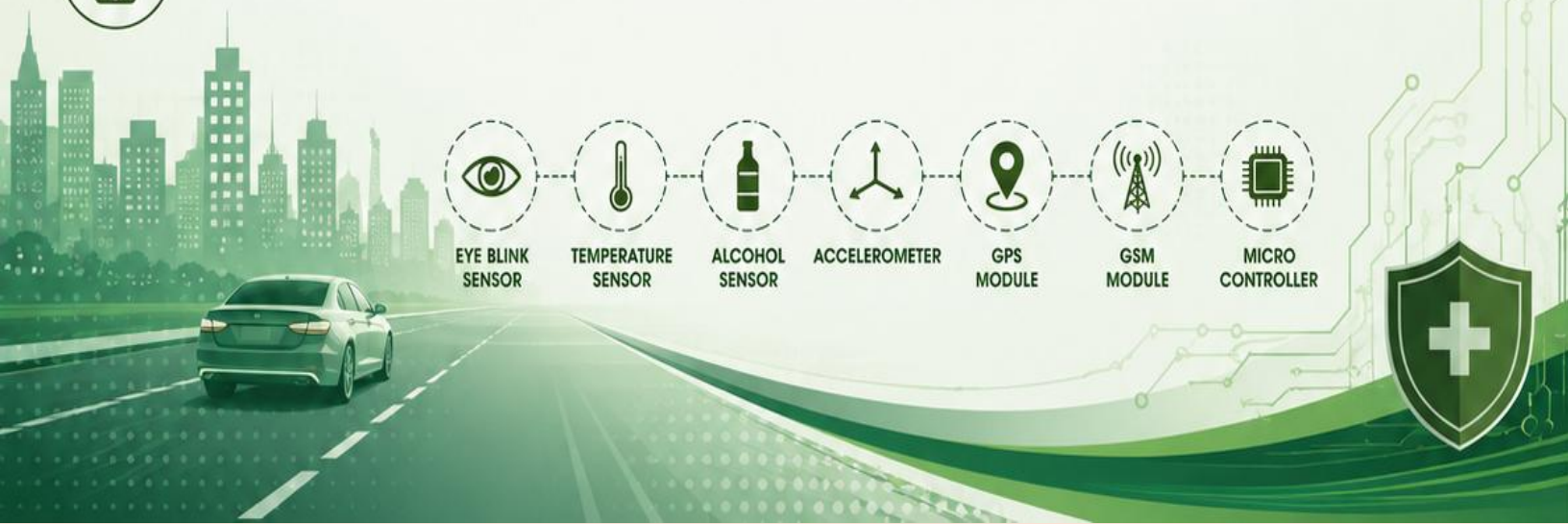
Besides, we also construct exact/approximate (4:2) compressors based on sorting network, and they are 10.2%–37.4% better in the area–delay product and 22.3%–48.0% better in power–delay product when they are embedded in an 8 × 8-bit approximate multiplier



IOT BASED ACCIDENT PREVENTION, DETECTION AND REPORTING SYSTEM USING ARDUINO

ABSTRACT

In today's world there is a severe increase in the use of vehicles. Such heavy automobile usage has increased traffic and thus resulting in a rise in road accidents. This takes a toll on the property as well as causes human life loss because of unavailability of immediate preventive and safety facilities. Complete accident prevention is unavoidable but at least repercussions can be reduced. This embedded system can prevent the accident to occur, and proper preventive measures are taken in this system. The ambulance service and the police station can easily find the location as the location along with the google map link was sent to their smart devices with mobile network accessibility. The system consists of eye blink sensor, temperature sensor, alcohol sensor, accelerometer, GPS module, GSM module, motor, buzzer, led etc. and all these devices are interfaced with the central micro controller unit. We are going to use eye blink sensor for detecting sleep by setting the certain time limit, if the driver gets sleepy, we can warn him. Temperature sensor helps us in detecting the heat of the engine and if the engine is overheated then that of a normal condition, we can warn the driver. Alcohol sensor helps us in detecting if the driver is drunk or not. If he/she is over drunk the vehicle provides warning and the engine stops functioning. Accelerometer detects the occurrence of accident and sends signal to the micro controller for further functioning. GPS module provides us the location, speed, time and date of the certain place where the vehicle is in the real time. If accident occurs, the location of accident that we get from the GPS is send to the ambulance service and police by the help of GSM module. Everything might be all right after a simple accident so the driver can re-inform the ambulance service and police station in this case.



INTELLIGENT HELMET FOR BIKE RIDER'S SAFETY



ABSTRACT

We are going to design and development of intelligent helmet for bike rider's safety. Motorcycles have high rate of fatal accidents than cars or trucks and buses.This project aims for accident avoidance, safety and security of bike rider. The system will ensure that the motorbike will not start unless the rider is wearing a helmet and has not consumed alcohol.Thus alcohol detection is also an important part in this project. Alcohol detection is done byMQ3 sensor and helmet detection is done by IR and PIR sensors. Also GSM technology is used to inform the family members in case of an accident. This project could be highly developed with upcoming technologies to provide further more safety and security to the vehicle systems.

The System consists of 4 Modules:

a) Helmet Authentication - to ensure that the bike rider is wearing a helmet or not (using IR & PIR Sensor or Ultra sonic sensor).

b) Alcohol Detection - to ensure that the bike rider has not consumed alcohol (using MQ3 Gas Sensor).

c) Fall Detection - the vibrations due to static obstacles will be detected by accelerometer or tilt sensor.

d) Response System - in the helmet in case of accident, to inform bike rider's family about the accident using GPS & GSM module.







IOT BASED AUTOMATED HORTICULTURE SYSTEM FOR FARMERS



ABSTRACT

India is the crop growing based country. Our ancient publics entirely depended on the farming realizing. Agriculture is a cause of living of mainstream Indians and has great control on the economy of the country. In dry zones or in situation of lacking rainfall, irrigation comes to be difficult. So, it wants to be involuntary for correct produce and measured at all for farmer protection. Horticulture is a sub-sector of agriculture which plays significant role in economy, human nutrition, gender mainstreaming and employment. Horticulture commodities include fruits, vegetables, flowers, spices and condiments, which have grown steadily and turn into a major segment in agricultural trade. The objective of Horticulture system is to keep measure on food security and the aim of automation irrigation control system is to minimize the efforts of the human operator in Horticulture activities. This control system is built around Arduino programmed using embedded C language. Also using GSM technology for sending message on operator mobile about pump status. By using this method can easily know the data without wasting of time and energy.

- IOT CONNECTIVITY
- AUTOMATED IRRIGATION
- ENVIRONMENT MONITORING
- GSM ALERT TO OPERATOR
- DATA ANALYSIS & REPORTS

Soil Moisture Sensor | Temperature Sensor | Light Sensor | pH Sensor | Humidity Sensor



ARDUINO CONTROLLER → GSM MODULE → WATER PUMP CONTROL → OPERATOR MOBILE → CLOUD SERVER (DATA STORAGE) → DATA ON DASHBOARD

DETECTION OF LUNG CANCER BY IMAGE PROCESSING USING MATLAB



ABSTRACT:

Lung cancer is one of the most lethal cancer types; thousands of people are infected with this type of cancer, and if they do not discover it in the early stages of the disease, then the chance of surviving of the patient will be very poor. For the suggested reasons above and to help in overcoming this terrible, early diagnosis with the assistance of artificial intelligence procedures most needed.

Through this project, a computer-aided system introduced for detecting lung cancer in a dataset collected from hospitals by using a convolutional neural network technique. The accuracy of prediction has always been a challenge, despite the many algorithms proposed in the past by many researchers. Using Convolutional neural networks, this study proposes a methodology to detect abnormal lung tissue growth.

In order to achieve great accuracy, a tool with a higher probability of detection is taken into account. The manual interpretation of results is incapable of avoiding misdiagnoses. During the course of this project, lung images from both healthy and malignant individuals were analysed. An effective training function is used for proposed neural network construction.

This proposed method provides High accuracy of detection. This improved result is comparatively better than other existing detection techniques. The basic reasons for getting magnificent results are the utilization of perfect pre-processing steps and effective training function.



INSTITUTION ACTIVITIES



Valedictory of One week workshop on Microsoft Office Tools for the Non-Teaching Staff Members from 08052023 - 13052023 at E-Class Room, Department of Computer Science on 08-05-2023



An Online Meeting with Principals of all Autonomous and Affiliated Colleges conducted by Vice-Chancellor, Director Academic & Planning of JNTUK held on 15-07-2023



A session conducted on personality development by Dr.SRI PADA RAMAKRISHNA on 21-09-2023



A session on High Impact Teaching Skills by B.K. Mukhesh of Prajapitha Brahma Kumari Eeswareeya Viswa vidyalaya, Mount Abu, Rajasthan on 08-09-2023



III B.Tech. AI&ML students visited Miracle software Solutions, Visakhapatnam from CAD Department on 22-09-2023



LinkedIn premium workshop by associate trainers Sumathi & Vijayavalli from faceprep Vijayawada on 22-09-2023

DEPARTMENT ACTIVITIES





ONE WEEK WORKSHOP ON RECENT TRENDS IN IOT AND VLSI

(12/9/2022 to 17/9/2022)





ONE-WEEK WORKSHOP ON XILINX AND EMBEDDED DESIGN

(13/3/2023 to 18/3/2023)



Fresher's party 2022-23



Farewell party 2022-23

ART GALLERY



Name: Ch. Gayatri

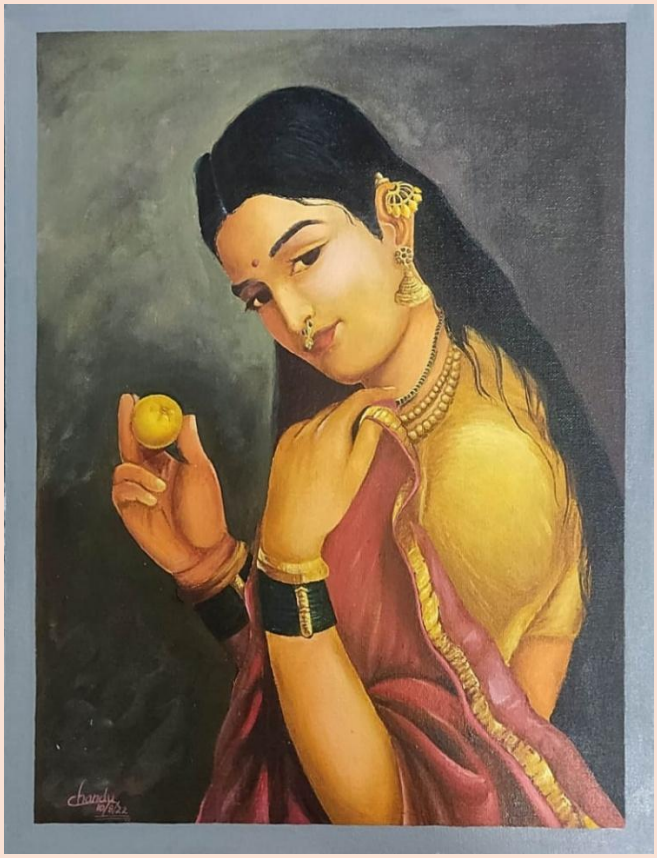
Roll No.: 22221A0432





Name: Kollu Vasu

Roll No.: 23221A0482

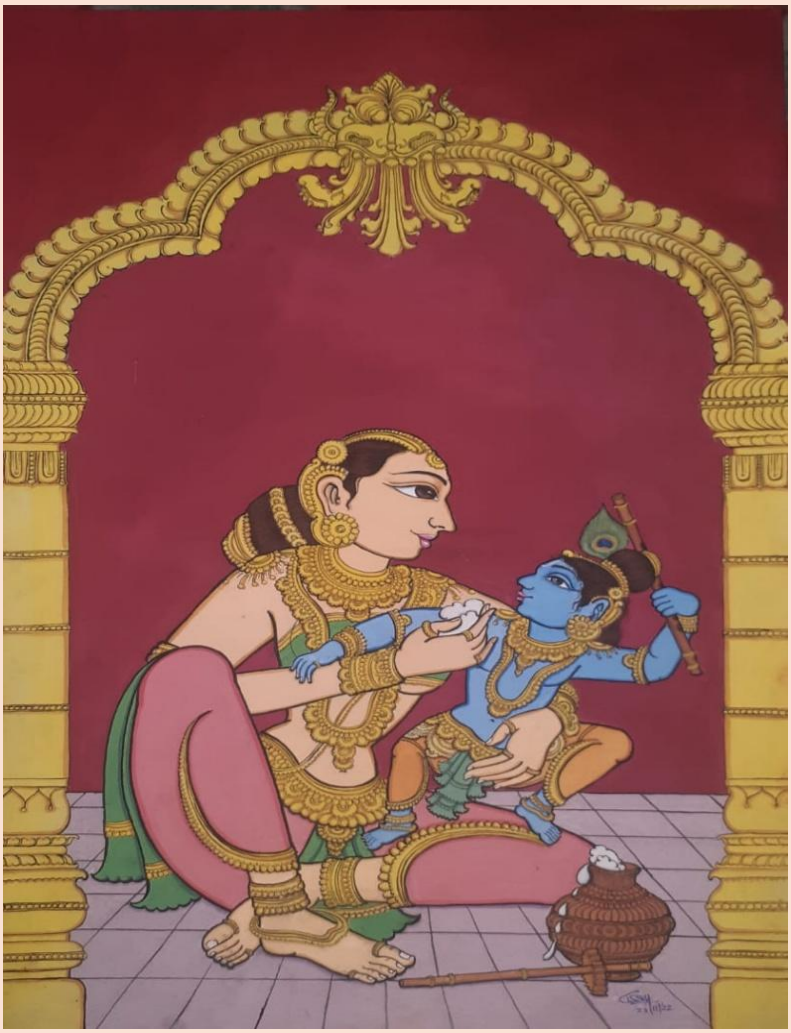






Name: K. Navyasri

Roll No. : 23221A0476

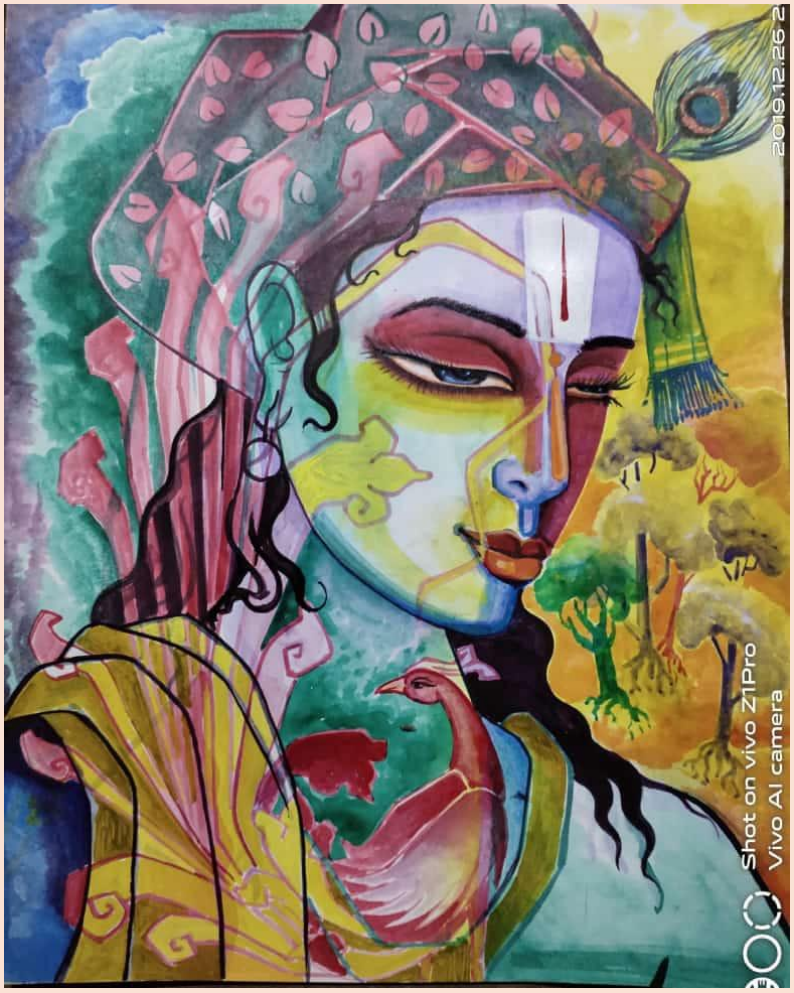




Name: M. Durga Abhinaya

Roll No. : 22221A04A9





Name: K. Lavanya

Roll No. : 23221A0480

PLACEMENTS





On Campus Placement drive by
Soft Suave Technologies (P) Ltd. Chennai,
4 Students are Selected with a package of 3 Lakhs/Annum







SELECTED FOR INTERNSHIP CUM PLACEMENT

oppo INDIA R&D CENTER

Package 3.6 LPA

ECE TOPPERS

I YEAR / I SEM

S.No	Register No.	Name	SGPA	Rank
1	22221A0452	Dulipudi Pavani Veera Satya	9.47	**1**
2	23225A0417	Sanaka Maheswari	9.20	**2**
3	22221A04H7	Yedla Sasi Priyanka	8.90	**3**

II YEAR / I SEM

S.No	Register No.	Name	SGPA	Rank
1	21221A0441	Chollangi Chandrika Lakshmi Madhu	9.56	1
2	21221A0442	Chollangi Sneha Siva Durga Padmini	9.33	2
3	21221A04J6	Yerramseeti S V N L Sailaja	9.25	3

III YEAR / I SEM

S.No	Register No.	Name	SGPA	Rank
1	20221A0471	Kalisetti Hema Sai Sireesha	9.35	1
2	20221A0404	Alladi Bhandavya Gayatri Devi	9.28	2
3	20221A0407	Ambati Yogendra Sai Sandeeep	9.12	3

IV YEAR / I SEM

S.No	Register No.	Name	SGPA	Rank
1	19221A04D9	Rajapurohith Akash	9.45	1
2	19221A0477	Kancharla Giridhara Srinagesh	9.36	2
3	19221A0497	Maddala Leelavenkata Satya Lakshmitayaru	9.20	3

I YEAR / II SEM

S.No	Register No.	Name	SGPA	Rank
1	22221A0437	Chodapaneedi Parvathi Devi	9.34	1
2	23225A0407	Kancharla Lakshmi Devi	9.27	2
3	22221A04H8	Yelamarthi Satya Vasavi	9.05	3

II YEAR / II SEM

S.No	Register No.	Name	SGPA	Rank
1	21221A0456	Golakoti Deepthi	9.39	1
2	21221A0419	Bavireddi Sankararao	9.14	2
3	21221A0441	Chollangi Chandrika Lakshmi Madhu	8.92	3

III YEAR / II SEM

S.No	Register No.	Name	SGPA	Rank
1	20221A0407	Ambati Yogendra Sai Sandeeep	9.09	1
2	20221A0404	Alladi Bhandavya Gayatri Devi	9.02	2
3	20221A0471	Kalisetti Hema Sai Sireesha	8.88	3

IV YEAR / II SEM

S.No	Register No.	Name	SGPA	Rank
1	19221A0477	Kancharla Giridhara Srinagesh	9.26	1
2	19221A04D9	Rajapurohith Akash	9.10	2
3	19221A0497	Maddala Leelavenkata Satya Lakshmitayaru	8.95	3