



INSIDEOUT

CRAFTING THE FUTURE OF TECHNOLOGY

DEPARTMENT OF ELECTRONICS AND COMMUNICATION

JAMIA MILLIA ISLAMIA
(A Central University by an Act of Parliament)

जामिया मिल्लिया इस्लामिया
(संसदीय अधिनियमानुसार केन्द्रीय विश्वविद्यालय)

Department of Electronics & Communication Engineering इलैक्ट्रॉनिकी एवं संचार अभियांत्रिकी विभाग

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**جامیہ
ملیہ
اسلامیہ**

Message from the HOD's Desk



It gives me immense pleasure to announce the departmental magazine 'Inside out'. The department since its very inception in 1996 firmly believed in the holistic and comprehensive development of its students which eventually instills in them a sense of responsibility to contribute towards the betterment of the society. The department is known for the excellence of its teaching, its research, and its service to local, national and international communities. The vision of the department is to become a leading Centre of Excellence in higher learning and research which will eventually produce skilled and proficient individuals. The department has a well-documented and updated syllabus to keep in pace with the current technological trends. The learning is basically imparted through an amalgamation of classroom teaching and hands-on experience in the state-of-the-art laboratories. To imbibe extra-curricular and co-curricular activities, the department always encourages its students to participate in workshops and seminars. The cultural activities are also promoted through various clubs and events at the departmental and university level. Therefore, this magazine perfectly acts as an apt platform to showcase the achievements of the department in terms of research and development activities, student-industry interaction and various cultural activities. It also highlights the accomplishments of the students, teachers and its distinguished alumni.

Prof. Mainuddin

Head of the Department
Electronics and Communication Engineering
Jamia Millia Islamia, New Delhi

MESSAGE FROM THE EDITOR

I am glad to be a part of the departmental magazine “INSIDE OUT”. Each year, our team of editors, designers, photographers, and correspondents, in addition to generating creative content from the student population, work extensively for the magazine. The final publication reflects and encompasses the diversity inherent to the academic and extra-curricular spaces in Department of Electronics & Communication , JMI .

The magazine continues to expand its reach to achieve its vision of being a truly representative student publication. I feel extraordinarily proud to be part of such a soulful and heartfelt journey with an absolute zealous team. I take this opportunity to express my heartfelt gratitude to Prof. Mainuddin,Head of Department(Electronics and Communication) to entrust the responsibility to me to bring out this issue and for his constant bolstering and all the faculty members for their support throughout the creation of this edition.

I hope the effort and hard work put up by the team will be appreciated by the audience.

Regards,

Mohammad Adish Irfan
Editor in Chief
Inside Out



ELECTRONICS AND COMMUNICATION DEPARTMENT

FACULTY MEMBERS

Dr. Mainuddin | Professor & Head

Dr. Mirza Tariq Beg | Professor

Dr. S.N Ahmad | Professor

Dr. Anwar Ahmad | Associate Professor

Dr. Dinesh Prasad | Associate Professor

Dr. Sajad A Lone | Associate Professor

Dr. Neelofer Afzal | Associate Professor

Dr. Nizamuddin | Associate Professor

Dr. Md Waseem Akram | Assistant Professor

Dr. S Intekhab Amin | Assistant Professor

Mrs. Amber Khan | Assistant Professor

Mohd Zohaib Khan | Guest Faculty

Ms. Zainab Haseeb | Guest Faculty

Mr. Sumit Suhag | Guest Faculty

Ms. Garima | Guest Faculty

Mr Tariq Hussain | Technical Assistant

Mr Abdul Sadir | Laboratory Attendant

Mr Asif Saifi | Technician

Mr Ayaz Taqy | LDC



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ABOUT UNIVERSITY

Jamia Millia Islamia came into existence in 1920 through the tireless efforts of its founders, such as Shaikhul Hind Maulana Mahmud Hasan, Maulana Muhammad Ali Jauhar, Hakim Ajmal Khan, Dr. Mukhtar Ahmad Ansari, Jenab Abdul Majeed Khwaja and Dr. Zakir Husain. It symbolizes the unflinching and resolute commitment of these great visionaries in bringing about socio-economic transformation of common masses, in general.

Jamia Millia Islamia was founded on 29th of October, 1920. It's foundation stone was laid by the freedom fighter Maulana Mehmud Hasan, in Aligarh. This university stemmed from the persistent efforts of visionaries, and was fuelled by the trend of anti-colonial activism. Jamia Millia Islamia was accorded the status of a Central University by a special Act of Parliament in December, 1988. The motto of this university is, 'Allammal Insaana Maalam Yalam - Taught Man, That Which He Knew Not'. Our university is headed by Dr. Najma A. Heptullah, Hon'ble Governor of Manipur; and Prof. Talat Ahmad, Chancellor and Vice-Chancellor of Jamia Millia Islamia.

Jamia Millia Islamia has nine faculties under which it offers academic and extension programs, i.e. Education, Humanities & Languages, Natural Sciences, Social Sciences, Engineering & Technology and Law.

Besides its Nine faculties, Jamia has a number of centres of learning and research, like AJK-Mass Communication Research Centre (MCRC), Academy of International Studies etc

ABOUT THE DEPARTMENT

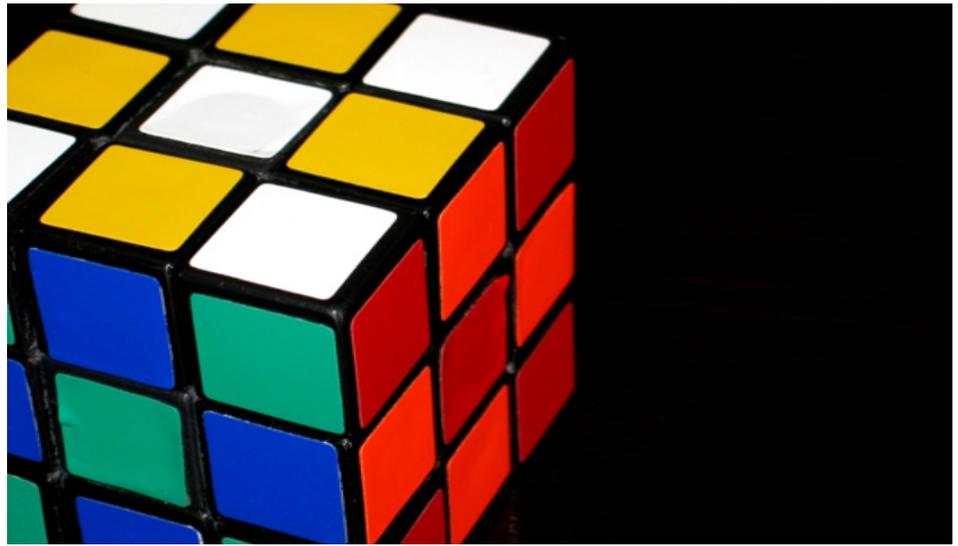
The department of Electronics and Communication Engineering came into existence at the Faculty of Engineering and Technology in 1996, by the approval of All India Council of Technical Education (AICTE), to meet the growing requirement of practical design engineers in the country and abroad. Since its commencement, the primary objective of the department has been to impart quality education, training and research at the undergraduate and doctoral levels in various areas of Electronics and Communication Engineering with emphasis on design aspects of Electronics and Communication systems to produce scientists and technologists of highest caliber.

VISION

To become a leading Centre of Excellence in higher learning and research, and to facilitate the transformation of students into good human beings and competent professionals.

MISSION

- Focus on assimilation, generation and dissemination of knowledge in the field of Electronics and Communication Engineering.
- Impart quality teaching-learning experience with state-of-the-art curriculum.
- Increase the visibility of academic programs globally and attract talent at all levels.
- Practice high standards of professional ethics, transparency and accountability.



WHAT IS THE PROBLEM?

- MOHD. ASHRAF

What's the problem? is a valuable contribution to the debates about young people's life conditions and lifestyle choices, problem from a family perspective and how bad approach can become problematic.

We use the word problem to describe a wide range of situations of different importance, from the irritation of discovering that the car battery is flat, to the life threatening failure of an aircraft engine in mid-air. Why do we need them ?

Problem can be defined broadly as situations in which we experience uncertainty or difficulty in achieving what we want to achieve, for example Stopping smoking is a problem when you decide you want to stop but cannot. A computer malfunction is a problem if it prevents you completing work on time. An excessive workload is a problem when it interferes with your ability to work effectively. Poor communication is a problem when it reduces the efficiency of an organization.

One of the driving forces of growth is the identification of problems and the search for solutions. No matter which field you are in, or hope to be, one of the driving forces of growth is the identification of problems and the search for solutions to those problems. Many of us are good at working out solutions, once we are given a problem. But what about the necessary first step, that of actually figure out what the problem is? In science and in all academic disciplines, knowledge grows because we see gaps in understanding that we seek to fill. Seeing the gap therefore becomes an important initiator of this process. And then we need to understand the nature of this gap- what exactly is its shape and size? What are its consequences?

How solution of problem is framed is a highly relevant issue that affects policies surrounding the efficiency of organization or the consumption of product.

The ability to see a gap, to describe it in a way that allows us not only to imagine what it looks like but what it means, and then to articulate a way to fill it- or to conceive a way of solving it- is a skill that is worth cultivating. Creative teachers help us do this in every field, giving us the tools to perceive not only the things that we understand and that are working well, but also helping us notice the things that need to be understood, or made to work better.



ELECTRIC VEHICLES: DRIVE THE FUTURE

An electric vehicle is an automobile that is propelled by one or more electric motors, using electrical energy stored in rechargeable batteries. Electric motors can provide high power-to-weight ratios, and batteries can be designed to supply the large currents to support these motors. Electric motors have very flat torque curves down to zero speed. For simplicity and reliability, many electric cars use fixed-ratio gearboxes and have no clutch.

Although some electric vehicles have very small motors, 15 kW (20 hp) or less and therefore have modest acceleration, many electric cars have large motors and brisk acceleration. In addition, the relatively constant torque

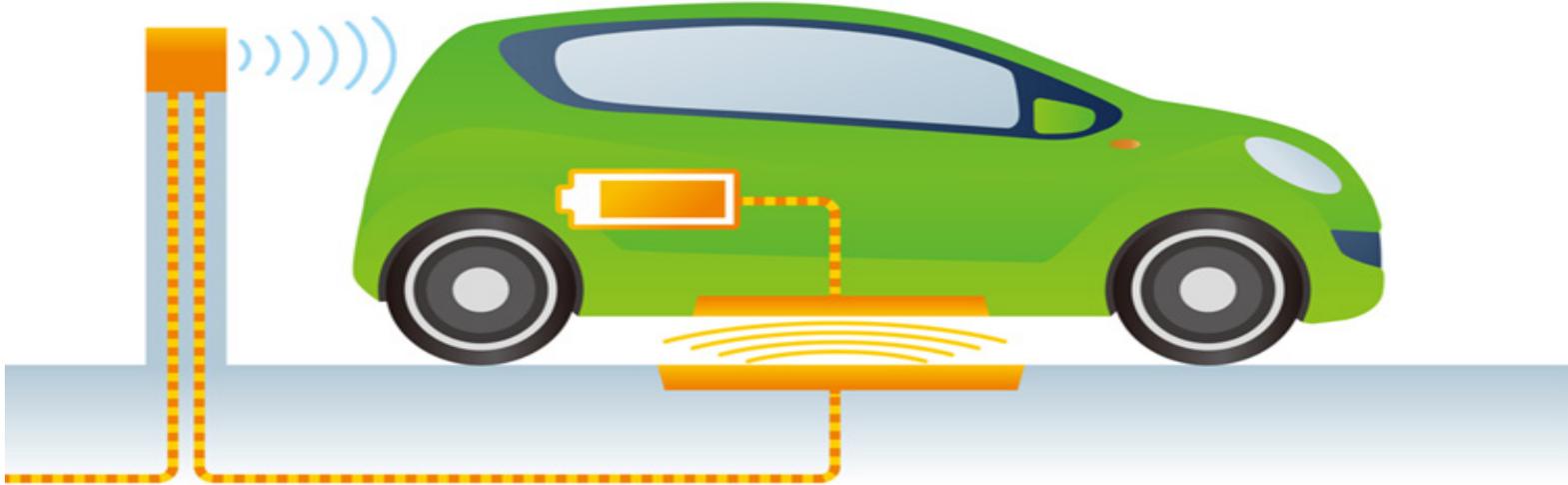
Electric vehicles can also use a direct motor-to-wheel configuration which increases the amount of available power. Having multiple motors connected directly to the wheels allows for each of the wheels to be used for both propulsion and as braking systems, thereby increasing traction. When not fitted with an axle, differential or transmission, electric vehicles have less drivetrain rotational inertia.

Internal combustion engines have thermodynamic limits on efficiency, expressed as fraction of energy used to propel the vehicle compared to energy produced by burning fuel. Gasoline engines effectively use only 15% of the fuel energy content to move the vehicle or to power accessories, and diesel engines can reach on-board efficiency of 20%, while electric vehicles have on-board efficiency of around 80%.

Electric motors are more efficient than internal combustion engines in converting stored energy into

driving a vehicle. Electric cars do not idle. Regenerative braking can recover as much as one fifth of the energy normally lost during braking.

All-electric vehicles (EVs) run on electricity only. They are propelled by one or more electric motors powered by rechargeable battery packs. EVs have several advantages over conventional vehicles. Including a significant reduction of local air pollution, especially in cities, as they do not emit harmful tailpipe pollutants such as particulates (soot), volatile organic compounds, hydrocarbons, carbon monoxide, ozone, lead, and various oxides of nitrogen. The clean air benefit may only be local because, depending on the source of the electricity used to recharge the batteries, air pollutant emissions may be shifted to the location of the generation plants. This is referred to as long tail pipe of electric vehicles. The amount of carbon dioxide emitted depends on the emission intensity of the power sources used to charge the vehicle, the availability of renewable



Electric cars usually also show significantly reduced greenhouse gas emissions, depending on the method used for electricity generation to charge the batteries. Even when the power is generated using fossil fuels, electric vehicles usually, compared to gasoline vehicles, show significant reductions in overall well-wheel global carbon emissions due to the highly carbon-intensive production in mining, pumping, refining, transportation and the efficiencies obtained with gasoline.

- Energy efficient. EVs convert about 59%–62% of the electrical energy from the grid to power at the wheels. Conventional gasoline vehicles only convert about 17%–21% of the energy stored in gasoline to power at the wheels.
- Environmental friendly. EVs emit no tailpipe pollutants, although the power plant producing the electricity may emit them. Electricity from nuclear-, hydro-, solar-, or wind-powered plants causes no air pollutants.
- Performance benefits. Electric motors provide quiet, smooth operation and stronger acceleration and require less maintenance than internal combustion engines (ICEs).
- Reduced energy dependence. Electricity is a domestic energy source.

Researchers are working on improved battery technologies to increase driving range and reduce charging time, weight, and cost. These factors will ultimately determine the future of EVs. One of the best things about owning an EV is being able to plug in at home without visiting the petrol station. Charging is as easy and as safe as charging your mobile

phone. Charging at home overnight is the simplest, cheapest and most convenient way to charge. Using a residential off-peak electricity rate means you can charge your EV for the equivalent of 30c a litre. You can charge at home using your portable 3-pin charging cable or by using a wall-mounted charging unit.

There are several options in the market, with higher-end devices able to display information and enabling you to control charging using even with your smartphone. Fast chargers will typically be an option that costs about \$10 per 100km. To recharge your battery to 80% takes approximately 20 minutes. It's easiest and cheapest to charge at home, but sometimes you may want to top up when you are out, or on a longer trip. There will be electric recharging lanes where you can recharge the battery of your electric vehicle while moving on the road.

ACIEVEMENTS & ACTIVITIES



Sarah Khan won first prize in inter faculty badminton tournament 2016-17.



Sarthak Bhagat secured first position and was awarded with National Winner, Tarandeep Kaur won the second position- Skimmer Challenge 2016-17 out of 32 regional winner teams in AWIM (A World in Motion) competition, with 3 category awards, organised by SAE and Maruti Suzuki.



Manish, Kashif, Raghav, Zafaryab bagged first position in EyanTRA 2018 under the theme of Collector Bot. Received a cash prize of Rs. 20,000 Manish, Kashif, Raghav, Zafaryab bagged first position in EyanTRA 2018 under the theme of Collector Bot. Received a cash prize of Rs. 20,000.



Noorain Ahmad Khan singing in Inter University Fest North Zone.



Raif Parwez secured third position in Nationals under Jetttoy challenge in AWIM, a league conducted by SAE International and Maruti.



Syed Ahmed Mustafa secured first position in 'Video Content' held during Safe Roads Summit 2017 at Vivanta by Taj, Dwarka.



Community Visit.



Nashrah ,Prachi,Kaustubh,Sarthak from ECE Dept. visited a community of disabled people in Kailash Colony.



Sharmin Khan selling Kerala can at Enactus Stall.



Nashrah Rahman displaying her model built on solar panel at Talimi Mela.



DATA - THE NEW GOLD

VASU HARSHVARDHAN
B.TECH E&C

Yes you read it right, "DATA IS THE NEW GOLD", this piece of writing talks about a thing, which has become the most precious thing in the world so much so that it is as exquisite as some of the most valuable resources in our world. Over the years, gold, oil etc. have been regarded as the most valuable assets of this world but now it has all been replaced by a new entity called DATA. The arrival of computers, machines and subsequent rise and advancement of the internet has fabricated a human dependence on technology. The top titans of the silicon valley like Microsoft, Google etc. know more about our day-to-day interaction with devices than we ever will. This industry is collecting gigantic amounts of data from millions of users every day.

Data is a very general term, it can be anything related to information about something, like for example the name of a person or his or her address can be regarded as data. So basically data is a set of characters that has been rendered into a form that is efficient for movement, processing and communication. Data can be as small as one bit or as large as millions of terabytes. In the computing world, data has massive importance and usage. So much so that a new derivative has branched out from data known as BIG DATA due to its massive utilization by the companies all over the world. Big DATA is data in the form of petabytes range or even larger than that. It has got a lot of prominence over the time and is used by huge multinationals for giving out good products. People all over the world are using products made by the silicon valley, for example use of Google maps. People use Google maps for navigation and knowingly or unknowingly share their current location data with the company. Then a combination of data from other users is used to create specific traffic patterns which suggest which route is faster and which one is slower.

This intercombination of data enables Google Maps to function so efficiently. Along with this, Youtube is another example of the versatile use of data, where the user's video preferences are based upon the search history, trending videos, location etc. This also helps in boosting advertising which is a major source of income for these companies, as data helps anticipate user behaviour and targets customers involved with the respective product. The data availability and accessibility have massively transformed mankind's interaction with technology. Smartwatches would not have existed without the availability of data related to a user's behaviour, location parameters etc. We wouldn't be able to make weather predictions, stock-market performance analysis etc without the use of data. Data conceptualisation, processing and visualisation are the most proficient ways to convey an anecdote and give out facts in a way that encapsulates the mankind's curiosity.

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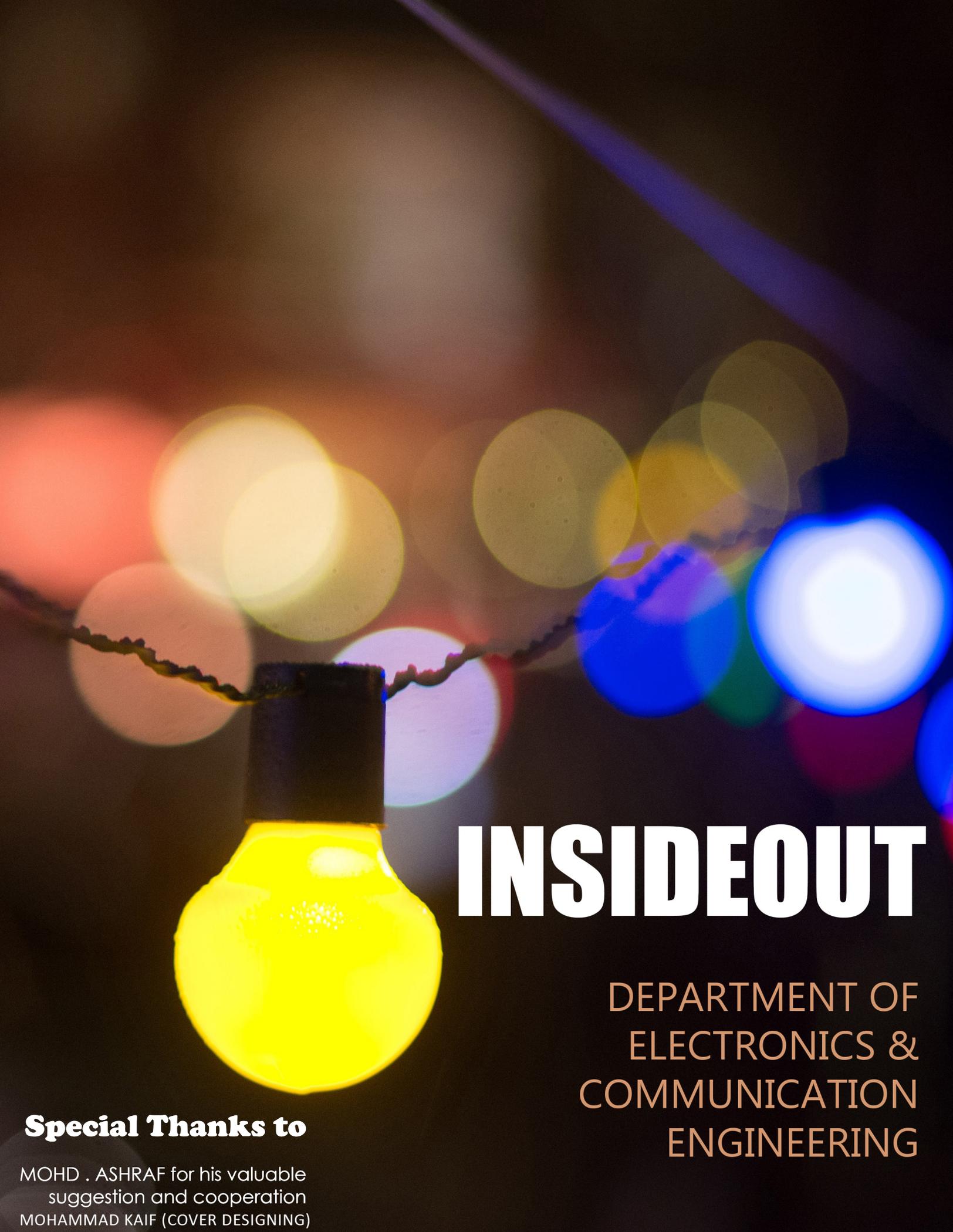
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INSIDEOUT

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ELECTRONICS &
COMMUNICATION
ENGINEERING

Special Thanks to

MOHD . ASHRAF for his valuable
suggestion and cooperation
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