The importance of being an innocent beginner and a good listener

To be a good student one needs to be an innocent beginner always. Can you remain a beginner forever? Only when you are aware of your ignorance can you remain with the attitude of a beginner. A beginner knows he is ignorant and has to learn. Therefore, he listens intently. He is open and receptive. Once you think that you know, then you do not listen anymore; you only speak. Your mind and intellect become full. You are not a beginner anymore, you have turned into a knowledgeable person. But in reality, a knowledgeable person is more ignorant than others, because he is completely closed. He has lost his ability to be open and receptive. He may be knowledgeable, but he does not really know. To really know is different from being knowledgeable. You need to be open in order to know. You need to be an innocent beginner: The beginner is able to bow down in humility, and because of this, true knowledge flows into him. But a knowledgeable person is merely full of information and tends to be egoistic. He therefore cannot bow down and be humble. True knowledge cannot enter into him. There is no room for it and so it spills out.

Knowledgeable people or intellectuals only know how to talk. They cannot listen. Listening is possible only when you are empty within. Only one who has the attitude, ‘I am a beginner, I am ignorant,’ can listen with faith and love. Others cannot listen. If you observe two scholars talking to each other, you will see that neither of them is listening to what the other is saying. But you will also see that one is keeping quiet while the other is talking and vice versa. You may think that they are listening to each other, but, in fact, they are not. They cannot listen. When one speaks, the other one may not be speaking externally, but he is speaking within, forming his own ideas and interpretations. Each one is waiting for the other to stop so that he can start, and there will be no connection between what they are saying to each other. One will be talking about A and the other will be talking about Z. Neither of them is a good listener; they each know only how to talk. If you want to be a good student, you must become a good listener; a listener endowed with faith and love. You must always have the attitude of being a beginner, so that you can listen properly. Such a beginner will be completely open and innocent, like a child.

Sri Mata Amritanandamayi Devi (Amma)
Overall, 2018 has been very rewarding for Amrita. Amrita Vishwa Vidyapeetham was ranked at 8th place across all universities in India, by National Institutional Ranking Framework (NIRF), MHRD, Govt. of India. Ranking by other international educational watchdogs has been heartening with Times Higher Education, UK ranking Amrita as 18th Overall in India and 1st amongst Private Universities and the QS University Ranking positioning Amrita at 27th Overall in India and 140th amongst BRICS nations.

It has been happy tidings also at the School of Engineering, Amritapuri Campus with students coming out successful in various fronts. Though the list is exhaustive as you will see while you peruse this Newsletter, I am just mentioning a few here as examples. Students were awarded internships at top-notch international universities like Arizona State University, USA, Ben-Gurion University, Israel, University of Paderborn, Germany, Alto University, Finland, POLIMI, Italy etc. Students were selected to do final year BTech projects at renowned international universities like Penn State University, USA; Northern Illinois University, USA; Technical University of Munich, Germany etc. On the research front, papers were published by students and faculty in many reputed Scopus Indexed international and UGC listed national journals.

In global forums covering various co-curricular competitions be it the “Troopers 2018 cyber security conference” Germany, “Black Hat Asia 2018”, Singapore “WeTech Qualcomm Global Scholar”, USA, or the “b00t2root’18 & Swamp CTF” by University of Florida, students won prestigious places and scholarships for their participation. Amrita was the only team from India to participate at the Robocup German Open 2018 at Magdeburg, Germany. In the Formula Hybrid competition at Dartmouth, USA, Team Agraganya’ won the eighth position competing amongst teams from all over the World.

At the national level also as in the Solar Vehicle Challenge at Mehasana, Gujarat, Team “Mavericks” of Amrita was placed at Sixth position nationally. Team ‘Agraganya BAJA’ set the record for ‘Fastest Lap Time’ in SAE BAJA 2018, held by NATRAX, Indore.

I am greatly pleased and proud of the excellent performance of the students in academic, co-curricular and extra-curricular activities in the first half 2018. I congratulate the faculty and staff for their dedicated efforts and support to the students. I wish the students even greater success in future by becoming vessels fit to receive divine grace in all their worthy endeavours!

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Message of the Principal

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“Children, we should simplify our life’s needs and use the resulting savings for charity.”

- Mata Amritanandamayi
DEPARTMENT OF
COMPUTER SCIENCE
ENGINEERING

STUDENT ACHIEVEMENTS
International Collaborations

1. Arjun V and Amit Krishna of S6BCA was selected for Student Exchange Program in HALMSTAD UNIVERSITY, Sweden for the period Jan- May 2019 for 6 months.

2. Rahul krishnan of 2016 -2020 CSE batch was a recipient of $5500 scholarship as a one month Summer Exchange student at Ben Gurion University, Israel for the period July to August 2018.

3. Aniketh Girish of 2016 -2020 CSE batch was a recipient of $1500 scholarship as a one month Summer Exchange student at Ben Gurion University, Israel for the period July to August 2018.

Internship – International

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name</th>
<th>Roll No</th>
<th>Internship-Company Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Haritha H</td>
<td>AM.EN.U4CSE14030</td>
<td>Received internship to go to Honeywell/University of Iilan, Taiwan from January 2018 for 6 months.</td>
</tr>
<tr>
<td>2</td>
<td>Amrita Sanjay</td>
<td>AM.EN.U4CSE14107</td>
<td>Received internship to go to University of Paderborn, Germany from March 2018 for 6 months</td>
</tr>
<tr>
<td>3</td>
<td>Athira S</td>
<td>AM.EN.U4CSE14113</td>
<td>Received internship to go to Alto University, Finland from January 2018 for 6 months</td>
</tr>
<tr>
<td>4</td>
<td>Devi R Krishnan</td>
<td>AM.EN.U4CSE14120</td>
<td>Received internship to go to Alto University, Finland from January 2018 for 6 months</td>
</tr>
<tr>
<td>5</td>
<td>Amrita Raghunath</td>
<td>AM.EN.U4CSE14007</td>
<td>Received internship to go to University of Paderborn, Germany from March 2018 for 6 months</td>
</tr>
<tr>
<td>6</td>
<td>Resya Reghu</td>
<td>AM.EN.U4CSE14077</td>
<td>Received internship to go to University of Paderborn, Germany from March for 6 months</td>
</tr>
<tr>
<td>7</td>
<td>Arun Babu</td>
<td>AM.EN.U4CSE14112</td>
<td>Received internship to go to POLIMI, Italy from March for 6 months.</td>
</tr>
<tr>
<td>8</td>
<td>Jayakrishna Menon</td>
<td>AM.EN.U4CSE14133</td>
<td>Received internship to go to University of South California, USA for 6 months</td>
</tr>
<tr>
<td>9</td>
<td>Gokulkrishna</td>
<td>AM.EN.U4CSE14124</td>
<td>Received internship to go to Arizona State University for 12 months from April 2018</td>
</tr>
<tr>
<td>10</td>
<td>Devi R Krishnan</td>
<td>AM.EN.U4CSE14120</td>
<td>Received internship to go to Ben-Gurion University, Israel from June to August 2017</td>
</tr>
<tr>
<td>11</td>
<td>Amrita Raghunath</td>
<td>AM.EN.U4CSE14007</td>
<td>Received internship to go to Ben-Gurion University, Israel from June to August 2017</td>
</tr>
</tbody>
</table>

International Events

a) Ankit Raj Ojha of 2016 – 2020 CSE batch received a “Google India Challenge Scholarship for Mobile Web Specialist Track”, conducted by Udacity.

b) Vignesh S Rao, Tarunakant Gupta, Ashutosh Ahelleya, Siddharth M, Aswin M Guptha, Heeraj and Shiv Krishna of CSE batch secured 1st position and won X-Box One in “NullCon Battle Underground CTF, Swamp CTF” conducted by Flipkart-VMWare in March 2018.

c) Vignesh S Rao of 2016 – 2020 CSE batch was awarded scholarship worth $900 to attend “Black Hat Asia 2018” on March 2nd 2018.

d) Sidhant Gupta of 2016 – 2020 CSE batch was awarded scholarship of 3500 euro to attend “Troopers 2018 Cyber Security Conference” in Germany.

e) Aswin M Guptha, Ashutosh Ahelleya, Tarunakant Gupta Siddharth M won the 5th position in cyber security competition “b00t2root ’18 and Swamp CTF” conducted by University of Florida on March 2018.

f) Aswin M Guptha, Ashutosh Ahelleya Tarunakant Gupta Siddharth M won the 9th position in cyber security competition “Backdoor CTF” conducted by IIT-Roorkee on March 2018

Internship – National

The following students of M.Tech CSE 2017-19 Batch were selected for one-year internship at various companies as given below:

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name</th>
<th>Roll No</th>
<th>Internship-Company Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Amrutha M Gopan</td>
<td>AM.EN.P2CSE17003</td>
<td>GE Digital</td>
</tr>
<tr>
<td>2</td>
<td>Arya Vijayan</td>
<td>AM.EN.P2CSE17007</td>
<td>Dell EMC</td>
</tr>
<tr>
<td>3</td>
<td>Deepak S</td>
<td>AM.EN.P2CSE17008</td>
<td>Dell EMC</td>
</tr>
<tr>
<td>4</td>
<td>Krishna Priya</td>
<td>AM.EN.P2CSE17015</td>
<td>GE Digital</td>
</tr>
<tr>
<td>5</td>
<td>Nellisery Cheryli</td>
<td>AM.EN.P2CSE17018</td>
<td>INTEL</td>
</tr>
<tr>
<td>6</td>
<td>Monisha Mohan</td>
<td>AM.EN.P2CSE17017</td>
<td>Nokia</td>
</tr>
<tr>
<td>7</td>
<td>Anupama S</td>
<td>AM.EN.P2CSE17004</td>
<td>Cerner</td>
</tr>
</tbody>
</table>
National Events

1. Jyothi K of 2017-2021 CSE batch secured 3rd prize for group song at the 33rd Inter-university National Youth Festival-2018, PALASH, organized by Ranchi University in collaboration with the Association of Indian Universities (AIU) and Ministry of Youth Affairs and Sports, Government of India, February 16-20, 2018.

2. Third Semester Students of B Tech Computer Science & Engineering organized a project demo session as part of Connected IoT Devices project based course offered by Dr Jayaraj Poroor, on 15 & 16 November 2018.

3. Vibhooti of 2016-2020 CSE batch was selected as a speaker at FOSSMeet 2018 on “Improving UX with Custom ROMs” in NIT-Calicut on 1st February 2018.

4. Manu Aravind of 2015-2019 CSE batch was selected as DSC lead by Developer Student Club Summit conducted by Google in Goa on March 22nd to 25th 2018.

5. PS Narayanan of S4 MCA developed an Android App CTF Time, which provides information about upcoming and past CTF events. CTF Time Android provides a handy version of the site with a beautiful UI. The beta release of the app has already got a lot of attention on twitter.

Co-curricular

Student Achievements

1. Abhishek Dinesh of Third semester of BTech CSE was a team member of ASHVA which qualified for Mars Rover Challenge 2018 during 14th-16th Sep 2018. This is the 3rd time we are representing the world Mars rover challenge. European Rover Challenge is one of the biggest international space and robotics event in the world. A 12-member student team comprising of Mechanical, Electronics & Computer Science qualified as one among the final 20 teams from the best 65 world teams that had applied with their design ideas. Our Amrita team is one among the 3 teams from India to qualify for European Rover Challenge 2018.

2. Gopa Vasan of 2017-2021 CSE batch was selected as Developer for the event “Season of Revision Slider” conducted by Wikimedia Foundation from Aug 1 - Sep 30 2018.

3. Gopa Vasan of 2017-2021 CSE batch was selected as Mentor for the event “Google Code In” conducted by Wikimedia Foundation in September 2018.

4. Siddharth M, Akshay Ajan and Tarunkanth Gupta won the 12th position globally and 2nd position nationally in cyber security competition “CSAW CTF’18” conducted by New York University on in September 2018

5. Siddharth M, Akshay Ajan and Tarunkanth Gupta won the 7th position globally and 1st position nationally in cyber security competition “SEC-T CTF 18” conducted by SEC - T conference on in September 2018

6. Siddharth M, Akshay Ajan and Tarunkanth Gupta won the 4th position globally and 1st position nationally in cyber security competition “Hack it 18” conducted by ‘Hack IT conference’ and also were invited for finals to Ukraine in September 2018

7. Tarunkanth Gupta of 2016-2020 CSE batch secured 3rd position globally and 1st position nationally in cyber security competition and was also awarded a travel grant of 1500 Euro in August 2018

Extra-curricular

Technology International Events

1. Abhishek Sidhath of S2BCA was listed in Facebook Hall of Fame & was rewarded $1500 by Facebook Security Team for finding a security vulnerability in facebook platform. Reference: https://facebook.com/ whitehat/thanks

2. Abhishek Sidhath of S2BCA found a security issue which affected millions of android devices, and android rewarded it with $1000 and a CVE ID (CVE ID) Reference: https://source.android.com/security/overview/acknowledgements

3. Devajith Jyothi of S6BCA bagged the first prize in Group Music (Indian) at the 34th Inter-University National Youth Festival held in Tirupati, Andhra Pradesh during November 2018.

4. Amal Karnavar of S6BCA participated in the 7th All India Inter University Athletic Championship in Mangalore University during November 2018.

5. Ajmal Nazar of 2016 - 2020 CSE batch participated in Senior State Roll Ball (Skating) Championship and secured a 2nd position which is conducted by Trivandrum Roll Ball Association on September 2018.

6. Rohit R, of S6BCA, participated in University South Zone competition in the event badminton held at SRM College Chennai during November 2018.

Arts

1. Devajith Jyothi of S6BCA bagged the first prize in Group Music (Indian) at the 34th Inter-University National Youth Festival 2018 “Padmotsav” held from October 7-11, 2018, in Tirupati, Andhra Pradesh.

Sports

i) Amal Karnavar of S6BCA participated in the 7th All India Inter University Athletic Championship 4x100 metres held at Mangalore University during November 2018.

ii) Ajmal Nazar of 2016 - 2020 CSE batch participated in Senior State Roll Ball (Skating) Championship and secured a 2nd position which is conducted by Trivandrum Roll Ball Association on September 2018.
Departmental Activities

Departmental level Association / Club Activities of Students

- The Department organized an international competitive programming Bootcamp in collaboration with Harbor Space University (Russia), on March 22nd to 30th, 2018.
- Dr. Jayaraj Poroor and Dr. Gopakumar G conducted “Skill-based Computer Science Tutorials Program (SCIT)”, a hands-on session. The focus was to help students to gain practical skills in industry-relevant topics like programming, algorithms, machine learning, databases, and so on. This is an ongoing programme and sessions happened every alternate day after the regular class hours, with some guided tutorial sessions conducted by faculty / senior students and others unguided self-paced sessions.
- The Department of Computer Science and Department of Mathematics jointly organized a workshop on “Machine Learning and its Applications” from December 5 to December 9, 2018.
- The ACM International Collegiate Programming Contest (ICPC) 2018 Asia-Amritapuri Multi-site Regional Contest was held on December 29, 2018, at Amrita Vishwa Vidyapeetham, Amritapuri and Coimbatore campuses. This year’s ICPC Asia-Amritapuri multi-site regional contest witnessed more than 275 teams from premier institutions like IITs, IIITs, NITs and IISc from India and Bangladesh. This included 10 high school teams also.
- The student association of CSA Department SATBHAV coordinated a workshop on Node JS during October 2018. The MCA alumni Pranav T, Software developer at Plus91 Technologies Pvt. Ltd, conducted the workshop.

The Department conducted Student Achiever’s Day on Jan 23rd, 2018. This is a platform for expressing our appreciation for the Computer Science students who have performed exceptionally well at international, national, and state-level events.
1. Dr. Jayaraj Poroor presented a paper titled "VerticalThings: A language-based microkernel for constrained IoT devices" at the reputed ACM SIGBED International conference on embedded software (EMSOFT), Italy (Oct 2018).

2. Dr. Jayaraj Poroor was selected and sponsored for a 2 week "Deep Spec Research Summer School" at Princeton University. The program covers cutting edge topics on the application of formal methods to prove correctness of critical software/hardware. Renowned professors from Princeton University and other top US universities such as MIT engaged sessions.

3. Microsoft Research awarded Dr. Jayaraj Poroor a research grant for research in machine learning platforms in constrained embedded devices. His proposal for a new domain-specific programming language for data processing on 'Internet of Things' devices was accepted by Microsoft Research India Summer Research Workshop. Microsoft Research is one of the top places for Computer Science Research, hosting several Turing Award Winners.

4. Dr. Vivek Menon was granted the NVIDIA Deep Learning Institute (DLI) University Ambassadorship. DLI Ambassadors are a select group of DLI Certified Instructors committed to teach DLI instructor-led workshops and meetups at universities, academic conferences, and events at no cost exclusively for academic students, staff, and researchers.

5. Dr. Vivek Menon received the best paper award for the paper titled “Modeling Compensation of Data Science Professionals” in BRIC Nations at International Conference on Emerging Technologies in Data Mining and Information Security.

6. Dr. Sajeev GR was elevated to the grade of Senior Member of the IEEE this year. Senior Member is the highest professional grade of the IEEE for which a member may apply. It requires extensive experience, and reflects professional accomplishment and maturity. Only 10% of the more than 400,000 IEEE members have achieved this level.

7. Shri Jinesh MK was awarded Ph.D. from Amrita University under the guidance of Dr. Bharath Jayaraman in August 2018. His research thesis is titled 'Temporal Constrained Objects: Semantics Application and Implementation'.

8. Smt. Subbulakshmi S. was awarded Ph.D. from Manonmaniam Sundaranar University in Computer Science under the guidance of Dr. K Ramar in July 2018. Her research thesis is titled 'Design of Architecture to Enhance the Quality of Web Service for Information Delivery'.

Research

Journal published papers:


Conferences


15. Deega Raj K G P Sajeev | "Mining Frequent Temporal Structures in Web Graph" | International Conference on Data Science and Engineering, ICDSCE 2018 | November 2018, Article number 8527824.


24. Nellierry Cheryll Ano Jaya, Krishnapriya S, Dr Jyothisha J Nair | "Commercial fruit juice classification using fuzzy logic" | International Conference o


37. Priyanshu Das, Bhadrachalam C | “Scheduling Applications of DAGs” | International Conference on Advances in Computing, Communications and Informatics, ICACCI 2018 | November 2018 | Article number 8554870 | Pages 2156-2160.
42. Jisha R C, Ram Krishnan and Varun Vikraman | “Mobile Applications Recommendation Based on User Ratings and Permissions” | International Conference on Advances in Computing, Communications and Informatics, ICACCI 2018 | 30 November 2018 | Article number 8554691 | Pages 1000-1005.
43. Indulekha T S, Aswathy GS and Parvathy Sudhakaran | “A Graph Based Algorithm for Clustering and Ranking Proteins for Identifying Disease Causing Genes” | International Conference on Advances in Computing, Communications and Informatics, ICACCI 2018 | 30 November 2018 | Article number 8554655 | Pages 892-896.
47. Bhadrachalam Chitturi, Priyanshu Das | “Sorting permutations with transpositions in O(n^2) amortized time” | Theoretical Computer Science, 2018 | Volume 766 | 25 April 2019 | Pages 30-37.

**Invited Talks**

2. Dr Gopakumar G was a resource person of Faculty Development Programme on Machine Learning held at SAINGTITS College of Engineering Kottayam, during 18 to 22 June 2018.
3. Dr Sajeev G P chaired a session at the 7th International Conference on Advances in Computing, Communications and Informatics (ICACCI, September 2018).
4. Dr Bhadrachalam Chitturi chaired a session at the 7th International Conference on Advances in Computing, Communications and Informatics (ICACCI, September 2018).
5. Dr Bhadrachalam Chitturi delivered a technical talk on “Efficient algorithm to compute transposition distance between every pair of permutations” at Department of Computer Science, University of Texas at Dallas in June 2018.
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

STUDENT ACHIEVEMENTS & ACTIVITIES

Academic Excellence

P. Dilip Kumar and Rohit S. Prabhu of B.Tech EEE were awarded Gold medal and Silver medal respectively during Amrita Vishwa Vidyapeetham’s graduation ceremony held on 31st August 2018.

Ravi Krishnan Kodoth and Sreya Chandran P.C. of M.Tech Power and Energy Engineering were awarded Gold medal and Silver medal respectively during Amrita Vishwa Vidyapeetham’s graduation ceremony held on 31st August 2018.

P. J. Neeraj of M.Tech Control and instrumentation Engineering was awarded Gold medal during Amrita Vishwa Vidyapeetham’s graduation ceremony held on 31st August 2018.

International Collaboration

Airavati Subramonia and Aravind M Nair of fourth year B.Tech EEE were selected for semester exchange programme at TUM Germany.

Mr. Visal Raveendran, Research Scholar of EEE Dept. was selected for student exchange program, in Universitat Polittechnica de Valencia (UPV), Spain, during Nov 2018. This is part of collaborative work between Prof. Dr. Carlos Alvarez, Institute for Energy Engineering, UPV, Valencia, Spain and Dr. Manjula G. Nair, Professor and Chairperson, Department of EEE, Amritapuri who is supervising Visal’s doctorate.

Co-Curricular


Student Internship

Many of our first year M.Tech Students were selected for internship by illustrious companies. A few are listed below:

Continental Automotive

CSIR-CSIO

First year B.Tech students completed internship in companies like Vizag Steel Plant, BSNL, Cochin Ship yard, KMML, KSEB, Ashok Leyland, KINFRA, Keltron, and Amrita for Villages and Amrita Hut Lab.

Third year B.Tech students accomplished internship in companies like TATA Power Solar Bangalore, Jindal Steel and Power Plant Raigarh, Reliance Switch gear LTD Dubai, TELK, KEL, Keltron, KSEB(Pallivasal Power House, Lower Periyar Power House, Substations), Cochin Ship Yard, KMML, KTPS Thermal Power Plant, Steel and Industrial Forgings LTD Trissur, Apecenco Vijayawada, etc.

Fourth year B.Tech students did internship in companies like VSSC, Indian Railway and Bosch for doing their final year project.

P. J. Neeraj (CIN) Gold Medal

Mr Anoop A.S. student of M.Tech Control and Instrumentation (2016-18), under the guidance of Dr. P. Kanakasabapathy, Associate Professor EEE Dept., Dr. K Sivabalaji, Dr. B.N Ashwini from School of Ayurveda has received Best Paper Award in the 8th World Ayurveda Congress & Arogya Expo 2018 held at, Ahmedabad, India during 14-17 Dec 2018.
Extra-Curricular

Mr. Anoop A.S. began a start-up company to develop an automated system to carry out certain procedures for eye-related treatment in the field of Ayurveda medicine and is upgrading and manufacturing such products having fetched considerable appreciation and orders when he presented the work in a forum at Ministry of Health, Government of Kerala.

Team mentored by Mr. Bharath K. R., Ms. Jayasree P. R., and Mr. Sreenivasan M.K. participated in 2nd National Solar Vehicle Challenge at Merchant University, Mehasana, Gujarat that took place through 18-22 March 2018. They reached the final round of the contest and received appreciations for the ergonomic design of their solar electric vehicle.

Indira Basumatary of first year B.Tech EEE was a member of Table Tennis team, representing Amritapuri campus which was adjudged the runner-up in the Inter Amrita University Tournament held at Coimbatore campus during 30th September to 02nd October 2018.

B. Krishnan Iyer of third year B.Tech EEE has completed google summer of code 2018 contributing to the open source project Haiku.

Adabala Sai Jyothi Gayathri Nagendrakumar of first year B.Tech EEE won second prize for Western Solo Vocals in the Inter University National Youth Festival organized during February 2018 at Ranchi University, Ranchi.

Aswin Sathish of third year and Devika Pramod of second year B.Tech won third prize for Group Song in the Inter University National Youth Festival organized during February 2018 at Ranchi University, Ranchi.

Devika Pramod was part of the team that secured first place for Group Song in Inter University South Zona youth festival held at Padmavati University, Tirupati during 7th to 11th October 2018.

Placements

Fourth year B.Tech students got placements in top core and software companies; a few to list are Continental AG, Robert Bosch, Renault Nissan, IBM, Infosys, TCS, Analytics Quotient and Musigma Business Solutions.

Departmental Activities

Workshops Organised In Campus

Anudev J, Assistant Professor of Dept. of EEE and Ms. Sandhya Harikumar, Assistant Professor of Dept. of CSE organized a programming session on “Python Language” for third year B.Tech. EEE students during 25th to 29th of June 2018. The session was oriented to gear up programming skills of students for attending technical interviews. Ms. Gayathri R G and Ms. Thara, Assistant Professors of Dept. of CSE handled the sessions.

Renewable Energy Club organised a two-day workshop from 7th Feb to 8th Feb 2018 on “Advanced Programming using Arduino Microcontrollers” handled by Mr. Bharath K. R., Assistant Professor, EEE Dept., to bestow basic knowledge on Arduino Microcontroller hardware, software, installation and application. Many B.Tech students from EEE Department attended the workshop and secured aspiring experience.

“Basics of Programming using Arduino mega” on behalf of Renewable Energy Club was organized by Mr. Bharath K. R., Assistant Professor, EEE Dept. organised a workshop from 6th to 7th March 2018. The workshop explored deeply in different versions of Arduino development platform, interfacing with Arduino, PWM generation using Arduino etc. B.Tech students from EEE Department attended the workshop and they were able to secure good practical experience. The workshop succeeded in developing innovative ideas among the students.

One-day workshop sponsored by IEEE IAS SBC on “Latex - A Technical Writing Tool for Beginners” was coordinated by Dr. Ravikumar Pandi, Assistant Professor, EEE Dept. and Mr. D. Ashwin, PG Student (Power and Energy Engineering) on 10th May 2018. The workshop was on Latex, which is typesetting software for preparing reports, research papers and presentations especially useful for researchers engaged in writing technical documents in various engineering disciplines. The workshop was attended by faculty and final year students of M.Tech. and B.Tech. of Electrical and Electronics Engineering Department at Amritapuri Campus.

Alumni International Admission

Mr. Mahesh Siva Ramakrishna of B.Tech EEE (2012-2016) got MBA – International Business admission in University of Greenwich, Public University in London.

Workshop on “Basics of Programming using Arduino mega”

Workshop on “Advanced Programming using Arduino Microcontrollers”

“Workshop on “Basics of Programming using Arduino mega”

One-day workshop sponsored by IEEE IAS SBC on “Latex - A Technical Writing Tool for Beginners” was coordinated by Dr. Ravikumar Pandi, Assistant Professor, EEE Dept. and Mr. D. Ashwin, PG Student (Power and Energy Engineering) on 10th May 2018. The workshop was on Latex, which is typesetting software for preparing reports, research papers and presentations especially useful for researchers engaged in writing technical documents in various engineering disciplines. The workshop was attended by faculty and final year students of M.Tech. and B.Tech. of Electrical and Electronics Engineering Department at Amritapuri Campus.
Amrita Renewable Energy Club organised a 5-day workshop on "Embedded Systems and AVR Microcontroller" from 16th to 20th April 2018 for B.Tech EEE students. The session was handled by Shri Bharath K. R., Assistant Professor, EEE Dept. The workshop mainly focused on basics of AVR, ADC configuration, simulation of ADC in Proteus using different sensors.

Department of Electrical and Electronics Engineering is keen in regularly providing a platform for students every year which bring to lime light their research work, receiving appreciation from the expert evaluators, faculty members and students from various Departments and Research centres. This year also a demonstration of hardware projects of final year, students were arranged on 10th May 2018. The projects showcased by the students spanned over various aspects of electrical and electronics engineering like Control and Instrumentation, Power system operation & control, Robotics & Automation, Renewable energy harvesting etc. Most of the projects were product based with focus on developing solutions of social, economic and industrial impact. Experts from other Departments including Dr. Jayaraj Poroor, Chairperson CSE Dept., Dr. Kirthik V Shankar, Asst. Professor, ME Dept., Ms Gayathri Narayanan, Asst. Professor ECE Dept., etc evaluated these projects. It was a great rostrum for the students to express the ingenious technical ideas.

A team of 25 members, including staff and students of EEE Department at Amritapuri campus, in association with the IEEE IAS Student Branch Chapter, co-ordinated by Mr. Srikanth V., Asst Professor EEE Dept. were first to join hands with Kerala State Electricity Board Ltd. to participate in the mission "RECONNECT" to restore electricity in flood affected areas. As a part of the mission, the team inspected Pandalam from Bharath K. R., Assistant Professor, EEE Dept. The workshop mainly focused on basics of AVR, ADC configuration, simulation of ADC in Proteus using different sensors.

Workshop on “Basics of Electric Vehicle” was organised on 6th November 2018 in Amritapuri campus as a part of the mission "RECONNECT" to restore electricity in flood affected areas. As a part of the mission, the team inspected Pandalam for the first time in April 2018 by properly utilizing the available renewable energy and taking care of current harmonic compensation, power factor correction and reactive power compensation.

Work involved design and implementation of Solar Aided UPS (1 KVA, 230V, 50 Hz, Single phase) to provide Uninterrupted Power Supply to the user. Control and energy management techniques for efficient power transfer and energy storage from solar PV array with the battery and the load was attempted in this project.

Work involved design and implementation of Solar Aided UPS (1 KVA, 230V, 50 Hz, Single phase) to provide Uninterrupted Power Supply to the user. Control and energy management techniques for efficient power transfer and energy storage from solar PV array with the battery and the load was attempted in this project.

Work involves development of a novel three winding Y/YD utilized distribution transformer which effectively recovers trapped circulating harmonic power in the delta winding so as to improve the operational efficiency of the transformer. An MPPT controller tracks filtered, ripple-free drainage power for storing in a battery for further use, which improves system power quality in addition to improving transformer efficiency. Recovered drainage power is used for Street lighting application and for DC link voltage regulation of shunt active filters.
Design and implementation of a zero net energy building as a smart micro grid

The project aims to design and develop a low energy, low emission building called as the zero net energy smart micro grid building. A zero net energy building (ZNEB) is a residential or commercial building which reduces energy needs through improved efficiency so that the balance of energy demand can be supplied with renewable energy source.

Solar panel. Modular approach was selected for easier power handling.

Autopilot control loop design of MAV with minimum control surfaces for surveillance

This project, aims to design and implement an autonomous fixed wing unmanned Micro Aerial Vehicle (MAV) with integration of computer vision and GPS. The project focuses on the design of and implementation of an autopilot for autonomous flight operations with GPS and computer vision integrated to it, which may be used for surveillance purposes.

Other Research Projects

- State Space Analysis of Non Linear Control Systems
- CMOS RF IC design based on compressive sensing
- Power system analysis of ship microgrid system
- An Event Triggered Algorithm for Cooperative Control of Unmanned Surface Vehicles (USVs) with Minimal Communication
- IoT Based Smart Distribution Grid
- An Intelligent Algorithm to Improve the Socio-economic Benefits of a Microgrid with Blockchain Energy Trading Scheme
- Agent based Self-Healing Protection in Smart Grids
- Model Predictive control of PMSM

Research Publications

Conference - Publications

22. Arun Rajendran, Arya R Nair, "Fault Location Strategy Based on


Faculty and Students of EEE Dept. have published 69 Scopus indexed research papers and also possess 300+ citations in the year 2018, among which some were published in international journals like PMME, IJET, International Journal of Renewable Energy Research and Procedia Computer Science. Remaining research papers were presented in reputed international conferences like ICCAR, IPACT, ICSCS, Tap Energy, ICICICT, IBIOMED etc.

Ms. Preetha P. K., Assistant Professor and Vice chairperson, Dept. of Electrical and Electronics Engineering successfully completed her Ph.D on the thesis titled “Drainage Power Recovery in Distribution Transformers”, from Amrita Vishwa Vidyapeetham in the month of February 2018. She received her degree from Dr. K. Sivan (Honorable ISRO Chairman) during Amrita Vishwa Vidyapeetham’s graduation ceremony on August 2018. Her thesis advisors are Dr. Manjula G. Nair, Professor & Chairperson, Dept. of EEE and Dr. Chandramohan Nair, former Professor & Chairperson, Dept. of EEE.

Shri Nandagopal J. L., Asst. Professor of EEE Dept. got selection as Scientist/Engineer at ISRO Satellite Centre, Bangalore.

Dr V Ravikumar Pandi, and Mr. Srikanth V., Asst Professors of EEE Dept. have been elevated to the grade of Senior Member of the IEEE.

Awards and Recognitions

Invited Talks

Dr P. Kanakasabapathy, Associate Professor, EEE Dept. delivered a talk on “Self-Scheduling of Pumped-Storage Hydro Power Generation in Electric Power Markets” at National Workshop on Pumped Storage Hydropower Projects organized by Energy Management Centre, Kerala, Thiruvananthapuram, during 8-9 February 2018.

Dr V Ravikumar Pandi, Assistant Professor of EEE Dept. delivered a talk on “Application of PSCAD for FACTS Devices” in FDP on Software Tools for Simulation and Analysis of Power Systems during 24-26 May 2018 at Kalasalingam University, Tamil Nadu.

Dr V Ravikumar Pandi along with Ms. Angel T. S., Asst Professors of EEE Dept delivered a lecture on “Optimization techniques with incorporation of renewable energy to grid” in FDP at Bishop Jerome Institute, Kollam on 19th July 2018.

Dr Ilango K, Assistant Professor of EEE Dept. delivered a talk on “Modern Power Grid for Sustainable Future” at International Conference on Recent advances in Electrical, Electronics and Control Engineering at Mepco Schlenk Engineering College, Tamil Nadu on 5th May 2018.

Dr V Ravikumar Pandi, Assistant Professor of EEE Dept. delivered a key note address on “Applications of PSCAD for wind integration”, in the FDP on “Software Tools for Simulation and Analysis of Power Systems” at Kalasalingam University, Tamil Nadu on 26th May 2018.

Dr V Ravikumar Pandi, Assistant Professor of EEE Dept. delivered a talk on “Applications of PSCAD for wind integration”, in the FDP on “Software Tools for Simulation and Analysis of Power Systems” at Kalasalingam University, Tamil Nadu on 26th May 2018.

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Dr V Ravikumar Pandi, Assistant Professor of EEE Dept. delivered a talk on “Applications of PSCAD for wind integration”, in the FDP on “Software Tools for Simulation and Analysis of Power Systems” at Kalasalingam University, Tamil Nadu on 26th May 2018.
DEPARTMENT OF MECHANICAL ENGINEERING

STUDENT ACHIEVEMENTS

International Collaboration

Master's Degree

Saladi Sathya Sidhartha
University: Massachusetts Institute of Technology, USA.
Course: Master's degree in Integrated Design and Manufacturing
Year: 2018

Harikrishnan V
University: KTH Royal Institute of Technology, Sweden
Course: Master's degree from KTH Royal Institute of Technology, Sweden.
Year: 2018

Student's Project

Harikrishnan R
Project: Btech (IV year) - Project at Penn State University, USA.
Year: 2018

Harikrishnan J
Project: Btech (IV year) - Project at Penn State University, USA.
Year: 2018

Ajith Aravindan Nair
Project: Btech (IV year) - Project at Northern Illinois University, USA.
Year: 2018

Chavan Ishan Avinash
Project: Btech (IV year) - Project at Northern Illinois University, USA.
Year: 2018

Vignesh Parameswaran
Project: Btech (IV year) - Project at Technical University of Munich, Germany.
Year: 2018

Extracurricular

The team Agraganya BAJA, a group of 25 students, led by Mr. Ramdas V Menon got the overall 51st position out of 150 teams and set the record for Fastest Lap Time in the event in SAE BAJA 2018, held at NATRAX, Pithampur, Indore.

Subramaniam Olappamanna of S6 Mechanical won the 7th position and a cash prize in the One-Day Chess Competition held at Mas Baselios College of Engineering, Thiruvananthapuram on March 3rd 2018.

Placements

Ajay Rituraj
Btech got placement in Bajaj Auto

Jithin Pai U
Btech acquired placement in CUMI- Murugappa groups

Shankar Ganesh
Btech got placement in Hyundai Motors & CUMI - Murugappa group

Faculty Achievements

Doctorate

Dr. Pramod Sreedharan, Faculty of Mechanical Engineering was awarded Doctorate for research on the title ‘Investigations on Asymmetric Flexible Pneumatic Actuators for Robotic Applications’ from Amrita Vishwa Vidyapeetham.

Foreign Doctoral Admission

Shri Aravind Krishnan, Faculty of Mechanical Engineering and B.Tech alumni (2013 batch) gained PhD admission in Engineering Design and Applied Mechanics, Technical University of Denmark, Denmark.

Departmental Activities

Seminar and Invited Talk

Department of Mechanical Engineering arranged a one-day seminar on Industrial Automation by IPCS (Ingenious Power & Control Systems Pvt. Ltd.) for the final year undergraduate and postgraduate students on 5th October 2018.

Department of Mechanical Engineering organized a talk by Prof. Subir Kumar Saha, IIT Delhi with the title Robotics to Rural: Innovative teaching and research approaches on 2nd August 2018.
Waste heat recovery using thermoelectric modules in an IC engine:

Engines of all sorts emit heat, which account to a major part of its generated energy. Efforts were made to develop an economical method to recover this energy wasted in the form of heat. Thermoelectric technology makes use of the properties of semiconductor materials to generate electricity from a temperature difference. This work aims to propel further researches to make use of thermoelectric modules, practical implication of the theory stated above, to be used as a waste heat recovery system. The aim of this research is to conduct a performance test on a heat recovery system designed to be attached to a single cylinder four-stroke diesel engine, and study the output characteristics relative to the engine parameters. Design to accommodate the thermoelectric module was made to withstand the working temperature and vibration of a static IC engine. Heat balance tests conducted on the engine revealed the amount of heat energy lost through exhaust gases which can be reutilized. Experiments conducted on the design gave data regarding variations of output power from the waste heat recovery system at different engine loads. Parameters such as exhaust gas inlet temperature and corresponding output power was analyzed. Output power fluctuations on increasingly varying loads, at idle engine runtime was recorded and graphically analyzed. Percentage of heat energy reutilized from the waste heat was recorded. This value is critical in further researches on thermoelectric technology for its economic viability.

Surface modification of magnesium alloys: A291 magnesium alloy was coated with silicon carbide/SS316 mixture. The coating method used was High Velocity Oxygen Fuel coating. Samples were prepared and coated with varying compositions of SS316/Silicon carbide. The corrosion resistivity was carried out on the samples. Alloy with 100%SiC was found to be least prone to corrosion.

Rubber based Composites: The synthetic rubbers SBR and SR were filled with hard particles of boron carbide. Samples were prepared with different compositions of boron carbide. Testing of alloys - tensile strength, wear strength, abrasion resistance and thermal conductivity.
The demand for effective and efficient use of solar heating arrangement is increasing in domestic and industrial applications. Presently most of the existing renewable energy method is sporadic and vary depending upon the meteorological conditions. Therefore, the main objective of this paper is to develop thermosyphon solar heating system for improving the performance using modified Phase Change Material (PCM) modules. Heat transfer during charging and discharging and ability to hold the heat energy are crucial to attain an effective solar fraction. In the present work, paraffin wax material is used to retain the heat. A detailed stratification experimental analysis for heat energy accumulation tank was carried out on without PCM, PCM without fins, PCM with ring type fins and spiral fins. An hourly based charging and discharging efficiency were also calculated for the above cases and compared. From the results measured experimentally, it was inferred that the discharging time of solar water heating system with cylindrical PCM ring type fins is 3 hours more than without PCM. The charging energy efficiency of heat energy accumulation tank with cylindrical PCM ring type and PCM in spiral module fins confers better results than cylindrical PCM and without PCM. The discharging time of solar water heating system with cylindrical PCM took 7 hours more than without PCM. This shows that the PCM get better stratification time and increase the overall performance of solar water heating system.

Study and comparison of A356-WC composite and A356 alloy for an off-road vehicle chassis: Every vehicle manufactured has a chassis design that corresponds to its body shape, size and material used, to its performance. Aluminium alloys are most commonly used due to its high strength to weight ratio. Recent studies reveal that additional reinforcements enhance the mechanical and tribological properties of aluminium and its alloys. So in this study, keeping aluminium (A 356) alloy as the matrix, WC particulates were added at 4 wt.% to the matrix using stir casting technique. The composition and microstructure of the cast specimens were studied by using EDS and SEM. The Vickers hardness test was carried out on both as-cast and heat treated specimens. The inference was that the composite had no effect on the heat treatment. A sample design of a roll cage chassis of an off-road vehicle was designed in Solidworks. Computer Aided Engineering (CAE) analysis was carried out on both composite and A356 alloy chassis. The analysis showed the composite was a better choice of material than the conventional aluminium alloy for its improved impact resistance and high strength to weight ratio and design safety.

An Investigation On The Mechanical And Tribological Properties Of Alloy A356 On The Addition Of WC: Aluminium alloys have broad applications in aerospace and automotive industries due to its high strength to weight ratio. Now a day, it is found that aluminium and its alloys are having poor tribological properties; hence, its applications are getting limited. Studies reveal that the additions of reinforcements will enhance the mechanical and tribological properties. In this work an investigation was carried out to understand the mechanical and tribological properties of Aluminium matrix composites. Varying weight percentage (1-5%) of tungsten carbide particulates were added to aluminium A356 alloy using stir casting technique. Different compositions of these aluminium matrix composites were cast. The tungsten carbide particulate distribution in the cast was observed using energy dispersive spectroscopy. Various Experiments were carried out to study the Mechanical and Tribological properties of these Aluminium matrix composites. The results of this investigation reveal that the mechanical properties like hardness, tensile strength and tribological properties like wear resistance improved up to 4 weight percentage of tungsten carbide. It was also found that varying weight percentage of tungsten carbide has no influence on the coefficient of friction.

Blood Flow Dynamics in Cerebral Aneurysm - A CFD Approach: Hemodynamics plays an important role in the diagnosis and treatment of various vascular diseases like stenosis, aneurysm etc. The elastic nature of blood vessels and non-Newtonian behaviour of blood escalate the complexity of vascular hemodynamics. Aneurysms are localized ballooning of arteries, which is a complex fluid structure interaction problem in hemodynamics. Numerous research works were performed to reveal blood flow dynamics in aneurysm. Image based computational fluid dynamics (CFD) tools were used to simulate blood flow. The simulation is performed in OpenFoam software. This paper analyzes 3D vascular (spherical) aneurysm model to study the role of Wall shear Stress (WSS) in the arterial wall and within the aneurysm. For simplicity, the artery wall is assumed to be rigid. Blood is treated as Non-Newtonian. The flow characteristic for blood through arteries is assumed to be incompressible and laminar. The flow velocity at inlet is pulsatile and no slip condition is applied to walls. Analysis reveals that hemodynamic stresses in the arterial wall are time dependent and location dependent. There is a non-uniform distribution of WSS in the aneurysm dome. High hemodynamic stresses tend to occur at the neck of the aneurysm and not at the tip or bleb. It has shown that, the flow impinges typically at the distal wall of the neck and elevates pressure in a region surrounded by a band of high Wall shear Stress.

Cold flow simulation and comparison of swirl ratio, tumble ratio and cross tumble ratio of two lobed, three lobed and flat piston head: IC engines are a major source of power. It produces power by performing combustion of fuel in the combustion chamber. So the efficiency of the IC engines depends on the combustion of fuel. If the fuel does not completely undergo combustion not only does thermal efficiency of the engines decrease but also the unburned fuel particles released into the atmosphere causes harm to the environment. In order for the fuel to undergo complete combustion, fuel should be evenly spaced. This can be done by mixing the fuel in the combustion chamber in high intensity. This is brought about by increasing the flow in the cylinder as Swirl. Swirl is defined as the flow that rotates concentrically about the axis of the cylinder. It acts as a two-dimensional solid body rotation, persisting through the compression and combustion processes. The tangential component of the velocity of air inside the Cylinder increases by the swirl intensity, which also helps in the mixing of fuel and air, and significantly affects the combustion and emission characteristics of diesel engines. The study focused on change in swirl, tumble and cross tumble when lobes are added to the piston head. The effect of change in Swirl is analysed by comparing the swirl ratio, tumble ratio and cross tumble ratio versus crank angle of the three geometries that is two lobes, three lobes and flat piston head geometry.
2. Nair, P. G. & Babu, J. S. | Methods to improve electrokinetic energy conversion efficiency in nanoscale channel | International Journal of Engineering and Technology(UAE) | 7(2), 94-96 | 2018


**Conference – Paper Publications**


16. Prasad, G. & Ramesh, M. V. | Spatio-temporal analysis of land Use/Land cover changes in an ecologically fragile Area—Alappuzha district, southern Kerala, India | Natural Resources Research, pp.1–12 | https://doi.org/10.1007/s11053-015-9419-y | 2018

DEPARTMENT OF ELECTRONICS COMMUNICATION ENGINEERING (ECE)

STUDENT ACHIEVEMENTS

Technical Competition: Six students of current S4 BTech ECE along with Dr. Rajesh Kannan had participated in the Robocup German Open 2018 at Magdeburg, Germany. Amongst eleven teams that participated, ‘Amrita’ was the only team from India. Students involved are N. Deepak, Katta Nigam, G. Raviteja, Rudhvik R. Chanda, Prasanth Kumar Yadav, Gontu Vamsi, P. Ravikiran and Allada Phanindra.

Internship

Internship at SUTD, Singapore: Current S6 B. Tech ECE students availed a one-month internship opportunity at Singapore University of Technology and Design. They spent the entire month of June 2018 at TEMASEK Labs, SUTD, working in robotics.

M. Tech Internships and job offerings:

- Several students did one-year internship at AMS, Hyderabad. Three first year M. Tech students, Yadhav Krishnan, Deepak R, Manasi M, got internship at AMS, Hyderabad and the internship is expected to convert to placement.
- Seven first year M. Tech students namely Aswathy Narayan, Abhijith M, Devika R Nair, Shilpa K. J, Midhun Sasikumar, Anu Sree and Souaj Muraleedharan did internship at Intel, Bangalore.
- Current first year M. Tech student Anu Thomas was offered internship at Nokia, Bangalore.

BTech Internships and Projects:

As part of the final year BTech project, several students did or are currently engaged in projects at various reputed national and international educational and industrial organizations.

Departmental Activities

The Department conducted Entuple training on Analog and Digital Design flow using Cadence on 27th & 28th April 2018.

Intel Cup Embedded System design contest

Three S7 B. Tech students Sarveswara Reddy, Bhanu Teja and Chaitanya Gupta of S6 ECE participated in the final round of 2018 Intel Cup Embedded System design contest held at Shanghai Jiao Tong University, Shanghai, China, from July 20-25, 2018. The contest follows the method of open problem proposal, and invites top universities to participate. Each team from such universities would comprise three undergraduate members (with a faculty mentor) to design, implement, and document a working prototype based on the assigned platforms. Held once every couple of years, the contest provides an opportunity for talented undergraduate students to design a working system based on an assigned Intel embedded platform over a period of three months. Designs can apply to any device that could be used in a real-world application, such as in the homes, automobiles, medical, industrial, or other industries.

Project funding

Project titled “Intelligent, Animal Attack Prevention System for Crop Protection” submitted by second year ECE students Konda Reddy, Amal Sujith, Project titled “Intelligent, Animal Attack Prevention System for Crop Protection” submitted by second year ECE students Konda Reddy, Amal Sujith, Manohar, Devika Mohan completed their six months’ project work at Robert Bosch.

Gautham P Krishnan, Sreejith S Pai and Samudrala Naveen got the funding of USD 7841.00 from IEEE Humanitarian Activities Committee. The project will be deployed in Sitarampuram village of Prakasam district of Andhra Pradesh.

World Robot Summit 2018, Tokyo

A team of eight students from third year B. Tech participated in one of the world’s largest robotic contests at World Robot Summit (WRS 2018, October), Tokyo. They competed with their Paripreksya Rescue Robot under the Standard Disaster Robot category, which was held in Tokyo Big Sight, Japan, on October 18, 2018. Of the 252 teams that participated in this contest from all over the world, only 26 teams were selected, and the Amrita team was the only team from India selected for the finals. The Amrita team successfully completed the two tasks - Mobility and Dexterity tasks and got twelfth position. Amrita team got funding amount of 7 lakhs towards travel and accommodation expenses.

Pics: Robocup German
Workshop conducted

Mentor Graphics

ECE department has conducted Mentor Graphics, a 2-day workshop on Tool familiarization of Mentor Graphics HEP1 and HEP2 on 2nd - 3rd August. Resource persons from Trident Tech Labs handled the sessions. Faculty attended: Geethu R S, Sreehari K N, Anu Chalil

Workshop on Biomedical Signal Processing

Dr Deepu John, Professor from University College Dublin, Ireland gave a workshop on Aug 2nd and 3rd in topics related to Biomedical Signal Processing as part of Erasmus Mundus Staff Mobility program.

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Research

International Journals


Conferences - Paper Publications


Conferences - Paper Presentation


ii. Gayathri G., Udupa G., Nair G.J., Poorna S.S. “EEG-Controlled Prosthetic Arm for Micromechanical Tasks” | Second International Conference on Computational Intelligence and Informatics, ICCII-JNU, Hyderabad (August 2018)


India's first IoT systems for Real-Time Landslide Warning

Toiling day and night, researchers, Prof. Balaji Harilaharana, Dr. Nirmala Vasudevan, Sangeeth Kumar, Balamukund Singh, Nitin Kumar M, Arun Kumar J, Deepak Brahmanandan, Gosh U.G, Aravind H, Koushik Ramanadan, Dawa Thshering Lepcha and led by Dr. Maneesh V Ramesh, from AmritaWNA deployed an IoT based system for real-time detection and early warning of landslides in Sikkim. Stated as the second implementation of such a kind, Sikkim deployment was done in collaboration with Sikkim State Disaster Management Authority. An array of IoT enabled sensors will monitor a densely populated area spanning 150 acres around Chandmari village in Gangtok district. This heterogeneous IoT system provides the capability for gathering real-time context aware data to understand the dynamic variability in landslide risk. A comprehensive research framework and technological solutions is now in place for landslide hazard mapping which uses remote sensing, low-cost sensing using IoT systems, big data analytics, and decision models for disaster risk reduction. This model can be replicated anywhere along the Himalayan mountain ranges which are susceptible to landslides.

Landslip

Landslip is a collaborative project that includes partners from India, UK and Italy, and is funded under the UK Natural Environment Research Council (NERC) Department for International Development (DFID) Science for Humanitarian Emergencies & Resilience (SHEAR) programme. The aim of this project is to develop an integrated landslide risk assessment and early warning system (EWS) in a multi-hazard framework, targeting a spatial scale from slope to regional and temporal scale from daily to seasonal. AmritaWNA contributes mainly to two of the work packages of LANDLISP including WPS and WPA. In WPS, collaboration is with Newcastle University to develop landslide ontology, and high performance data classification/event-detection algorithms based on social media. In WP6, Amrita is working with King's College London, to understand multi-hazard dynamics in the two pilot study areas by examining multi-hazard scenarios that involve landslides in India. Ms. Divya visited King’s college London (KCL) from 19th November 2018 to 7th December 2018 as part of Work package 6, and worked with Dr. Bruce Malamud in collating and analysing the multi-hazard case studies involving landslides in certain regions of North and South India.

Message from the Chancellor

“Recently, we have witnessed so many natural calamities and alarming changes in the global climate, including rapidly increasing global warming. These are challenging the further survival of this beautiful earth we live in. We should take into consideration how much we have been able to use research to serve the lowest and most vulnerable strata of society. In our approach to sustainable development, we should not forget that it is by strengthening the people at the base of the pyramid that the entire edifice of society becomes healthy and strong.”

Sri. Mata Amritanandamayi Devi

Breast Cancer Detection using Infrared Imaging

Researchers from AmritaWNA have recently started a project titled Advancement of a Computer Aided Diagnostic System which can identify abnormalities in breast at the stage of angiogenesis even ten years before the beginning of the disease.

Technology transfer for OceanNet and Wearable ECG.

OceanNet and wearable ECG monitoring device achieved another big milestone during month of October 2018. A 2 day workshop was held to understand design for manufacture and define design of cellular assembly lines to manufacture the products. Products will be manufactured in an automated plant which has minimum human intervention in the manufacturing and assembly process. The products will be launched in Indian and Global markets.

2018 IoT Workshop in Amritapuri

AmritaWNA, Amrita Vishwa VidyaPeetham conducted a two-day national level workshop, “IoT Applications Using Aruduinio” from 11 December to 12 December 2018. Dr. Maneesh V Ramesh, Director, AmritaWNA delivered keynote address on the topic “Knowledge Network through Internet of Things (IoT)”. This workshop aimed to impart the knowledge on IoT programming. Researchers from AmritaWNA conducted hands-on sessions on developing applications using IoT devices such as Aruduinio and Waspmote. The participants
were exposed to solving different challenges involved in designing real-time IoT applications. Around 44 participants including students, faculty members, and researchers attended the workshop. Though the attendees were from multidisciplinary areas such as Computer Science, Electronics and Electrical Engineering backgrounds, the workshop opened up a common platform for them to explore the various concepts of design and development of IoT applications.

Abstract of Patents

**Patent No.US9996168**

Abstract: A wearable device and a system to provide an input for a computing device are disclosed. The device comprises a sensing unit to deliver infrared signals to the facial region of a user and to receive transmitted or reflected signals therefrom, and a processing unit to determine the position or movement of the tongue of the user based on the received infrared signals. The processing unit is configured to provide an input to a computing device based on the determined position or movement of the tongue of the user.

**Patent No.US9826,196**

Abstract: An e-learning system has a local classroom comprising a local student station and a microphone; a microphone; a local student station with a microphone; an instructor station; an instructor display; planar displays; video cameras in each of the classrooms; the remote and local classrooms connected over a network. A server monitoring feeds, enforces exclusive states, such that audio and video feeds are managed in a manner that the instructor, the local students and the first remote students, seeing and hearing each other via speakers and displays presents to each other as though all are interacting in the same room.

**Patent No.US9826,647**

Abstract: An e-learning system has a local classroom comprising a local student station and an instructor station; such local students at the local student station and an instructor at the instructor station face each other directly along a first viewing line, a plurality of remote classrooms each having a student station, video cameras in each of the remote classrooms positioned and oriented to capture video images of subjects, video displays in the local classroom arranged along a line orthogonal to the first viewing line and all facing the local student station, in sets of at least two displays, arranged vertically one above another, each first set of at least two displays dedicated to one of the remote classrooms, a second plurality of video displays like the first, but facing the instructor, connection apparatus between classrooms, a server coordinating video feeds with displays.

**Rahul Krishnan, Clinically Aware Data Summarization at the Edge for Internet of Medical Things,“IEEE PerCom (Pervasive Computing and Communications) 2018”.


**Durga P. Rahul Krishnan Pathinarupothi, Ekanath Rangan, Praakash Ishwar. “When less is better: A summarization technique that enhances clinical effectiveness of data.” 8th International Conference on Digital Health, DH 2018; Lyon; France; 23 April 2018 through 26 April 2018.


**Shilpa P S, Bhuvana Nair S, Sreedevi K Menon, “Miniaturization of Monopole Antenna with Modified Ground for Wi-Fi Applications”. 2018.


**Betsy George, Shabinamol A,
AmritaWNA's contribution towards Flood Relief

Amrita Kripa App - To Aid Kerala Flood Survivors

In an effort to expedite relief and rescue operations during Kerala Floods 2018, researchers at the AmritaWNA developed Amrita Kripa Mobile App. This high-performance, multilingual, crowd-sourced mobile and web application based App has helped in helped in rescue and provided relief to more than 12000 people. Including a robust and durable suite of applications, Amrita Kripa app coordinates large-scale-distributed operations, directly linking disaster survivors, relief providers, relief-camp coordinators, rescue teams, NGOs, volunteers and administrators to collaboratively achieve optimal response. One of the major feature of the app is the interactive map, which enable relief and rescue operators to analyze ground realities in geographical hierarchies and in terms of the impact and areal extent of the disaster.

Jivamritam - Clean Drinking Water Initiative for Rural India

The Jivamritam project, Mata Amritanandamayi Math’s ₹100 crore initiative to provide clean drinking water for rural India, aims to install Jivamritam filtration systems for clean drinking water in 5,000 villages throughout the nation. The aim of the project is not only to provide a centralized and easily accessible source for clean drinking water, but also to unify and galvanize members of a given community and educate them on the concept of clean water. Deployment of filtration systems is a 3-stage process. In the first stage, staff and faculty of Live-in-Labs and AmritaWNA visited more than 1000 wards and panchayats to identity areas where the units can be implemented. In the second stage, they have been able to educate the community and Grama-panchayat members and after obtaining, "no objection certificate" have installed One hundred and ninety two filtration units in the state of Kerala during the 3rd stage, out of which 62 units were deployed during the period March 2018 and Dec 2018. The project also constitutes an active research component, which covers areas such as water-adjacent communities, water quality and monitoring, data science for water management, water and epidemiology, demand-supply models for sustainable water management, storm water management, water-energy nexus, and circular economy of water.

Conferences

A one-day Workshop on "ICT enabled Distribution Grid" was held at the Amritapuri, Kollam campus on March 22nd, 2018 to demonstrate the culmination of the results of the Indo-European FP7 funded research project "Stabiliz-E". The main highlight being the field visit and demo of the "Scalable, Modular, Self-Healing, ICT Enabled Distribution Grid Test-Bed" setup at our Amritapuri Campus. Sri. Kumaran, P. Director (Distribution & IT-KSEB) was the Chief Guest for the occasion and was also attended by representatives from our project partner organizations, industry experts, faculty/students from Amrita & elsewhere.

Prof. Sethuraman Rao, AmritaWNA visited Honolulu, Hawaii from Apr 14th to April 17th for presenting a paper on Micro Net at the WCNNE 2018 Workshop held at IEEE INFOCOM 2018 and to meet with Mr. Ravi Narayan, faculty at the Department of Information and Computer Science, University of Hawaii at Manoa.

Mr. Rahul Krishnan, Project Associate in AmritaWNA presented conference paper "A Summarization Technique that Enhances Clinical Effectiveness of Data", in 8th ACM International Digital Health Conference (DH 2018), Lyon, France, 2018 April.

Dr Maneesha V Ramesh, Director, AmritaWNA was invited to attend International Consortium on Landslides (ICL), International Programme on Landslides (IPL) conference held at Kyoto International Conference Centre & Collaborative Research Hub of the Disaster Prevention Research Institute, Kyoto University, Uji, Kyoto, Japan from Dec 1st to Dec 4th. The conference was organised by the ICL committee members to discuss the action plan for the Fifth World Landslide Forum and the Kyoto 2020 Commitment that is likely to happen at Kyoto, Japan in 2020.
Departmental Activities

An experimental set-up for developing a lightweight Physical Unclonable Function (PUF) for Internet of Things.

Research

Paper Presentations at National & International Conferences

Jithish J, PhD candidate at the Center for Cybersecurity Systems and Networks presents his poster titled ‘Towards a decision-centric approach for securing Cyber Physical Systems’ at COMSNETS 2018. COMSNETS is a premier international conference dedicated to advances in Networking and Communications Systems.

Projects

1) BigData Analytics for Cybersecurity SIEM -MEITY - Chief Investigator - Dr. Prabaharan Poomanchandran - Grant Letter dt.32-1-2018 for Rs.234.58 Lakhs

2) Virtual lab - Phase III - MHRD - Through IIT Delhi-Principal Investigator – Dr Krishnasree Achuthan - Grant Letter dt.24-1-2018.

Faculty Achievements

Dr Prabaharan Poomanchandran was invited speaker at Cyber Security Conclave for Financial Sector by Government of India on Feb-2018.

Research

Project experimental set-up which develops a realistic energy profiler of blockchains for securing Internet of Things.

Projects

1) BigData Analytics for Cybersecurity SIEM -MEITY - Chief Investigator - Dr. Prabaharan Poomanchandran - Grant Letter dt.32-1-2018 for Rs.234.58 Lakhs

2) Virtual lab - Phase III - MHRD - Through IIT Delhi-Principal Investigator – Dr Krishnasree Achuthan - Grant Letter dt.24-1-2018.

Faculty Achievements

Dr Prabaharan Poomanchandran was invited speaker at Cyber Security Conclave for Financial Sector by Government of India on Feb-2018.

Research

Paper Presentations at National & International Conferences

Jithish J, PhD candidate at the Center for Cybersecurity Systems and Networks presents his poster titled ‘Towards a decision-centric approach for securing Cyber Physical Systems’ at COMSNETS 2018. COMSNETS is a premier international conference dedicated to advances in Networking and Communications Systems.

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AYUDH

Amrita Yuva Dharma Dhara (AYUDH) is an international youth movement, dedicated to empowering young people to contribute to a peaceful and sustainable world and foster them into compassionate leaders with a sense of tolerance, solidarity and global responsibility.

Founded in 1991, AYUDH now has branches across Europe, North and South America, Asia, Africa and Australia. It is open to youth between 15 and 30 years of age with all religions, genders, social and cultural backgrounds.

The name AYUDH is derived from Sanskrit meaning ‘Non-Violence/Peace’, and a dove in the insignia of the organisation symbolizes this. AYUDH forms the youth wing of Embracing the World®, the global arm of the charitable mission of the Math and is active in over 40 countries around the world.

Through self-transformation and service to others, AYUDH encourages young people to work towards the betterment of society. AYUDH’s initiatives are focussed on four main objectives:

- Social Service: Contributing to individual and global transformation through community outreach
- Personal Development: Empowering young people to express their creative and innovative potential, acquire leadership and life skills
- Sustainable Initiatives: Promoting a sustainable and environmentally-friendly lifestyle to preserve and protect the earth for future generations
- Intercultural Exchange: Building bridges between youth from different cultures, religions and social backgrounds while laying the framework for a global network of young people who share the ambition to create a better world

Located at the Headquarters of Mata Amritanandamayi Math, AYUDH Amritapuri Chapter is a very active centre with a plethora of events taking place round the year and functions in the premises of Amrita Deemed University, Amritapuri Campus. It provided many opportunities for some of the most exciting events and service prospects for the year 2018.

AYUDH - Flood Relief 2018

The devastating Kerala floods was an occasion where AYUDH students and faculty at Amrita Vishwa Vidyapeetham, Amritapuri Campus worked dauntlessly and showed exemplary selflessness to help the hundreds of thousands of flood victims marooned in the state. After being vigorously active in setting up donation centres for the collection of food, clothing, medicines and other supplies and making preparation for after-floods rescue and rehabilitation works, there was yet a lack of fulfillment as the floods raged due to incessant rains. This resulted in the setting up of a 24x7 call centre to help rescue the marooned. In a matter of less than a week, the team had handled more than 25,000 SOS calls that, brought succour and relief to over a lakh flood victims. The connectivitty and data sharing included government officials, Navy, Air Force, National Disaster Response Force, Kerala State Police, independent rescue teams and other volunteering agencies.

The helpline team comprised over 400 students and faculty volunteers who worked nonstop in turns for days. Their exemplary commitment made the service provided by Amrita Helpline invaluable and popular among both the public and rescue teams, and helped save many lives. The helpline also helped coordinate the distribution of food, clothes, medicines, and other essentials.

Meanwhile, restoration and relief services for people affected by the floods continue. More volunteer teams are visiting affected locations and extending aid in medical treatment, essential supplies, environmental clean-up and evaluation and support to rebuild damaged buildings and properties. We are working hard to reach remote tribal communities in Kerala, as these are villages that are isolated and ignored at such times of adversity.

Swachhata Hi Seva (SHS)

As part of the Government of India’s #SwachhataHiSeva relaunch, the Honorable Prime Minister of India Narendra Modi held a nationally televised video conference with Amma and various Gurus, leaders, industrialists, and celebrities to impact the importance of environmental care. Immediately following the video conference, Amma, ashram residents, Amrita students and devotees went and cleaned a 16-km strip of coastal belt near Amritapuri Ashram. This included a couple, who partook in the ‘Seva’ before their nuptial being conducted by Amma.

Amma spoke to the PM via teleconferencing and encouraged the mission by mentioning the various environmental protection and cleanliness programs undertaken by the Math. Designated under ‘Embracing the World’ movement, the Math conducts over 1,700 annual cleanliness drives, has undertaken construction of 15,000 toilets across the country for the poor, invented and introduced of reusable and biodegradable Saukhyam Sanitary Pads, training of women in rural villages in the skills of toilet-construction and plumbing, and much, much more. These apart the Math had donated Rs. 100-crore [$1 million US] to the Namami Gange [Clean the Ganges] program initiated by the Prime Minister himself.

In his message while interacting with Amma, Prime Minister Modi said, “Amma, I am very happy that you took time to be a part of this event today and gave it your blessings. Your blessings are always a great source of strength for this movement. You have always been a beacon of hope for the poor and needy and I have always been a recipient of your love. From the time of the 2001 Gujarat Earthquake to the present day, whenever there has been an opportunity to serve, you have always been there in the forefront. You have played a very important role in making the desire to serve the poor to become more firm within me. The contribution to Swachhta Hi Seva Abhiyan in the form of your blessings, time, resources and the efforts of your volunteers has given the movement great speed and energy. The training that you have given women to become masons and to construct toilets is a great example of Human Resource Development and skill-development. Women were always ahead in matters of cleanliness and sanitation. But now you have given them skill and empowerment as well. I offer my pranams to all the efforts being rendered by you.”
AYUDH Leadership Camps

AYUDH every year conducts Camps for individual development, culture enrichment, improving leadership qualities and interpersonal communicative augmentation. These camps are of varied types, namely International, National, Branch wise/State wise, Student Freshers of Amrita educational institutions, Senior Students of Amrita Deemed University and Schools children. The year 2018 saw a few such camps being conducted at Amritapuri as listed below.

AYUDH Leaders Training Summit 2018

The “Leaders Training Summit” which is annual national level training camp was conducted at Amritapuri during the end of December 2018 for youngsters aged 15 to 30 years. The summit brought together over 500 dynamic youth volunteers from diverse educational and cultural backgrounds across 22 states of India.

AYUDH Mentors Training Summit

The Leaders Training Summit was followed by the ‘Mentors Training Summit’ which is meant for adults aged 30 to 50 years. This summit is intended to bring all senior volunteers who function as mentors from different parts of India together and reaffirm the commitments and objectives of the youth movement as well as define new goals that are necessary with the present changing times.

Dhruva ‘18 - Youth Leadership Camp

Dhruva ‘18 was a two-day leadership camp for the senior students (2nd, 3rd, & 4th years) of Amrita Deemed University’s Amritapuri Campus which was conducted during 14th & 15th July 2018. The camp focussed on imparting knowledge and life experiences shared their knowledge conveying important values in them. This greatly helped provide a broader perspective to life.

Illustrious personalities and senior monks of the math, rich with wisdom and life experiences shared their knowledge conveying important values in them. This greatly helped provide a broader perspective to life.

AYUDH Meet (2018)

‘AYUDH Meet’ was fundamentally conceived for the ‘Freshers’ who join Amritapuri University complex. Essentially organized for improving the interpersonal relations, communication skills and coordination proficiency, AYUDH Meet comprised various fun games and activities that served as a platform for the freshers to develop a comfortable relationship with the environment of colleagues, seniors and faculty.

Focusing on the positives of the children, the event encouraged them to take on tasks that best suits them, through which they develop desirable traits. AYUDH Meet paved the path for diverse interactions that unite people of different cultures, race and nation.

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ASWAS

“Give a helping hand to others in their sorrow and thus serve the world”. This is the maxim assimilated by AYUDHians in their activities. By inebriating this teaching from Amma, ‘AYUDH – Amritapur’ and ‘Amrita Serve’ joined hands to embark on a new initiative ASWAS.

The initiative was launched in December 2017 for providing woollen clothes to highly frigid areas in our country. The name itself highlights the very purpose of the initiative i.e. to be a sense of relief to the needy.

Students set up collection centres in the college for collecting woollen clothings and blankets. All the collected items were well packed and were sent to regions in India.

Villages covered: 22 nos

Anpudan Amrita 2018

Members of AYUDH – Amritapur, visited the tribal village Puravillai in Kanyakumari. The students and the staff members distributed school kits to more than 120 students in the village. The village was selected by the AYUDH students after studying the need of school children in proximity. The student volunteers could understand that most of the students do not go to school because of the lack of study materials. With the instructions given by Sri Mata Amritanandamayi Devi, students and staff members went to the village and distributed School bag, Notebooks, Record books. Geometry boxes and water bottles. More than Rupees Eighty Thousand collections were made. The project was titled as ANPUDAN AMRITA (With love from Amrita in Tamizh).

Navarathri Celebration (2018)

Navaratri is one of the foremost Hindu festivals celebrated throughout India in reverential devotion of the feminine aspect of God known as Devi or Shakti. Navaratri means “nine nights” in Sanskrit. During these nine days, the three forms of the Feminine Divinity, Durga, Lakshmi and Saraswathy are worshipped three days each in sequence, which is symbolic of the different stages of spiritual progress. The tenth day is Vijaya Dashami, or the festival of victory, symbolizes the moment when truth triumphs by dawning within.

For the past several years, ‘AYUDH Amritapur’, has been celebrating Navaratri, with the wholehearted involvement of all students and faculty. Special invited talks about the significance of Navaratri festival, satangs, devotional chanting of Akadanama Japan, Sri Lalitha Sahasranama Deeparchana with 108 Deepams, pujas and bhajans are conducted during this period of ten days. Students also perform Dandiya dance, which is the popular dance form in Gujarat during Navaratri. The environment and the devotees are surcharged with positive spirits that results in an upbeat atmosphere of love and fraternity.

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Volunteer Care Committee (2014-2018)

Amma’s birthday celebration, in no sensible way, can be compared to the normal birthday party of any human. When people’s paradigm of choices for birthdays are yummy cakes, delightful treats, and dance revelries, here we see Amma, the epitome of Compassion and Sacrifice, want Her birthday to be an occasion for selfless love and service. The events and seva on the day included conduct of group marriages for the poor, distribution of clothes to the underprivileged, award scholarships to children, pension for the old, and the launching of many more future humanitarian projects. She herself sets an example by sitting hours on end (over 24 hours) providing succour, wiping the tears of the less fortunate, who flock to her for solace. AYUDH, Amritapuri was given the responsibility to function as the “Volunteer Care Committee” (VCC) that served 24x47 refreshments comprising Indian Village Dishes, with a touch of kindness, to approximately 15000 volunteers who participate in “Amritavarsham”. Volunteering at VCC, is where hundreds of volunteers get served as they go around serving others, which is provided by the hundreds of selfless students of ‘AYUDH’.

Nature Camps and Treks

AYUDH also regularly conducts Nature Camps and Treks for the students of Amritapur Campus. Through these expeditions, students get to love and revere Nature, and thereby learn to care for the environment. Experienced guides, senior AYUDHians and faculty accompany the students on these trips.

Blood Donation 2018

A blood donation camp was organized under the banner of Ayudh, with the support of HDFC Bank and Indian Medical Association Kollam in the campus. More than hundred students and faculty attended the camp. The initiative was to bring about an awareness to the students on the importance of blood donation.

<table>
<thead>
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<th>Year</th>
<th>Activity</th>
<th>Date</th>
<th>No of Donors</th>
<th>Hrs/person</th>
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<td>Blood Donation Camp</td>
<td>16th Oct</td>
<td>200</td>
<td>1 hr</td>
<td>200</td>
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</tbody>
</table>

Car Free Day

‘World Car Free Day’ was observed by Ayudh, the youth organization at Amrita University, Amritapur Campus. The objective was to promote the use of public transport and emission-free vehicles in an effort to address the crisis of environmental pollution. The entire Amritapur Campus abstained from use of Cars and over 800 students and 200 faculty members showed their support by participating in a Cycle Rally and a 10km Fun Run from Karunagapally to Amritapur. R. Kannan of the National Football Team and Sri. Akhin GS of the National Volleyball team inaugurated the campaign.

The event had the full support and cooperation of the public and this reflects that our society cares for the environs. Participants were greatly enthused that their efforts had inspired others.

Amala Bharatam Clean-up Drive

Ayudh Amritapur chapter conducted Amala Bharatam clean-up drive in Vallickavu on the occasion of 72nd Independence day. Students and faculties of Amrita Vishwa Vidyapeetham joined hands together in making the premises clean. More than 400 students participated in the campaign. The clean-up drive was officially inaugurated by Sri S M Iqbal, President, Clappana Panjayath. Ward members Maneesh and Jaith Krishna were also present during the function. Students cleaned the Vallickavu Market, Main Junction, Way to Amrita Sethu, Roads around College Complex and the college premises.

Universal Motherhood Day

Universal Motherhood Day was celebrated by Ayudh Amritapur on 27th September 2018 as it is the birth date of our beloved Amma ‘Sadguru Sri Mata Amritanandamayi Devi’.

The morning, started with a procession from ashram to Amrita University (Deemed) Campus. Students and faculty of the University took part, doing so with great enthusiasm as they sang (bhajans) and danced all the way to the educational campus. Thus making it a joyful and energetic start to a wonderful day.

The evening comprised even more blissful moments with cultural programmes, consisting of Musical and Dance events of the students, being presented in the ashram.

Raksha Bandhan (2014–2018)

Raksha Bandhan is a popular festival celebrated across the country. This is traditionally a day when men & women identify each other as brothers and sisters celebrate and honour their bond with the lady tying a “Rakhi”, a traditional ornamental bracelet of threads, on the brother’s hand. In this way, the sister expresses her love for her brother, and the brother in-turn pledges to look after and safeguard her in all circumstances. This thread, which represents love and sublime sentiments, is called the ‘Raksha Bandhan’ that translates to ‘bond of protection’. The brother in return offers a gift to his sister and vows to look after her. Irrespective of caste and creed people from all walks-of-life participate in this festival. It is celebrated on the full moon day of the lunar month Shravana (Shravana Poornima) which also coincides with Upa-karma (changing the sacred thread for the brahmins, Avani Poornima) which also coincides with the lunar month Shravana (Shravana Poornima) which also coincides with Upa-karma (changing the sacred thread for the brahmins, Avani Poornima) and Paramahams Paaduka - Pravachanam.

In Amritapur, this year Raksha Bandhan was celebrated with a difference in honour of our soldiers and paramilitary forces. Soldiers from the CRF were invited by our students, honoured by tying Rakhi and sweets and gifts distributed. An oath supporting the forces was also rendered by the students.
Go out and serve the suffering. Learn to place others in front of yourself

-Mata Amritanandamayi