

VELAMMAL COLLEGE OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING



EEE
CHRONICLE

JULY-DEC
2024

CHIEF ADVISOR

Dr.A.Shunmugalatha, M.E,Ph.D
HoD/EEE



EDITOR-IN-CHIEF

Mrs.R.Saranya, M.E,
Assistant Professor /EEE



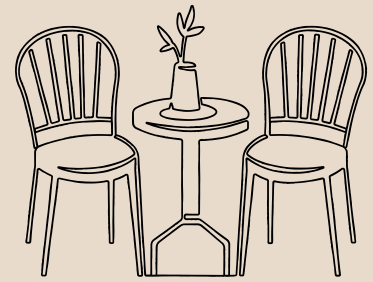
FROM THE EDITOR'S DESK



On behalf of the Velammal EEE department, We would like to wish all authors, patrons, and readers a wonderful and prosperous yearahead. When a thought that has been enduring in mind becomes true, it is truly an interesting and exciting experience. This new assignment of ours as editors is one such cherished work that we would fulfill to the best of our attributes. We need the support of all students and the faculty. So sit back and enjoy browsing through the magazine. Happy reading folks!

BHARATH RANJAN R
III EEE

TABLE OF CONTENTS

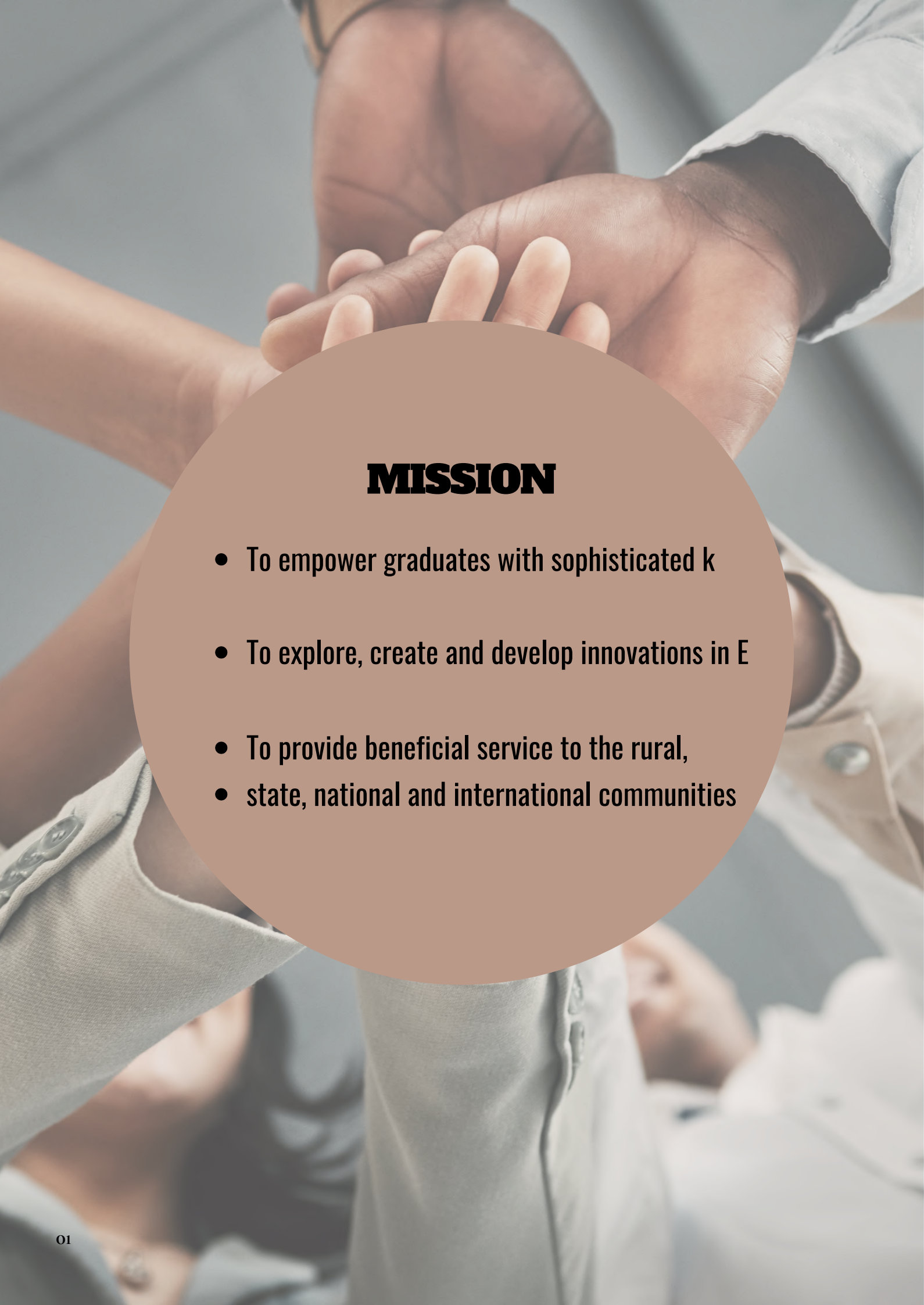


04	POEM : GENERATION WHY?
05	POEM : SMILE
06	SKETCHES
08	NEUROMORPHIC COMPUTING
10	POEM : TO MY BEST FRIEND
11	RISE OF ELETRIC VEHICLE

The background of the entire page is a low-angle photograph of the Statue of Liberty. The statue's head, crown with spikes, and torch are visible in the upper right, while its torso and robes fill the lower right. The sky is a clear, pale blue. A large, semi-transparent light green circle is positioned on the left side, containing a brown circle with the text.

VISION

To Produce quality Electrical
Engineers for industry and good
citizens for society through
excellence in technical education and
research



MISSION

- To empower graduates with sophisticated k
- To explore, create and develop innovations in E
- To provide beneficial service to the rural,
- state, national and international communities

GENERATION WHY?

Sending daisies and tulips through our keypads!!!

Forgetting what nature smells like

Stuck in a corporate maze trying to figure out our way home

Never Seen a daisy in person

will I ever able to be ?

Making our way through the maze in hopes of reaching atulip valley

Will we be able to make it

The generation why

**AKILA S
III YEAR EEE**

SMILE

Smile,
Smile is an art of holiness,
A door to happiness.

Smile is a spark,
That helps you glimmer through the dark.

Smile,
A gift so pure,
Which soothes us for sure.

Smile at the butterfly,
Smile seeing the blue sky,
Smile waving to that kid who is very shy,
This lets you cherish every moment until you die...

Smile at the soft rain,
Smile at the tall mountain,
Smile at the moon that is serene,
Smile at the beauty in all that you've seen.

Smile, smile, smile
Smile every day at least for a while...

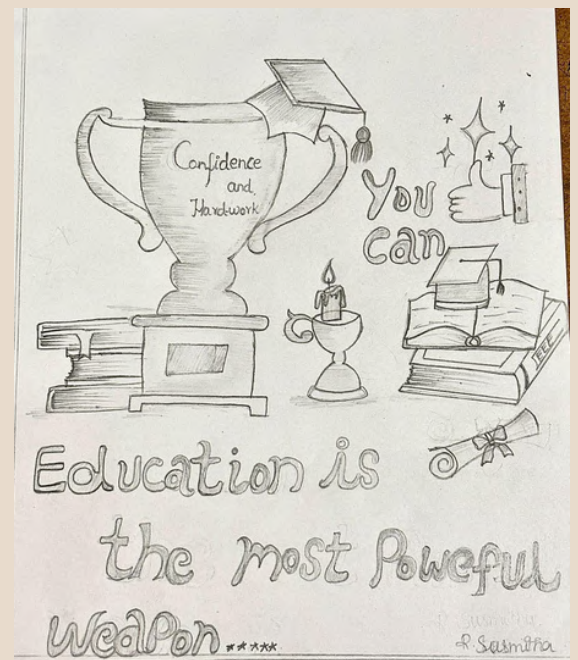
M.VAISHNAVI
I YEAR EEE.

SKETCHES

Jeevithaswari.V
III EEE



Akshaya Prabha
III EEE



Susmitha
I EEE



Akshaya Prabha
III EEE



Linisha.B
I EEE

NEUROMORPHIC COMPUTING: REDEFINING THE FUTURE OF INTELLIGENCE

IMAGINE A COMPUTER CAPABLE OF THINKING, LEARNING, AND ADAPTING WITH THE EFFICIENCY OF A HUMAN BRAIN. THIS REMARKABLE CAPABILITY DEFINES NEUROMORPHIC COMPUTING—A CUTTING-EDGE TECHNOLOGY MODELLED AFTER THE BIOLOGICAL PROCESSES OF OUR NEURAL SYSTEMS. BY MIMICKING THE BRAIN'S METHODS OF PROCESSING INFORMATION, NEUROMORPHIC COMPUTING HOLDS TRANSFORMATIVE POTENTIAL FOR REVOLUTIONIZING FIELDS LIKE ARTIFICIAL INTELLIGENCE AND ROBOTICS.

NEUROMORPHIC COMPUTING REPRESENTS A TRANSFORMATIVE APPROACH TO COMPUTING, INSPIRED BY THE STRUCTURE AND FUNCTION OF THE HUMAN BRAIN. TRADITIONAL COMPUTING SYSTEMS, ROOTED IN THE VON NEUMANN ARCHITECTURE, PROCESS INFORMATION SEQUENTIALLY, OFTEN ENCOUNTERING BOTTLENECKS IN DATA TRANSFER AND ENERGY EFFICIENCY. IN CONTRAST, NEUROMORPHIC SYSTEMS EMULATE THE PARALLEL PROCESSING CAPABILITIES OF NEURAL NETWORKS, ENABLING THEM TO HANDLE COMPLEX TASKS WITH REMARKABLE EFFICIENCY AND ADAPTABILITY.

THE CORE OF NEUROMORPHIC COMPUTING LIES IN ITS HARDWARE DESIGN, WHICH INTEGRATES ARTIFICIAL NEURONS AND SYNAPSES TO MIMIC BIOLOGICAL BRAIN FUNCTIONS. THESE SYSTEMS USE SPIKING NEURAL NETWORKS (SNNs) TO PROCESS INFORMATION IN A MANNER SIMILAR TO THE BRAIN'S COMMUNICATION THROUGH ELECTRICAL IMPULSES. THIS APPROACH SIGNIFICANTLY REDUCES POWER CONSUMPTION, MAKING IT IDEAL FOR APPLICATIONS REQUIRING REAL-TIME DATA PROCESSING AND DECISION-MAKING, SUCH AS AUTONOMOUS VEHICLES, ROBOTICS, AND MEDICAL DIAGNOSTICS.

NEUROMORPHIC COMPUTING WORKS BY LEVERAGING THE PRINCIPLES OF BRAIN-INSPIRED PROCESSING. IN TRADITIONAL SYSTEMS, DATA IS MOVED BETWEEN SEPARATE MEMORY AND PROCESSING UNITS, CREATING INEFFICIENCIES. NEUROMORPHIC SYSTEMS ELIMINATE THIS BOTTLENECK BY COMBINING MEMORY AND PROCESSING WITHIN ARTIFICIAL NEURONS AND SYNAPSES. EACH NEURON OPERATES ASYNCHRONOUSLY, FIRING ONLY WHEN A SPECIFIC THRESHOLD IS REACHED, SIMILAR TO BIOLOGICAL NEURONS. THESE SPIKES ARE THEN TRANSMITTED THROUGH SYNAPSES TO OTHER NEURONS, ENABLING A FLOW OF INFORMATION THAT MIRRORS NATURAL NEURAL ACTIVITY. THIS EVENT-DRIVEN PROCESSING ENSURES THAT ENERGY IS USED ONLY WHEN NECESSARY, RESULTING IN SIGNIFICANT POWER SAVINGS COMPARED TO CONVENTIONAL ARCHITECTURES.

ONE OF THE MOST COMPELLING FEATURES OF NEUROMORPHIC COMPUTING IS ITS CAPACITY FOR LEARNING AND ADAPTABILITY. UNLIKE CONVENTIONAL SYSTEMS THAT RELY ON PRE-PROGRAMMED ALGORITHMS, NEUROMORPHIC PROCESSORS CAN MODIFY THEIR BEHAVIOUR BASED ON EXPERIENCE. THIS ABILITY STEMS FROM THEIR DYNAMIC ARCHITECTURES, WHICH ADJUST SYNAPTIC WEIGHTS TO OPTIMIZE PERFORMANCE OVER TIME. AS A RESULT, THEY EXCEL IN SCENARIOS WHERE ADAPTABILITY AND RESILIENCE ARE CRUCIAL, SUCH AS IN UNPREDICTABLE ENVIRONMENTS OR WHEN PROCESSING INCOMPLETE DATA.

THE APPLICATIONS OF NEUROMORPHIC COMPUTING EXTEND BEYOND TRADITIONAL AI IMPLEMENTATIONS. FOR INSTANCE, IN EDGE COMPUTING, WHERE DEVICES OPERATE WITH LIMITED RESOURCES AND CONNECTIVITY, NEUROMORPHIC CHIPS ENABLE EFFICIENT DATA PROCESSING LOCALLY, REDUCING LATENCY AND DEPENDENCE ON CENTRALIZED CLOUD SYSTEMS. THIS TECHNOLOGY ALSO HAS THE POTENTIAL TO REVOLUTIONIZE BRAIN-MACHINE INTERFACES BY PROVIDING SEAMLESS COMMUNICATION BETWEEN NEURAL SYSTEMS AND ELECTRONIC DEVICES, PAVING THE WAY FOR ADVANCED PROSTHETICS AND ENHANCED HUMAN-COMPUTER INTERACTIONS.

DESPITE ITS PROMISING POTENTIAL, NEUROMORPHIC COMPUTING FACES CHALLENGES IN ITS DEVELOPMENT AND ADOPTION. DESIGNING AND FABRICATING NEUROMORPHIC HARDWARE REQUIRES INTERDISCIPLINARY EXPERTISE, COMBINING INSIGHTS FROM NEUROSCIENCE, MATERIALS SCIENCE, AND ELECTRICAL ENGINEERING. FURTHERMORE, THE LACK OF STANDARDIZED PROGRAMMING FRAMEWORKS POSES HURDLES FOR DEVELOPERS, LIMITING THE BROADER IMPLEMENTATION OF THESE SYSTEMS. ADDRESSING THESE CHALLENGES WILL REQUIRE COLLABORATIVE EFFORTS ACROSS ACADEMIA, INDUSTRY, AND GOVERNMENT INITIATIVES TO ESTABLISH ROBUST ECOSYSTEMS FOR RESEARCH AND INNOVATION.

AS NEUROMORPHIC COMPUTING CONTINUES TO EVOLVE, ITS IMPLICATIONS FOR THE FUTURE OF INTELLIGENCE ARE PROFOUND. BY BRIDGING THE GAP BETWEEN BIOLOGICAL AND ARTIFICIAL SYSTEMS, IT OFFERS A PATHWAY TO MORE EFFICIENT, ADAPTIVE, AND SUSTAINABLE COMPUTING SOLUTIONS. IN AN ERA WHERE THE DEMAND FOR INTELLIGENT SYSTEMS IS SURGING, NEUROMORPHIC COMPUTING STANDS POISED TO REDEFINE THE BOUNDARIES OF WHAT MACHINES CAN ACHIEVE, USHERING IN A NEW PARADIGM OF TECHNOLOGICAL ADVANCEMENT.

SRI DHARSHINI R
III EEE

TO MY DEAR BEST FRIEND,

This is to my sunshine,
Who makes gloomy days warmer,
This is to my moonlight,
Who makes dark nights glimmer.

To listen to my rant,
To give me a gentle pat,
You are always there near me dear confidant.

In seasons, you are my spring,
It's the infinite happiness you bring,
In trees, you are cherry blossom,
You always make my days awesome.

No doubt, you are always my friend
And my dear, our story has no end.
Among all other mates, you are the best,
A treasure in life, outshining the rest.

So here's a poem for you,
Dear best friend, so rare, so true.

M.VAISHNAVI
I/EEE



THE RISE OF ELECTRIC VEHICLES: DRIVING TOWARDS A SUSTAINABLE FUTURE

ELECTRIC VEHICLES (EVs) REPRESENT A TRANSFORMATIVE SHIFT IN THE TRANSPORTATION INDUSTRY, OFFERING A CLEANER AND MORE SUSTAINABLE ALTERNATIVE TO TRADITIONAL INTERNAL COMBUSTION ENGINE VEHICLES. POWERED BY ELECTRICITY STORED IN BATTERIES, EVs ELIMINATE THE NEED FOR FOSSIL FUELS, SIGNIFICANTLY REDUCING GREENHOUSE GAS EMISSIONS AND AIR POLLUTION. WITH ADVANCEMENTS IN TECHNOLOGY, MODERN EVs DELIVER IMPRESSIVE PERFORMANCE, FEATURING INSTANT TORQUE FOR RAPID ACCELERATION AND QUIETER OPERATIONS COMPARED TO CONVENTIONAL VEHICLES. THEIR ADOPTION HAS BEEN FUELED BY A GROWING GLOBAL EMPHASIS ON COMBATING CLIMATE CHANGE, ALONG WITH SUPPORTIVE GOVERNMENT POLICIES, INCENTIVES, AND AN EXPANDING CHARGING INFRASTRUCTURE.

THE RISE OF EVs HAS SPARKED INNOVATION IN BATTERY TECHNOLOGY, WITH LITHIUM-ION BATTERIES LEADING THE WAY DUE TO THEIR HIGH ENERGY DENSITY AND EFFICIENCY. HOWEVER, EFFORTS ARE UNDERWAY TO DEVELOP ALTERNATIVES SUCH AS SOLID-STATE BATTERIES, WHICH PROMISE FASTER CHARGING TIMES AND GREATER RANGE. AS BATTERY TECHNOLOGY ADVANCES, THE COST OF EVs CONTINUES TO DECREASE, MAKING THEM MORE ACCESSIBLE TO CONSUMERS. THIS, COUPLED WITH LOWER MAINTENANCE COSTS AND THE INCREASING AFFORDABILITY OF RENEWABLE ENERGY SOURCES, POSITIONS EVs AS A VIABLE AND COST-EFFECTIVE TRANSPORTATION OPTION.

DESPITE THESE BENEFITS, CHALLENGES REMAIN. THE LIMITED RANGE OF SOME EVs AND THE UNEVEN AVAILABILITY OF CHARGING STATIONS POSE HURDLES TO WIDESPREAD ADOPTION. ADDITIONALLY, THE ENVIRONMENTAL IMPACT OF MINING MATERIALS LIKE LITHIUM AND COBALT FOR BATTERIES RAISES SUSTAINABILITY CONCERNS. YET, ONGOING RESEARCH AND DEVELOPMENT AIM TO ADDRESS THESE ISSUES, FOCUSING ON RECYCLING METHODS AND ALTERNATIVE MATERIALS TO MINIMIZE ECOLOGICAL FOOTPRINTS.

THE GLOBAL EV MARKET IS EXPANDING RAPIDLY, WITH MAJOR AUTOMAKERS COMMITTING TO ELECTRIC-ONLY FLEETS IN THE COMING DECADES. THIS GROWTH IS ACCOMPANIED BY A CULTURAL SHIFT, AS CONSUMERS BECOME MORE ENVIRONMENTALLY CONSCIOUS AND RECOGNIZE THE LONG-TERM SAVINGS ASSOCIATED WITH EV OWNERSHIP. AS THE TRANSITION TO ELECTRIC MOBILITY ACCELERATES, IT SIGNALS A PROFOUND TRANSFORMATION NOT ONLY IN HOW WE TRAVEL BUT ALSO IN HOW WE VIEW ENERGY, SUSTAINABILITY, AND THE FUTURE OF OUR PLANET.

AKILA S
III YEAR EEE

CHIEF EDITOR

DR.A.SHUNMUĞALATHA, M.E,PH.D
HOD/EEE

EDITORIAL CHIEF

MRS.R.SARANYA, M.E,
ASSISTANT PROFESSOR /EEE

EDITOR

BHARATH RANJAN R
III EEE