CASS Membership Development Workshop on

Internet of Things

Organised by CAS/EDS Chapter, IEEE Hyderabad Section in collaboration with

CASS Indonesia Chapter and ITENAS university, Bandung Indonesia

Under the CASS Outreach Program

Proposer: Dr. Mohammed Arifuddin Sohel, Vice Chair, IEEE CAS/EDS Chapter of Hyderabad Section and Professor & Head, ECE Department, MJCET, Hyderabad

Event Report

A proposal for conduct of a CASS membership development workshop on Internet of Things was submitted by Dr. Mohammed Arifuddin Sohel, Vice Chair of IEEE CAS/EDS Chapter to IEEE CASS Headquarters, USA, under the CASS outreach initiative in February 2017. The proposal was to conduct a three day workshop at Bandung, Indonesia to promote CASS membership in Indonesia. As a part of the proposal three senior members of IEEE Hyderabad Section and two students would travel to Indonesia and conduct a hands-on workshop in the niche area of Internet of things. The proposal was accepted for funding of USD 4300 in May 2017.

Dr. Arif Sohel coordinated with Dr. soegijardjo soegijoko, , Vice Chair of IEEE CAS Indonesia chapter to conduct the workshop in ITENAS University Bandung in the month of October 2017. In this regard, a complete workshop course structure was prepared by Dr. Arif Sohel which included five technical lectures and three days of practical sessions comprising of Nine Experiments and culminating with a student innovative idea design contest as seen in Table 1.

Workshop participation:

The workshop was announced in the month of august 2017 with an active website maintained by Dr. Arif Sohel which highlighted the course contents, speaker profiles, list of experiments, hardware kit details, and Software drivers for pre-installation. The workshop was very well publicized by Dr. Soegi across Indonesia. As a result, about 59 delegates from 13 different universities across Indonesia participated in this workshop. There were 15 teams and each team comprised of a senior faculty member and three students. The classification of participants was 21 IEEE members and 38 Non IEEE members.

Workshop Preparation:

The success of the workshop relied on the smooth conduct of the practical sessions which were designed on a platform comprising of NodeMCU(Hardware Kit), Thingspeak(IoT Cloud service by Mathworks) and BLYNQ(Mobile App). It required meticulous planning to ensure that the participants could be able to handle three relatively new platforms in a short span of three days. In this regard, Dr. Arif Sohel requested Dr. Soegi to identify 15 volunteers from Indonesia who were having basic knowledge of C programming and arduino kits, as teaching assistants. These volunteers were IEEE members of ITENAS university. A **whatsapp** group of all the volunteers along with two students volunteers of Hyderabad section – Mr. Humair and Mr. Huzaifa(team leaders), who were adept in this area was created. Dr. Soegi procured all the components and he was supported by Mr. Fabrian Hadiatna, Asst. Profesor, ITENAS who assembled (PCB design and soldering) a complete IoT kit using this components in the form of a finished product. All the experiments were uploaded on a google drive and shared with the TAs and a SKYPE session was conducted for the TAs one week before the main workshop to iron out any issues. Further the team from India reached Indonesia on 8 October, two days before the workshop, and conducted a pre workshop on 9 October 2017 for all the TAs and ensured that all the kits were in perfect working condition. There was an issue with the onboard ultrasonic sensor which was handled by connecting an external one. A few programming bugs were also fixed to suit the hardware configuration. Each team was allotted one TA to ensure that any hardware/software issues would be immediately handled and the pace of the workshop is not hindered by any team lagging behind.

Workshop Team

The workshop team comprised of experts in IoT domain from India namely - Dr. Arif Sohel, Professor, ECED, MJCET, Dr. Atul Negi, Professor, Univeristy of Hyderabad, Dr. P.A. Govindacharyulu, Director(Retd.), GAETEC, and two students Mr. Humair Ahmed Khan and Mr. Huzaifa Nayeem who had done the final year projects on IoT domain under guidance of Dr. Arif Sohel. From Indonesia side, the workshop was led by Prof. Soegi, Professor, ITENAS, Prof. Suhartono, Professor, ITB and Prof Kastam Astami, Professor, ITB, Jakarta supported by Mr. Fabrian Haidatna, Lecturer, ITENAS, Ms. Ratna, IEEE Student Branch Counselor, ITENAS, Bandung and 15 TAs led by Mr. Ridhwan, Student Chair, IEEE Student Branch, ITENAS.

Workshop Schedule

Day 1: Tuesday, 10 October, 2017			
8.00 – 9.00	Registration	9.00 – 10.00	Lecture Session 1: Introduction to IoT by Dr. P.A. Govindacharyulu
10.00 – 12.00	Lab Session 1 – Node MCU led interfacing by	12.00- 12.30	Inaugural Session presided by Dr. Dani Rusirawan, Dean, ITENAS

	Dr. Arif Sohel		
12.30 – 13.30	Lunch Break	13.30 – 14.15	Lecture Session 2 - Internet Principles and communication technology by Dr.Arif Sohel
14.15 – 16.15	Lab Session 2 – Interfacing Node MCU with Internet and BLYNQ App- Arif Sohel		
Day 2: Wednesday, 11 October, 2017			
8.30 – 9.15	Theory Session 3 - Cloud computing and Data analytics by Dr. Atul Negi	9.15 – 11.15	Lab Session - Introduction to Cloud Storage model-Twitter updates and email using ThingSpeak weather monitoring by Dr. Arif Sohel
11.15 – 12.00	Theory Session 4 – MQTT protocol for IoT by Dr. Atul Negi	13.00 – 13.45	Theory Session 4 - API Development by Dr. Arif Sohel
13.45 – 16.00	Lab Session – IoT Based Waste management system and Toll gate system by Dr. Arif Sohel and Mr. Humair Ahmed Khan		

Day 3: Thursday, 12 October, 2017			
8.30 – 9.15	Theory Session 5 - IOT System Design – IoT Platforms and prototyping by Dr.Arif	9.15 – 10.00	Lab Session – Home Automation System using IoT by Dr. Arif Sohel and Mr. Huzaifa Nayeem
10.00 – 14.00	Innovative Idea Design Contest judged by Dr. P.A. govindacharyulu, Prof. Soegi, Prof. Suhartono, Prof. Atul Negi		
14.00 – 15.45	Panel Discussion - Future challenges and opportunities in IoT Panelists - Ir. Kastam Astami, Industry expert from Indonesia	15.45 – 16.30	Closing Session – Feedback and Prize distribution to winners of Innovative Idea Design Contest.

Venue: Room 14305 = ITENAS Campus, Faculty Building (Building 14, third floor).

Innovative Idea Design Contest:

On the third day of the workshop, Each team was required to present an innovative idea wherein they could identify local problems and suggest solution using the concept of IoT. It was indeed very satisfying to see that each team was presenting the background, target market segment, a hand drawing of their proposed solution, implementation feasibility and even worked out the cost of the product. The following are the topics presented in the workshop which varied in a wide spectrum from IoT for medical care (Maternity healthcare), IoT for street vendors, Swimming pool stabilizers and IoT for Traffic management.

Sl.No	Title	Sl.No	Title
1	IoT for Maternity HealthCare	2	Tsunami Evacuation navigation System
3	Spoolizer – Swimming Pool Stabilizer	4	iBast system for peaceful urban traffic
5	Pitchman (Travelling Seller) Apps to locate the position of the mobile sellers common	6	FIT- TRANS – Fully integrated smart public transportation system
7	Vehicle Accident information system	8	Reliable RFID by IoT
9	Anti Vehicle Bandit	10	Smart Indoor Garden

Feedback and Closing

The closing session was conducted on 12 October 2017 in which one member from each team was requested to give their feedback. The winning teams of Innovative Idea design were presented with cash prizes of USD 300. Each participating team was presented with a IoT kit which they could take back to their university and they were encouraged to use the kit and lecture material provided, to conduct demo sessions on IoT to attract members to join their IEEE student branch.

Socializing:

A welcome dinner was hosted by Prof. Waluyo, Head EED, ITENAS at a VEGAN joint in Bandung city on the day of arrival of the team to Indonesia. Finally the Hyderabad team extended a dinner invite to the CAS, Indonesia team and the IEEE student branch execom of ITENAS on the last day of the visit at a picturesque restaurant on hilltop from where the complete view of Bandung city could be enjoyed.

Outcome:

The workshop was able to achieve its planned outcome of improving IEEE CASS membership in Indonesia. The message of IEEE could reach out to 13 universities from various parts of Indonesia and participants were encouraged to join IEEE CAS Society and conduct similar programs. The IEEE CAS chapter of Hyderabad section is committed to technically support all such programs in Indonesia in future.

Event Photographs:

Members of CASS Hyderabad and Indonesia releasing the IoT kits during Inaugural

Workshop faculty and Teaching Assistant from Indonesia and Hyderabad

Workshop Faculty – Dr. Arif Sohel, Dr. P.A. Govindacharyulu and Dr. Atul Negi

Workshop Participants engrossed in programming and circuit design

Distribution of CASH prizes to winning team of Innovative Idea Contest in closing ceremony

Social Dinner on the last day

Finances:

Income

CASS Outreach Support from IEEE CASS Headquarters, USA – USD 4300
Income through 59 registrations in Indonesia - USD 1503
Total Income = USD 5803

Expenses:

S.NO	Item	Quantity	Amount(in USD)
1	*Flight Tickets (Air Asia – Low cost economy carrier)*	*5*	*1625*
2	*Visa Charges*	*5*	*175*
3	Accommodation for 5 nights (50% charges were borne by ITENAS university)	3 rooms	305
4	IoT Kits distributed to participating teams(15 Nos) and to ITENAS university student branch(8 Nos)	23	850
5	Lunch and snacks (three days)	85	1420
6	CASH Prizes	3	300
7	Workshop Bags	85	115
8	Wifi Router	2	61
9	Stationary and printing	-	90
10	Local travelling		230
11	Food for 5 persons of Indian delegation during stay and travel	5 days	335
		Total Expenses	**USD5506**
Income – 5803	**Expenses – 5506**		**Surplus - 297**

Note: Surplus is available in the IEEE Hyderabad Section account and is proposed to be utilized by CASS Hyderabad Section for CASS membership development activities in line with this proposal .

Report Prepared by :

Dr. Mohammed Arifuddin Sohel
Vice Chair, IEEE CAS/EDS Chapter, Hyderabad Section.
Professor and Head, ECE Department, MJCET