JODHPUR INSTITUTE OF
ENGINEERING AND TECHNOLOGY

Electronika

Dept. of Electronics & Communication Engineering
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JIET
Group of Institutions

www.jietjodhpur.ac.in

Vision

To evolve Electronics and Communication department as a center of excellence by training students in modern technologies, to cater the needs of global industry, develop them as skilled engineers imbibed with human values and professional ethics as well as to assist weaker sections of the society by encouraging employability or self-help/entrepreneurship.

Mission

To create research, development and testing environment for students and faculty with a broad intellectual spectrum for diverse and competitive career path and excel in their field of specialization to meet ever changing and ever demanding needs of the Electronic Industry, along with IT & other inter disciplinary fields with special focus on sustainable and inclusive Innovation of Technologies for overall benefit of society.

Programme Educational Objectives (PEOs)

Graduates of Electronics and Communication Engineering Programme at JIET should be able to utilize the knowledge gained from their academic program:

I. **Preparation -** To prepare the students with the knowledge and skills to compete in their fields as well as to succeed in their career and to contribute effectively to the engineering profession.

II. **Core-Competence -** To enrich student's intellectual skills to analyze and solve electronics circuits as well as problems using basic fundamentals, synthesis of circuits, design and experimentation support.

III. **Breadth -** The program is designed to impart education moving from basic electronics and communication system to the advanced fields such as digital signal processing, VLSI and embedded systems, so as to comprehend, analyze, apply and innovate solutions for real life complexities.

IV. **Professionalism -** To make understand the human values and develop the skills, such as professional ethics, effective oral and written communication and teamwork through industry oriented training programs and projects.

V. **Learning Environment -** Engage in the process of lifelong learning through motivation, creation of self learning environment and exposure to emerging fields.

Programme Outcomes (POs)

(a) Apply knowledge of Mathematics, Science and Engineering to solve the complex engineering problems in analog and digital electronic systems.

(b) An ability to design electronic circuits, communication systems, conduct experiments, analyze and process data to report results.

(c) An ability to design digital, analog and embedded systems to meet the specific requirements.

(d) An ability to function on multi-disciplinary areas.

(e) Work as a member of project team to find successful design solutions to the problems related to electronics and communication systems.

(f) An ability to use modern tools to analyze the performance of communication systems by modeling and simulation.

(g) An ability to understand and demonstrate professional and ethical responsibilities.

(h) An ability to communicate effectively in both verbal and written form.

(i) Confidence to apply engineering in global and societal contexts and develop eco friendly products and solutions with awareness of contemporary issues.

(j) An ability to clearly understand the value of lifelong learning and self-education.

(k) An ability to participate and succeed in competitive examinations like CAT, GRE, GATE, IES etc.

"The ideal of all education, all training, should be this man-making. But, instead of that, we are always trying to polish up the outside. What use in polishing up the outside when there is no inside? The end and aim of all training is to make the man grow. The man who influences, who throws his magic, as it were, upon his fellow-beings, is a dynamo of power, and when that man is ready, he can do anything and everything he likes; that personality put upon anything will make it work".

- Swami Vivekananda

In the Words of the Head

Prof. (Dr.) Hemant Purohit
Head, ECE Dept., JIET

Globalization is bringing competitiveness in every domain. Engineers have to fit into the requirements of companies that recruit across the globe. The Department of Electronics and Communication Engineering of JIET is leading the future by equipping students with the skill set that is required in the industry. All the members of this department and the college are working in this direction to produce highly skilled engineers to assist the nation in its technological development. The department has been consistently working towards the goal to produce highly skilled and scientifically oriented man-power through flexible adaptive and progressive training programs along with cohesive interaction with research organizations, academicians and industries.

From the Editor's Desk

This is the thirteenth issue of Bi-annual newsletter ELECTRONIKA. Reading is a great platform for opening us up to each other and a guaranteed way to connect with like-minded people & young minds with creative leadership and intelligence. Now a days the digital technologies are expanding but the craving for reading is same as earlier. The place of hard paper bounded books are replaced by E-newspapers or magazines but the enthusiasm for book reading is still there. This bi-annual newsletter is one such precious work that has its roots in the persuasion. It includes photos of the various activities and achievements of all associated with the ECE, department. This newsletter is a platform that exhibits the literary skills and innovative ideas of faculties and students. “ELECTRONIKA” presents the hard work and dedication of students and contributions of the faculty members.

I hope you enjoy reading this issue as much as I have enjoyed making it.

Rita Choudhary
Asst. Prof. (ECE, JIET)

Inside This Issue

GUEST LECTURES (EXPERTS FROM OUTSIDE JGI)

- Mr. Ram Prakash Prajapat (SDE, BSNL, Jodhpur) delivered an Expert Lecture on "GSM Mobile Technology, Multiplexing and Cross Talk Models" to V semester Students on 9 Sep. 2017 at JIET Conference hall.
- Er. Kunal Parihar (Sr. Sec. Engg., North-Western Railway) delivered an expert lecture on "Transient Analysis of Second Order Systems" to II Year Students on 4/11/2017.

EXPERT LECTURES (EXPERTS FROM WITHIN JGI)

- Mr. Manish Gehlot (Sr. Asst. Prof., IT dept.) delivered an expert lecture on "Complexity and Asymptotic Notations" to III Sem students on 1-8-17.
- Prof. (Dr). Hemant Purohit (HOD & Professor, ECE) delivered an expert lecture on "Applications of OP-Amp" to III year students on 4-8-17.
- Mr. S.R.Patel (Assoc. Prof., EE) delivered an expert lecture on "Practical Approach to solve Coupled Circuits with Dot Convention Method" to III Sem students on 16-8-17.
- Mr. Sanjay Bhandari (Assoc. Prof., ECE) delivered an expert lecture on "Frequency Demodulation Techniques" to V Sem students on 19-8-17.
- Mr. Avnish Bora (Assoc. Prof., ECE) delivered an expert lecture on "Linear Phase System" to VII Sem students on 22-8-17.
- Ms. Purneshwari Varshney (Assoc. Professor, Dept. of EEE, JIETCOE) delivered an expert lecture on "CMOS Logic Circuits" to the Final Year ECE students on 31 August 2017.
- Prof. Bablu K. Singh (Assoc. Prof.) delivered an expert lecture on "Frequency Demodulation through Phase Locked Loop" to V Sem students at LT-13 on 9-10-17.
- Prof. Harish Khyani (Asso. Prof., EE) delivered an expert lecture on "Stability Analysis using Routh Hurwitz Criteria" to II Year Students on 15/11/2017 at LT-10.

WORKSHOPS/ CONFERENCES / INDUSTRIAL VISITS/ INDUSTRIAL TOURS

- The department of ECE organised a two day workshop on “Ni Lab View and its Application” for the Final Year students. The Resource person was MR. Rahul Yadav (Assistant- International Relation University of JAEN, SPAIN)(3-4 August 2017)
- The department of ECE has organized an interactive session on “Higher Studies in Foreign Universities” by Mr. Rahul Yadav (Assistant- International Relation University of JAEN, SPAIN) on 3 August 2017.

- A two day Educational tour at International Centre for Radio Science (ICRS), Mandore, Jodhpur was organized for III year students accompanied by Mr. Piyush Vyas (Asso. Prof.) on 26-27 September 2017. This visit enhanced their knowledge on the subject “Microwave Engineering”. They gained knowledge about soil apparatus, working model of radar, ice reflection materials and card board designs, different types of soil materials, horn antennas, cavity resonators, waveguide benches and various bands based transmitters and receivers. The students got the opportunity to interact with Prof. O.P.N. Kalla (Director, International Centre for Radio Science (ICRS)).

- On 5 September 2017, the students of the ECE branch organized a small programme on the occasion of “Teachers' Day” which was celebrated with full zeal and enthusiasm.
- Technical Sessions for Campus Recruitment (Final Year) were taken by Mr. Sanjay Bhandari (Asso. Prof.), Mr. Pradeep Kumar Sharma (Sr. S. Asst. Prof.) and Ms. Rita Choudhary (Asst. Prof.) at LT-9 on 20 Sep. 2017.
- A workshop on “EAGLE (PCB Design Software)” was organized for II Year, III Year and Final Year students under ISTE Student Chapter on October 11, 2017 by Mr. Bablu Kumar Singh (Associate Professor) and student coordinator Mr. Tribhuwan Singh (Final year, ECE). A total 20 students participated out of 25 registered students.
- On the occasion of Engineers' Day (15-09-2017), a Poster/Chart Making competition on “Clean India” was organized in the department under the banner of ISTE Student Chapter at JIET. Results are as follows :

1. Tamanna Bohra (Final Year)
2. Anil Bishnoi (Final Year)
3. Ankita Daiya (Final Year)

- On the occasion of Engineers' Day, an Essay Writing competition on “Role of Engineers in making Smart City (India)” was organized in the department under the banner of ISTE Student Chapter at JIET. Results are as follows-

1. Suman (II Year)
2. Anil Bishnoi (Final Year)
3. Sagar Karwa (III Year)

OPEN HOUSE 2017 (RESULTS)

Chart Competition

S.NO.	Name of Student	Title	Year	Position
1.	Tamanna Bohra, Ankita Daiya, Himanshu Joshi	"Smart City and its Meaning"	Final Year	I
2	Reema Vyas, Ruchi Parihar, RupaliChoudhary, ShivaniNarang, Kumkum Kaushik, Parul Parihar, Priyamvada Sandu	"Smart Living"	III Year	II
3	Karan Sharma	"DLPI"	Final Year	III

Model (Static) Competition

S.No.	Name of Students	Title	Year	Position
1.	Saurabh Joshi, Praveen Borawar, Shashank Dave, Rithik Rathore, Rohitash Solanki, Rajveer Singh, Yogendra Singh,	"Smart Mobility"	III Year	I
2.	Reema Vyas, Ruchi Parihar, Rupali Choudhary, ShivaniNarang, Kumkum Kaushik, Parul Parihar, PriyamvadaSandu	"Smart Living"	III Year	II
3.	Suman, Abhimanyu Singh, Priya Purohit, PriyalMathur	"Smart Ascent in Mobile Phones"	II Year	III

Model Working (Live) Competition

S.No	Students	Title	YEAR	Position
1.	Nalin Kashyap, Nishtha Arora, Mohit Arora, Lokesh Loonker	"Smart Restaurant."	III Year	I
2.	Divya Soni, Himanshu Negi, Rajat Sharma, Hitesh Kamal, Deepika Joshi, Garima Sharma.	"Intelligent Train"	II Year	II
3.	Yuvraj Singh, Tribhuwan Singh	"Wireless Networking using NRF Sensors"	Final Year	III

University Results
Top Three Rankers

Final Year (VIII Semester) Batch 2013-17

I shift

Rakesh Bhati
89.3%

Suraj Singh Solanki
89.2%

Narendra Choudhary
88.6%

II Shift

Yogesh
87.6%

Shekhar Nahata
84.5%

Yogendra Singh
84.4%

III Year (VI Semester) Batch 2014-18

I shift

Anisha Mehta
85.8%

Virat Mathur
82.9%

S. Kirthika
80.2%

II Shift

Ruchika Shankhla
70.1%

Amuram Choudhary
74.5%

Radheshyam Verma
72.2

II Year (IV Semester) Batch 2015-19

Nishtha Arora
81.2%

Divya Bhandari
81.1%

Mayank Mewara
81%

FACULTY ACHIEVEMENTS

- Dr Hemant Purohit (Prof & Head- ECE, JIET)has been appointed as Paper Reviewer and TPC member in two international conferences “Radio Access Technology and Heterogeneous Networks” & “Track of IEEE Vehicular Technology Conference (VTC)” Portugal - Spring 2018 and UK Sim 2017, Emmanuel College, Cambridge University, United Kingdom.
- Ms. Rita Choudhary (Asst. Prof.) received M.Tech Degree (Hons.) from the Governor of Rajasthan Shri Kalyan Singh (Minister of Technical Education Rajasthan), Smt. Kiran Maheshwari (AICTE Chairman) Shri Anil Dattatraya Sahasrabudhe and Vice-Chancellor Prof. N.P. Kaushik at 7th Convocation of RTU, Kota on 19 July 2017.

- Mr. Avnish Bora (Dy. HOD, Academics) participated in Summer School on “Speech Signal Processing (S4P)” organized at Dhirubhai Ambani Institute of Information and Communication Technology (DA-IICT), Gandhinagar during 8-12, July 2017.
- The paper titled “Evaluation of Mac Protocols using Local Bridge in High Frequency Bands based on Discrete Event Simulator Tool using Analytical Approach” co-authored by Mr. Avnish Bora (Assoc. Prof.), Mr. Piyush Vyas (Sr. Asst. Prof.), Mr. Manish Purohit (Asst. Prof. (Sr.)), have been presented in the International Conference on Energy, Communication, Data Analytics & Soft Computing (ICECDS-2017) held on 1-2 August 2017.
- Prof. O.P.Vyas (Dean-Engg, JIET), Mr. Piyush Vyas (Associate Prof.), Mr.Ajay Rupani (Asst. Prof.) & Mr. Manish Purohit (Asst. Prof. (Sr.) have jointly presented a paper on “A Multiple Bits Simulation obtained by Space Time and Frequency Techniques for Any Complex Rayleigh Channel MIMO-OFDM” in 2nd International Conference on “Telecommunication and Networks (TEL-NET 2017)” at Amity University, Noida held on 10-11 August 2017.
- Prof. K.K. Arora (Head- M. Tech, JIET), Mr. Piyush Vyas, Mr. Ajay Rupani and Mr. Manish Purohit have jointly presented a paper on “ Wi-Gig (IEEE 802.11ad): Future, Trends and Era” in 2nd International Conference on “Telecommunication and Networks (TEL-NET 2017)” at Amity University, Noida held on 10-11 August 2017.
- Mr. Ajay Rupani (Asst. Prof) successfully completed M.Tech on 30 August, 2017 in 'Embedded System' on “Hardware Implementation of Image Processing Filters based on Interfacing of Raspberry-Pi and FPGA using IoT”, under the guidance of Mr. Gajendra Sujediya (Asst. Prof., Department of ECE, RIET, Jaipur).
- A paper titled “Design, Implementation and Performance Analysis of Annular Ring Microstrip Patch Antenna for S-Band Application” co-authored by Mr. Pradeep Kumar Sharma (Asst. Prof. (Sr.), Mr. Manish Purohit (Asst. Prof (Sr.) and Mr. Piyush Vyas (Assoc. Prof.), was presented at the IEEE International Conference on Power, Control, Signal & Instrumentation Engineering (ICPCSI-2017) held on 21-22 September 2017.
- Technical sessions for Campus Recruitment (for Final Year students) were taken by Mr. Sanjay Bhandari (Assoc. Prof.), Mr. Pradeep Kumar Sharma (Asst. Prof. (Sr.) and Ms. Rita Choudhary (Asst. Prof.) at LT-9 on 20 Sep. 2017.
- The paper titled “Significance of DITMC Technique for Capacity Enhancement in GSM and CDMA Network” was presented by Prof. (Dr.) Hemant Purohit (Head, Dept. of ECE, JIET) in 4th International Conference on “Recent Developments in Science, Engineering and Technology” (REDSET-2017) at GD GOENKA University, Gurgaon, New Delhi (13-14 Oct.2017.)
- The paper titled “MATLAB Based Encoder Designing of 5.90 kbps Narrow-band AMR codec” was presented by Prof. (Dr.) Hemant Purohit in International Conference on “Computing and Communication Technologies for Smart Nation (IC3TSN)” at GD GOENKA University, Gurgaon, New Delhi on 10-12 Oct.2017.
- The paper titled “Design, Implementation and Performance Comparison of Square and Annular Ring Shaped Microstrip Patch Antenna for S-Band Application” was presented by Mr. Pradeep Kumar Sharma (Sr. S. Asst. Prof.), Ms. Ranjana Tivedi (Assoc. Prof.), Mr. Hemant Jain (Asst. Prof.) have been presented in International Conference on Computing and Communication Technologies for Smart Nation (IC3TSN) at GD GOENKA University, Gurgaon, New Delhi (12-14 Oct.2017).

- The paper titled “Implementation of Artificial Neural Network with Floating Point Arithmetic using Verilog HDL” was presented by Ms. Aisha Jangid (Sr. S. Asst. Prof.), have been presented in “International Conference on Computing and Communication Technologies for Smart Nation (IC3TSN)” at GD GOENKA University, Gurgaon, New Delhi (12-14 Oct.2017).
- The paper titled “A New Class of High Speed Lan Access Protocols on Discrete Event Simulator Tool” was presented by Mr. Manish Purohit (Asst. Prof. (Sr.)) was presented in “International Conference on Metrology” (ICONMET-2017)(26-27October, 2017) at Jakarta, Indonesia.
- Dr. Hemant Purohit (HOD, ECE) has authored a book titled, “Data Interleaving Techniques in Digital and Mobile Communication”. It has been published internationally by LAMBERT Academic Publishing. Its ISBN number is 978-3-330-08624-1.
- A paper titled “Photonic Crystal Fibre Developments, Properties and Applications in Optical Fiber Communication” co-authored by Prof. (Dr.) Hemant Purohit (HOD, ECE) and Ms. Laxmi Chaudhary (Assoc. Prof. & Deputy Head (Admin.)) has been published in International Journal for Research in Applied Science & Engineering Technology (ISSN: 2321-9653 , Vol. 5, Issue-11, Nov. 2017).
- The paper titled “Speaker Identification for Biometric Access Control using Hybrid Features” co-authored by Mr. Avnish Bora (Dy. HOD, Academics) and Dr. Jayashri Vajpai (Associate Prof.), MBM College of Engg.) have been published in International Journal on Computer Science and Engineering (IJCSE)(ISSN: 0975-3397, Vol. 9, 11-Nov. 2017.)
- Mr. Avnish Bora (Dy. HOD, Academics) completed course on “Digital Speech Processing” under NPTEL course with ELITE certification organized by IIT Kharagpur.
- A paper titled “Forgery Resistant Image Watermarking Technique using Discrete Cosine Transform (DCT)” co-authored by Ms. Hansa Mehra (Assoc. Prof.) and Ms. Rita Choudhary (Asst. Prof.) have been accepted in 4th IEEE International Conference on Image Information Processing (ICIIP) at Jaypee University of Information Technology, Solan, Himachal Pradesh, on 21-23 Dec .2017.
- Ms. Ranjana Trivedi (Assoc. Prof., ECE) attended 5 days' Course on “Microwave Remote Sensing and Its Utilization under NNRMS SC-T” from 31st to 4th November at ICRS, Jodhpur. The course was technically sponsored by ISRO and ICRS (International Centre for Radio Science).
- Mr. Bablu Kumar Singh (Assoc. Prof., ECE) has authored a book titled, “Design of Rectangular Microstrip Patch Antenna Using ANN”. It has been published internationally by LAMBERT Academic Publishing. Its ISBN number is 978-620-2-05972-5.
- Mr. Bablu Kumar Singh (Asso. Prof., ECE) has become a member of the International Association of Engineers (IAENG), Hong Kong.

STUDENTS' ACCOMPLISHMENTS

- Four Students of III Year (Nishtha Arora, Lokesh Loonker, Nalin Kashyap, Mohit Arora) have completed training on “IOT from Aarom Tech.”, Jodhpur.
- Mr. Rajesh Parihar (III Year) has completed his fall training on “Certified Cyber Security Expert (V3.0)” from TechDefence, Ahmedabad.
- Four Students of III Year (IshaMathur, Geeta, Mahak Mathur, Gaurav A. Kumar) have completed training on “Advance Arduino from Aarom Tech”, Jodhpur.
- Divya Bhandari (III Year) has been completed her online training on “Internshala Virtual Traning Program” and scored all India percentile 85.
- Manila Kachhawaha (III Year) has completed her fall training on “Embedded” from Tactiles.
- Tribhuwan Singh (Final Year, ECE branch) has done his summer internship from Sujai Telesoft Pvt. Ltd. Jodhpur (24 May - 22 July 2017).
- Tanuj Gulati (Final Year, ECE) is one of the entrepreneurs working for a Start Up company, “ABC Steps Technologies Pvt Ltd.” on the post of Senior Sales Engineer.
- A paper titled “Potential of Bio Butanol driven Petrol Engines and Solid Oxide Fuel Cells” penned by Akshat Mathur (II Year, ECE) has been presented in 2nd International Conference on Advancement in Engineering, Applied Science and Management (ICAEASM-2017)”held on 2 July 2017.
- Dhananjay Pandey (VII Sem, ECE) is selected the Captain in Badminton team to represent (Rajasthan Technical University) RTU, Kota at National level.
- Sumit Bhati and Prateek Singh Verma (V Sem, ECE) were winners at City Finals held at Jaipur by “Mahindra AQ Season-8” organized by MAHINDRA. They have also secured 3rd Runner Up position at West Zone and were awarded Rs. 20,000/- cash prize for the same.
- A paper titled “Comparative Study of Various Gates based in Different Technologies” co - authored by Sanobar Chauhan (Final Year, ECE), Saurabh Chaudhary (Final Year, ECE), Tarun Upadhay (Final Year, ECE), and Mr. Ajay Rupani (Asst. Prof., ECE, JIET) and Mr. Pawan Whig (VIPS, New Delhi) have been published in International Robotics & Automation Journal” Vol.-3, Issue-2 on 22- September2017).
- Siddarth Singh Sodha (V Sem, ECE) were winners at Infosys TEDx Jaipur Contest organized by INFOSYS. Next Round of Infosys for TEDx Jaipur is scheduled at Jaipur Marriott on Dec. 16, 2017.
- Komal Soni (Final Year, ECE) was selected the Ms. MY Fresh Face in the event “My Fresh Face (94.3 MY FM)” held at JIET on Sep.23, 2017.
- Virat Mathur, S.Kirtika and Mujeeb Maksood secured 1st, 2nd and 3rd position respectively in UDYAT at department level and were awarded with a cash reward of Rs.1000 each for the same. S.Kirtika has secured 1st position at JGI level in UDYAT 2017 and was awarded with a cash reward of Rs. 5000.

- Akshat Mathur (3rd, ECE, JIET) hosted an event MUKAAM: Open Mic on 14th November 2017 in JIET Seminar Hall (EE Dept.) under the guidance of Prof. Manish Bafna and Prof. Neetu Dabi. It was an Open Mic event, organized by team VIRTUOSO.

PLACEMENT

S.No.	Name of Students	Company
1.	Anisha Mehta	Infosys
2.	S.Kirthika	Infosys
3.	Vasundhara Sharma	Infosys
4.	Kratishtha Dalawat	Capgemini
5.	Purusharth Sharma	Capgemini
6.	S.Kirthka	Capgemini
7.	Nishant Gehlot	Appeal
8.	Tamanna Bohra	Appeal
9.	Tanuj Gulati	Appeal
10.	Monalisa Vyas	Linkruit
11.	Shubhangi Joshi	HFFC

TECHNICAL QUIZ

1. The internal impedance of an ideal current source is
A. Zero
B. Low
C. High
D. Infinity
2. The condition for reciprocity of a two port network is
A. AD - BC = 1
B. AD - BC = 0
C. A = D
D. B = C
3. The bridge used for measurement of inductance is
A. Wheatstone Bridge
B. Kelvin Double Bridge
C. Anderson Bridge
D. Schering Bridge
4. Which of the following is a universal gate?
A. AND
B. OR
C. NOR
D. XOR
5. An emitter follows has
A. High input impedance and high output impedance.
B. High input impedance and low output impedance.
C. Low input impedance and high output impedance.
D. Low input impedance and low output impedance.
6. The Laplace transform of an impulse function is
A. 1
B. 1 / s
C. 1 / (s * s)
D. 0
7. To prepare a P type semiconducting material the impurities to be added to silicon are
A. Boron, Gallium
B. Arsenic, Antimony
C. Gallium, Phosphorous
D. Gallium, Arsenic
8. In Bipolar Junction transistors, the type of configuration which will give both voltage gain and current gain is
A. CC
B. CB
C. CE
D. None
9. Thevenin's theorem cannot be applied to a network which contains
A. Linear impedances
B. Nonlinear impedances
C. Resistances
D. Inductances
10. When the distance between two charges is doubled, the force between them will be equal to
A. Four times
B. Double
C. Half
D. One Fourth

ANSWERS :

1	2	3	4	5
A	A	C	C	B

6	7	8	9	10
A	A	C	B	D

NOKIA MORPH

The “Nokia Morph" is a theoretical future device based on nanotechnology that might enable future communication devices. It is intended to demonstrate the flexibility of future mobile devices, in regards to their shape and form allowing the users to transform them according to their preference. It demonstrates the ultimate functionality that nanotechnology might be capable of delivering i.e. flexible materials, transparent electronics and self-cleaning surfaces. It also features Nano-sensors that can interact with the environment to provide key information for anything from temperature changes to pollution.

Nanotechnology enables materials and components that are flexible, stretchable, transparent and remarkably strong. Fibril proteins are woven into a three dimensional mesh that reinforces thin elastic structures. The nanoscale mesh of fibers controls the stretching when the device is folded. The surface of morph is super hydrophobic which makes it extremely dirt repellent. Nanoscale grass harvests solar energy which could be used for recharging batteries.

Since the KAIST, developed a transparent resistive random access memory (TRRAM), the idea of morph technology seems to be growing. By integrating TRRAM device with other transparent electronic components, we can create a total see-through embedded electronic system which became the major platform for Nokia Morph.

References :

References :

1. https://www.concept-phones.com/nokia/remember-nokia-morph/
2. http://www.livemint.com
3. gizmodo.com/360260/nokia-morph-cellphone-rolls-up-stretches-cleans-itself
4. www.slideshare.net/kannangvijai/nokia-morph-27288122

Team Work

PATRON

Prof. (Dr.) Rajendra Karwa

Campus Director - JIET

CHIEF EDITOR

Dr. Ankita Mehta

Associate Prof. (English)

Member - Personality &

Skills Development (PSD), JGI

FACULTY COORDINATORS

Ms. Rita Choudhary

Asst. Prof, Dept. of ECE, JIET

JAS MEMBER

Er. Sejal Parihar

DESIGN & LAYOUT

Mr. Anil Chandora (Admin)

JIET GROUP OF INSTITUTIONS

Campus : JIET Universe, N.H.- 65

Pali Road, Mogra, Jodhpur -342 802

Ph.: +91 291 2868152, 5170917/18

Email.: admission@jietjodhpur.ac.in

Web.: www.jietjodhpur.ac.in