

REPORT

PRAGATI ENGINEERING COLLEGE

(Approved by AICTE, Permanently Affiliated to JNTUK, KAKINADA & Accredited by NBA)

1-378, A.D.B. Road, Surampalem, Near Peddapuram-533437



“IIoT-INDUSTRIAL INTERNET OF THINGS”

Date : 15-04-2024 To 16-04-2024

Day : Monday To Tuesday.

Turing Club organised by the Dept. of CSE – AI&ML of Pragati Engineering College in association with Career Guidance Cell is organizing a seminar on " IIOT-INDUSTRIAL INTERNET OF THINGS " as part of Industry 4.0.

REGISTRATION MADE BY STUDENTS:

S.NO	ROLLNO	NAME	BRANCH
1	22A31A4202	ARIPAKAJYOTHIRMAISIRIVARSHINI	CSE(AI&ML)
2	22A31A4204	CHINTA SUSHMA	CSE(AI&ML)
3	22A31A4205	LOKASRINITHYA	CSE(AI&ML)
4	22A31A4207	MEDISETTICHANDRIKA	CSE(AI&ML)
5	22A31A4208	MUTHINTISIRI	CSE(AI&ML)
6	22A31A4209	NADIMPALLIKUSUMAAISHWARYA	CSE(AI&ML)
7	22A31A4210	NADIMPALLYSRIVAISHNAVI	CSE(AI&ML)
8	22A31A4211	NIDADAVOLU SATHVIKA	CSE(AI&ML)
9	22A31A4212	NIMMAKAYALALAKSHMIPRASANNADURGA ANJANI	CSE(AI&ML)
10	22A31A4217	SWATHISRIBOLLAMREDDY	CSE(AI&ML)
11	22A31A4221	UPPULURISOWMYASRI	CSE(AI&ML)
12	22A31A4222	VASAMSETTIINDHUPRIYA	CSE(AI&ML)
13	22A31A4223	YALLAMOUNISRI	CSE(AI&ML)
14	22A31A4224	YEPURI ANUSHA	CSE(AI&ML)
15	22A31A4225	ALAJANGI SHANMUKHAAJAY	CSE(AI&ML)
16	22A31A4226	BANDARUBSVEERASAIGANESH	CSE(AI&ML)
17	22A31A4230	CHENNOJUSREEKANTH	CSE(AI&ML)
18	22A31A4231	CHETTIJAYAVEER	CSE(AI&ML)
19	22A31A4234	GOLAMARIVIVEKANANDAREDDY	CSE(AI&ML)
20	22A31A4235	GOPAVAJJULASUJITHKARTHIKEYA	CSE(AI&ML)
21	22A31A4239	KALDHARIRAHUL	CSE(AI&ML)
22	22A31A4240	KAMIDILIVINGSTANJOSEPH	CSE(AI&ML)
23	22A31A4242	KARRIUMASANKARHERAMBANAGASRINIVASA RAJU	CSE(AI&ML)
24	22A31A4245	MADABATHULASAIRAGHAVAADITYA	CSE(AI&ML)
25	22A31A4246	MARRENARENDARKARTHIKEYA	CSE(AI&ML)
26	22A31A4247	MEDIDINAGENDRA	CSE(AI&ML)
27	22A31A4249	NAKKINACHANDRA MOULI	CSE(AI&ML)
28	22A31A4251	NEKKALAACHIBABU	CSE(AI&ML)

S.NO	ROLLNO	NAME	BRANCH
29	22A31A4258	THAMARAPALLI MAHESH	CSE(AI&ML)
30	22A31A4259	THURAKAKRANTHI KEERTHAN	CSE(AI&ML)
31	22A31A4264	ARANGISRIVALLESWARI	CSE(AI&ML)
32	22A31A4266	BADUGUAKSHAYA	CSE(AI&ML)
33	22A31A4267	BAYYAVARAPUSRIRAMYA	CSE(AI&ML)
34	22A31A4270	MOKSHAGNAGADUPUDI	CSE(AI&ML)
35	22A31A4273	GARIKANAPRASHANTISHIVASAIPRIYA	CSE(AI&ML)
36	22A31A4274	GUTTULACHINMAYEESAHITHYA	CSE(AI&ML)
37	22A31A4275	KAMIREDDILAKSHMIKEERTHISRI	CSE(AI&ML)
38	22A31A4278	MAMIDI RESHMA	CSE(AI&ML)
39	22A31A4282	PABBINEEDISATYANAGAVAISHNAVIDEVI	CSE(AI&ML)
40	22A31A4285	PUSARLA MANASWINI	CSE(AI&ML)
41	22A31A4286	SAMIKSHAYADAV	CSE(AI&ML)
42	22A31A4287	SATYAVARAPULAKSHMIDHANYASRI	CSE(AI&ML)
43	22A31A4288	TANISHAPERLA	CSE(AI&ML)
44	22A31A4289	VADREVVU LAKSHMIKAMESWARI	CSE(AI&ML)
45	22A31A4291	VANAPARTHIRENUSRIAMRUTHA	CSE(AI&ML)
46	22A31A4297	BHEEMANA VENKATALAKSHMISAIDINESH	CSE(AI&ML)
47	22A31A4298	DODDIPATLADEVISRIVIKAS	CSE(AI&ML)
48	22A31A42A1	KESANA VENKATA RAMESH	CSE(AI&ML)
49	22A31A42A3	KILLAMSETTIVNAGASAMPATHSURYA MANAS	CSE(AI&ML)
50	22A31A42A4	KOKKARLAGADDABHARATHKUMARVARMA	CSE(AI&ML)
51	22A31A42A6	KOPPADA PRUDHVIVINAYAK	CSE(AI&ML)
52	22A31A42B0	MANCHALA DVVS SWAROOP	CSE(AI&ML)
53	22A31A42B1	MANDAPALLIKIRANTEJA	CSE(AI&ML)
54	22A31A42B5	MOTIPALLIRAMAKRISHNASUBRAHMANYAM	CSE(AI&ML)
55	22A31A42B6	MUDUNURIKARTHIKSURYASAIVARMA	CSE(AI&ML)

S.NO	ROLLNO	NAME	BRANCH
56	22A31A42B8	NIDIGATLAROOPCHAND	CSE(AI&ML)
57	22A31A42C2	MANOJSWAMYSARELLA	CSE(AI&ML)
58	22A31A42C3	SHAIKMOHAMMEDIMRAN	CSE(AI&ML)
59	22A31A42C4	SHAIKTOWSIQ	CSE(AI&ML)
60	22A31A42C6	VADAPALLIHEMANTH SAI	CSE(AI&ML)
61	22A31A42C9	BALLASRIHARITHA	CSE(AI&ML)
62	22A31A42D5	GUNAPARTHIPRIYADURGA	CSE(AI&ML)
63	22A31A42E1	MOHAMMADRABIYATABASSUM	CSE(AI&ML)
64	22A31A42E3	PALACHARLALALITHASAHITYA	CSE(AI&ML)
65	22A31A42E8	REDNAMNAGAMADHAVI	CSE(AI&ML)
66	22A31A42F8	CHUNDURIRAKESHKUMAR	CSE(AI&ML)
67	22A31A42G4	JONNALAGADDANAVEEN	CSE(AI&ML)
68	22A31A42G7	KARRISAIMANIKANTAREDDY	CSE(AI&ML)
69	22A31A42H2	KOTIKALAPUDIBALARAMAKRISHNA	CSE(AI&ML)
70	22A31A42H7	RAMBALAPUJAYAVARDHANRAJ	CSE(AI&ML)
71	22A31A42H8	SERAMDASUJAIABHIRAMKUMAR	CSE(AI&ML)
72	22A31A42I7	MERLAVENKATATHARAKARAMAKRISHNATEJA	CSE(AI&ML)
73	23A35A4201	BOOREDDI CHETHANA	CSE(AI&ML)
74	23A35A4204	VASSEGANGARATNAMANASA	CSE(AI&ML)
75	23A35A4206	ANUSURI KISHORE	CSE(AI&ML)
76	23A35A4208	JAMMANAVEERAVENKATASATYANARAYANA	CSE(AI&ML)
77	23A35A4210	PULAKALA VAMSI	CSE(AI&ML)
78	23A35A4213	CHOKKASIVA CHARAN	CSE(AI&ML)
79	23A35A4219	KARANAMBABYSATYA	CSE(AI&ML)

S.NO	ROLLNO	NAME	BRANCH
1	23A31A4209	KOLASRIVANAJAGEETHA	CSE(AI&ML)
2	23A31A4210	KOPPANAMONIKASREEBALA	CSE(AI&ML)
3	23A31A4212	KORIBILLIBHAVYASRI	CSE(AI&ML)
4	23A31A4215	MADDUKURISRILAYA	CSE(AI&ML)
5	23A31A4216	MANDAPATI HARSHITHA	CSE(AI&ML)
6	23A31A4217	MUMMIDILAKSHMISAIPAVANAABHILASYA	CSE(AI&ML)
7	23A31A4219	PARAMSETTITEJASRI	CSE(AI&ML)
8	23A31A4223	PINJALATEJASRI	CSE(AI&ML)
9	23A31A4226	VADDISAHITYA	CSE(AI&ML)
10	23A31A4229	VEDULLADIVYA	CSE(AI&ML)
11	23A31A4230	VUNDIKAVYA	CSE(AI&ML)
12	23A31A4231	YELIDINDIRAMATULASI	CSE(AI&ML)
13	23A31A4232	AGUTUMUDIHEMANTH	CSE(AI&ML)
14	23A31A4235	BUDIDHASATHWIKABHIRAM	CSE(AI&ML)
15	23A31A4241	ETHAKOTAPHANIVEERA VENKATAADITHYA	CSE(AI&ML)
16	23A31A4243	KANCHUPATLAKARTHIKEYA	CSE(AI&ML)
17	23A31A4245	KATHASAI VENUAKSHAY	CSE(AI&ML)
18	23A31A4265	ADDENKISATYASANTOSHIMAHALAKSHMI	CSE(AI&ML)
19	23A31A4266	ALLAMPALLISHARONROSE	CSE(AI&ML)
20	23A31A4267	AMJURICHAITANYASREYA	CSE(AI&ML)
21	23A31A4274	GEDDADALAVANYA	CSE(AI&ML)
22	23A31A4279	KOTHASUGANYA	CSE(AI&ML)
23	23A31A4282	MANEPALLIGAYATHRIBHAVANA DEVI	CSE(AI&ML)
24	23A31A4283	MEENA VALLILAKSHMI APOORVA	CSE(AI&ML)
25	23A31A4285	NUNNANAGASRILAKSHMI	CSE(AI&ML)
26	23A31A4287	PAMPANAJYOTHIKASRIRAMANI	CSE(AI&ML)
27	23A31A4289	SABELLAKAVYASU VARNIKA	CSE(AI&ML)

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28	23A31A4290	SHAIKAHMADUNNISA	CSE(AI&ML)
29	23A31A4294	TANNEERUKAVYAVENKATASRI	CSE(AI&ML)
30	23A31A4295	THELLAMEKALARENUKADEVI	CSE(AI&ML)
31	23A31A4296	THOTASANTHI	CSE(AI&ML)
32	23A31A4298	ALLENBRIGHTONBASCOM	CSE(AI&ML)
33	23A31A42A2	DASARIAJAYKUMAR	CSE(AI&ML)
34	23A31A42A3	DEGALANARAYANKARTHEEK	CSE(AI&ML)
35	23A31A42B0	KARANAMSIVARUSHINADH	CSE(AI&ML)
36	23A31A42B6	MANDAVARUNSANDESH	CSE(AI&ML)
37	23A31A42C0	MIRIYALANAVEEN	CSE(AI&ML)
38	23A31A42C3	PEDDIREDDILAKSHMIKRISHNAPAVAN	CSE(AI&ML)
39	23A31A42C9	VADLAMURIBHAVANISAIVINAY	CSE(AI&ML)
40	23A31A42D2	ATTILIDEEPTHIPRIYA	CSE(AI&ML)
41	23A31A42D6	CHAKRAVARTHULASRISAIVARSHA	CSE(AI&ML)
42	23A31A42D7	CHODISETTIYOGITHARAMYASRI	CSE(AI&ML)
43	23A31A42D9	DUDALASRIYA	CSE(AI&ML)
44	23A31A42E1	KADALISRUJANA	CSE(AI&ML)
45	23A31A42E7	MANIVISETTILAKSHMISRI	CSE(AI&ML)
46	23A31A42E8	MONDIKOUSALYA	CSE(AI&ML)
47	23A31A42F2	PYDIKONDALALEELAMAHALAKSHMI	CSE(AI&ML)
48	23A31A42F6	THIRAGATIRENUKALAKSHMI	CSE(AI&ML)
49	23A31A42F8	VEEDHISRISAIKOUUDI	CSE(AI&ML)

ATTENDED STUDENT LIST:

F.N - 16/4

PRAGATI ENGINEERING COLLEGE
(Autonomous)

DEPARTMENT OF CSE (Artificial Intelligence & Machine Learning)

S.NO	ROLL NO	NAME	SIGNATURE
1	23A31A4209	KOLA SRI VANAJA GEETHA	K. Vanaja
2	23A31A4210	KOPPANA MONIKA SREE BALA	K. Monika
3	23A31A4212	KORIBILLI BHAVYA SRI	K. Bhavya sri
4	23A31A4215	MADDUKURI SRILAYA	M. Srilaya
5	23A31A4216	MANDAPATI HARSHITHA	Harshitha
6	23A31A4217	MUMMIDI LAKSHMI SAI PAVANA ABHILASYA	M. Lakshmi
7	23A31A4219	PARAMSETTI TEJASRI	P. Tejasri
8	23A31A4223	PINJALA TEJA SRI	P. Teja sri
9	23A31A4226	VADDI SAHITYA	V. Sahitya
10	23A31A4229	VEDULLA DIVYA	V. Divya
11	23A31A4230	VUNDI KAVYA	V. Kavya
12	23A31A4231	YELIDINDI RAMA TULASI	Y. Rama Tulasi
13	23A31A4232	AGUTUMUDI HEMANTH	A. Hemanth
14	23A31A4235	BUDIDHA SATHWIK ABHIRAM	B. Abhiram
15	23A31A4241	ETHAKOTA PHANI VEERA VENKATA ADITHYA	E.P.V. Adithya
16	23A31A4243	KANCHUPATLA KARTHIKEYA	K. Karthikeya
17	23A31A4245	KATHA SAI VENU AKSHAY	K. Sai Venu Akshay
18	23A31A4265	ADDENKI SATYA SANTOSHI MAHALAKSHMI	A. Santoshi
19	23A31A4266	ALLAMPALLI SHARON ROSE	A. Sharon rose
20	23A31A4267	AMJURI CHAITANYA SREYA	A. Chaitanya sreya
21	23A31A4274	GEDDADA LAVANYA	G. Lavanya
22	23A31A4279	KOTHA SUGANYA	K. Suganya
23	23A31A4282	MANEPALLI GAYATHRI BHAVANA DEVI	M. G. Bhavana devi
24	23A31A4283	MEENAVALLI LAKSHMI APOORVA	M.L. Apoorva
25	23A31A4285	NUNNA NAGA SRILAKSHMI	N.N. SriLakshmi
26	23A31A4287	PAMPANA JYOTHIKA SRI RAMANI	P. Jyothika
27	23A31A4289	SABBELLA KAVYA SUVARNIKA	S. kavya Suvarnika

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S.NO	ROLL NO	NAME	SIGNATURE
28	23A31A4290	SHAIK AHMADUNNISA	Sk. Ahmadunnisa
29	23A31A4294	TANNEERU KAVYA VENKATA SRI	T. Kavya Venkata Sri
30	23A31A4295	THELLAMEKALA RENUKA DEVI	T. Renuka Devi
31	23A31A4296	THOTA SANTHI	T. Santhi
32	23A31A4298	ALLEN BRIGHTON BASCOM	Allen Brighton
33	23A31A42A2	DASARI AJAY KUMAR	D. AJAY
34	23A31A42A3	DEGALA NARAYAN KARTHEEK	D. N. Karthi
35	23A31A42B0	KARANAM SIVA RUSHINADH	R. RUSHI
36	23A31A42B6	MANDA VARUN SANDESH	M. Varun Sandesh
37	23A31A42C0	MIRIYALA NAVEEN	M. Naveen
38	23A31A42C3	PEDDIREDDI LAKSHMI KRISHNA PAVAN	Pavan
39	23A31A42C9	VADLAMURI BHAVANI SAI VINAY	Vinay
40	23A31A42D2	ATTILI DEEPTHI PRIYA	A. Sunthipriya
41	23A31A42D6	CHAKRAVARTHULA SRI SAI VARSHA	Ch. Varsha
42	23A31A42D7	CHODISETTI YOGITHA RAMYA SRI	Ch. Y. Ramya Sri
43	23A31A42D9	DUDALA SRIYA	D. Sriya
44	23A31A42E1	KADALI SRUJANA	K. Srujana
45	23A31A42E7	MANIVISETTI LAKSHMI SRI	M. Lakshmi Sri
46	23A31A42E8	MONDI KOUSALYA	M. Kousalya
47	23A31A42F2	PYDIKONDALA LEELA MAHALAKSHMI	P. Leela
48	23A31A42F6	THIRAGATI RENUKA LAKSHMI	T. Renuka Lakshmi
49	23A31A42F8	VEEDHI SRI SAI KOUMUDI	V. Kounudi

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DEPARTMENT OF CSE (Artificial Intelligence & Machine Learning)

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1	22A31A4202	ARIPAKA JYOTHIRMAI SIRI VARSHINI	A. J. S. Varshini
2	22A31A4204	CHINTA SUSHMA	Ch. Sushma
3	22A31A4205	LOKA SRI NITHYA	L. Nithya
4	22A31A4207	MEDISETTI CHANDRIKA	M. Chandrika
5	22A31A4208	MUTHINTI SIRI	M. Siri
6	22A31A4209	NADIMPALLI KUSUMA AISHWARYA	N. K. Aishwarya
7	22A31A4210	NADIMPALLY SRI VAISHNAVI	N. Sri Vaishnavi
8	22A31A4211	NIDADAVOLU SATHVIKA	N. Sathvika
9	22A31A4212	NIMMAKAYALA LAKSHMI PRASANNA DURGA ANIANI	N. Anjani
10	22A31A4217	SWATHI SRI BOLLAMREDDY	B. Swathi Sri
11	22A31A4221	UPPULURI SOWMYA SRI	U. Sowmya
12	22A31A4222	VASAMSETTI INDHU PRIYA	V. Indhu
13	22A31A4223	YALLA MOUNI SRI	Y. Mouni Sri
14	22A31A4224	YEPURI ANUSHA	Y. Anusha
15	22A31A4225	ALAJANGI SHANMUKHA AJAY	A. Shanmukha
16	22A31A4226	BANDARU B S VEERA SAI GANESH	B. B. S. V. Sai Ganesh
17	22A31A4230	CHENNOJU SREEKANTH	Ch. Sreeranth
18	22A31A4231	CHETTI JAYAVEER	Ch. Jayaveer
19	22A31A4234	GOLAMARI VIVEKANANDA REDDY	G. Vivekananda Reddy
20	22A31A4235	GOPAVAJJULA SUJITH KARTHIKEYA	G. Sujith
21	22A31A4239	KALDHARI RAHUL	K. Rahul
22	22A31A4240	KAMIDI LIVING STAN JOSEPH	K. Living Stan Joseph
23	22A31A4242	KARRI UMASANKAR HERAMBANAGA SRINIVASA RAO	K. U. S. H. N. S. Rao
24	22A31A4245	MADABATHULA SAI RAGHAVA ADITYA	M. Aditya
25	22A31A4246	MARRE NARENDAR KARTHIKEYA	M. Narendar Karthikeya
26	22A31A4247	MEDIDI NAGENDRA	M. Nagendra
27	22A31A4249	NAKKINA CHANDRA MOULI	N. Chandra Mouli
28	22A31A4251	NEKKALA ACHIBABU	N. Achibabu

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29	22A31A4258	THAMARAPALLI MAHESH	T. Mahesh
30	22A31A4259	THURAKA KRANTHI KEERTHAN	T. Kranti Keethan
31	22A31A4264	ARANGI SRI VALLESWARI	A. Srivalli
32	22A31A4266	BADUGU AKSHAYA	B. Akshaya
33	22A31A4267	BAYYAVARAPU SRIRAMYA	Ramy e
34	22A31A4270	MOKSHAGNA GADUPUDI	C. Mokshagna
35	22A31A4273	GARIKANA PRASHANTI SHIVA SAI PRIYA	G. Prashanti
36	22A31A4274	GUTTULA CHINMAYEE SAHITHYA	C. Chinmayee G
37	22A31A4275	KAMIREDDI LAKSHMI KEERTHI SRI	K. L. Keerthisri
38	22A31A4278	MAMIDI RESHMA	M. Reshma
39	22A31A4282	PABBINEEDI SATYA NAGA VAISHNAVI DEVI	P. Vaishnavi
40	22A31A4285	PUSARLA MANASWINI	P. Manaswini
41	22A31A4286	SAMIKSHA YADAV	Y. Samiksha
42	22A31A4287	SATYAVARAPU LAKSHMI DHANYASRI	S. L. Dhanya Sri
43	22A31A4288	TANISHA PERLA	Tanisha
44	22A31A4289	VADREVVU LAKSHMI KAMESWARI	V. Kameswari
45	22A31A4291	VANAPARTHI RENU SRI AMRUTHA	V. Renu Sri Amrutha
46	22A31A4297	BHEEMANA VENKATA LAKSHMI SAI DINESH	B. Dinesh
47	22A31A4298	DODDIPATLA DEVI SRI VIKAS	D. Dev. Sri Vikas
48	22A31A42A1	KESANA VENKATA RAMESH	K. V. Ramesh
49	22A31A42A3	KILLAMSETTI V NAGA SAMPATH SURYA MANAS	K. V. N. S. Manoj
50	22A31A42A4	KOKKARLAGADDA BHARATH KUMAR VARMA	K. Bharath
51	22A31A42A6	KOPPADA PRUDHVI VINAYAK	K. Prudhvi
52	22A31A42B0	MANCHALA D V V S SWAROOP	M. Swaroop
53	22A31A42B1	MANDAPALLI KIRAN TEJA	M. Kiran Teja
54	22A31A42B5	MOTIPALI RAMA KRISHNA SUPRAHIMANYAM	M. Rama Krishna
55	22A31A42B6	MUDUNURI KARTHIK SURYA SAI VARMA	M. Kartiik
56	22A31A42B8	NIDIGATLA ROOPCHAND	R. Roopchand
57	22A31A42C2	MANOJ SWAMY SARELLA	Manoj swamy S

S.NO	ROLL NO	NAME	SIGNATURE
58	22A31A42C3	SHAIK MOHAMMED IMRAN	Imran
59	22A31A42C4	SHAIK TOWSIQ	Shaik Towsiq
60	22A31A42C6	VADAPALLI HEMANTH SAI	Hemant
61	22A31A42C9	BALLA SRIHARITHA	B. Sriharitha
62	22A31A42D5	GUNAPARTHI PRIYA DURGA	G. Priya
63	22A31A42E1	MOHAMMAD RABIYA TABASSUM	MD. Kabir
64	22A31A42E3	PALACHARLA LALITHA SAHITYA	P. Lalitha Sahitya
65	22A31A42E8	REDNAM NAGA MADHAVI	R. Naga Madhav?
66	22A31A42F8	CHUNDURI RAKESH KUMAR	Ch. Rakesh Kumar
67	22A31A42G4	JONNALAGADDA NAVEEN	J. Naveen
68	22A31A42G7	KARRI SAI MANIKANTA REDDY	R. Reddy
69	22A31A42H2	KOTIKALAPUDI BALA RAMA KRISHNA	K. Balaramakrishna
70	22A31A42H7	RAMBALAPU JAYAVARDHAN RAJ	Vardhan
71	22A31A42H8	SERAMDASU JAI ABHIRAM KUMAR	S. J. Abhiram Kumar
72	22A31A42I7	MERLA VENKATA THARAKA RAMA KRISHNA TEJA	Tharak
73	23A35A4201	BOOREDDI CHETHANA	B. Chethana
74	23A35A4204	VASSE GANGARATNA MANASA	V. G. Manasa
75	23A35A4206	ANUSURI KISHORE	A. Kishore
76	23A35A4208	JAMMANA VEERA VENKATA SATYANARAYANA	J. Satyanarayana
77	23A35A4210	PULAKALA VAMSI	P. Vamsi
78	23A35A4213	CHOKKA SIVA CHARAN	C. Sivacharan
79	23A35A4219	KARANAM BABYSATYA	K. B. Satya
80			

FEED BACK ANALYSIS

How satisfied were you with the session content:

Total number of Students : 124

Number Of Students Rating 5: 45

Number Of Students Rating 4: 67

Number Of Students Rating 3: 8

Number Of Students Rating 2: 1

Number Of Students Rating 1: 3

Overall rating : Good

TOPICS COVERED IN WEBINAR :

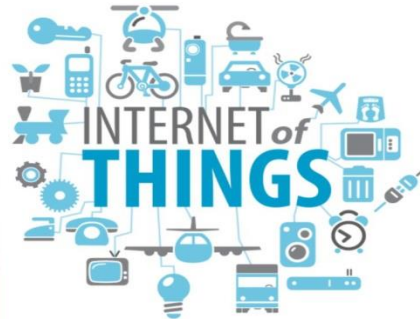
Innovians Technologies

Advanced IoT Manual



Innovians Technologies

Implementing New Ideas & Technology



Advanced IoT Workshop Manual

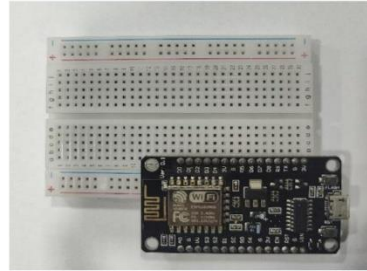
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Project 1: Simple LED Project



Exercise 1: LED On Project

Components Required:

1. NodeMCU Board
2. One Red LED
3. Micro USB Cable

Steps to Follow:

1. Mount the NodeMCU Pins Do to 3V Pin on Breadboard from A16 to A30.
2. Connect +ve of LED on E23 on Breadboard & -ve of LED on E22 on breadboard.
3. Run Arduino Software.
4. Create Sketch for LED Project.
5. Connect the USB cable with NodeMCU & Computer.
6. Click on Upload Option to download the program in Arduino.

Program

```
void setup ()
{
  pinMode (D5, OUTPUT);
}
void loop ()
{
  digitalWrite(D5, HIGH);
}
```

Exercise 2: LED Blink Project

Components Required:

1. Arduino UNO Board
2. One Red LED
3. Arduino USB Cable

Steps to Follow:

1. Mount the NodeMCU Pins Do to 3V Pin on Breadboard from A16 to A30.
2. Mount the LED on
3. Connect +ve of LED on E23 on Breadboard & -ve of LED on E22 on breadboard.
4. Run Arduino Software.
5. Create Sketch for LED Blink Project.
6. Connect the USB cable with NodeMCU & Computer.
7. Click on Upload Option to download the program in Arduino.

Program

```
void setup ()
{
  pinMode (D5, OUTPUT);
}
```

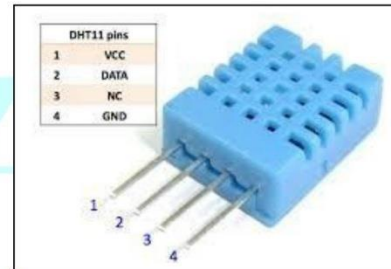


```
void loop ()  
{  
  digitalWrite(D5, HIGH);  
  delay(2000);  
  digitalWrite(D5, LOW);  
  delay(2000);  
}
```

Project 2: Integrating Temp & Humidity Sensor and Reading Enviornmental Values

Components Required:

1. NodeMCU Board
2. DHT11 (Temp. & Humidity Sensor)
3. USB Cable
4. 4.7K Ohm Resistor
5. Breadboard
6. Jumpers Wire M-M



Steps to Follow:

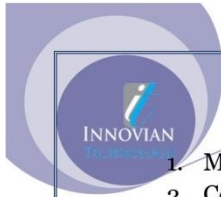
1. Mount the NodeMCU Pins DO to 3V Pin on Breadboard from A16 to A30.
2. Connect DHT11 on **J10** to **J13** wherein **Pin 1** of DHT11 on **J10** and **Pin 4** of DHT11 on **J13**.
3. Connect a 4.7K Ohm resistor between **H10 & H11** of breadboard (Between VCC & Data Pin of DHT11).
4. Connect a jumper wire between **F13** of breadboard & **E29** of Breadboard.
5. Connect a jumper wire between **F11** of breadboard to **E23** on **Breadboard**.
6. Connect a jumper wire between **F10** of breadboard to **E30** on **Breadboard**.
7. Import Library for DHTLib in Arduino IDE software.
8. Open Sketch for DHT11 Test in DHTLib Examples in Arduino IDE.
9. Change the DHT11_PIN 5 to DHT11_PIN D5 in the program.
10. Connect the USB cable with NodeMCU & Computer and then upload the program.
11. Open the Serial Communication Window and check the values.

Project 3: Voice Controlled Home Automation

Components Required:

1. NodeMCU Board
2. HC-05 Bluetooth Module
3. Three LEDs (Red, Yellow & Green)
4. NodeMCU USB Cable
5. Breadboard
6. Jumper Wires M-M & M-F.

Steps to Follow:



1. Mount the NodeMCU Pins DO to 3V Pin on Breadboard from A16 to A30.
2. Connect -ve of Red LED on H9 & +ve on H10.
3. Connect -ve of Yellow LED on H14 & +ve on H15.
4. Connect -ve of Green LED on H19 & +ve on H20.
5. Connect a jumper wire between **-ve** Terminal of Bread Board (GND) & F9.
6. Connect a jumper wire between **-ve** Terminal of Bread Board (GND) & F14.
7. Connect a jumper wire between **-ve** Terminal of Bread Board (GND) & F19.
8. Connect a Jumper Wire from E29 to Bread Board **-ve** (GND) Terminal Strip.
9. Connect a jumper wire between E16 & F10.
10. Connect a jumper wire between E17 & F15.
11. Connect a jumper wire between E18 & F20.
12. Mount the HC-05 Bluetooth Module between J25 to J30 wherein STATE Pin on J25 & EN Pin on J30.
13. Connect a Jumper Wire between breadboard **-ve** Terminal of Bread Board (GND) to G28.
14. Connect a Jumper between G27 to E27.
15. Connect a Jumper between G26 to E28.
16. Connect a M-F Jumper Wire between G29 to V_{IN} of NodeMCU.
17. Open the Sketch for **Voice-Activation-Arduino** Program.
18. Connect the USB cable with NodeMCU & Computer.
19. Click on Upload Option to download the program in NodeMCU. **Note:** While downloading the program please disconnect the Rx & Tx Jumper wire from Bread Board (E27 & E29). Once you finish with the download then re connect the Rx & Tx Jumper Wire.
20. Download the Arduino Voice Control App from Google Playstore in your Android Smartphone.
21. Run the Arduino Voice App in your Android Smartphone.
22. App will ask you to enable the Bluetooth. Allow It.
23. Search for your Bluetooth Device HC-05-(Group No). Once Connected Red Led on Bluetooth module will blink once per second instead of fast blinking.
24. Then control the devices from your Voice Commands on Arduino Voice Control App.
25. Voice Commands to be used: **light on, light off, fan on, fan off, ac on, ac of, everything on, everything of.**

Project 8: Control Devices using Localhost Web Server for Home Automation

Components Required:

1. NodeMCU Board
2. One Red LED
3. Micro USB Cable



Steps to Follow:

1. Mount the NodeMCU Pins Do to 3V Pin on Breadboard from A16 to A30.
2. Connect +ve of LED on E23 on Breadboard & -ve of LED on E22 on breadboard.
3. Connect NodeMCU to Laptop via USB Cable.
4. Open the Sketch of Run Light Weight Server in Arduino.
5. Enter the SSID & Password for Wifi.
6. Upload the Program into NodeMCU.
7. To Check your home server, simply enter the IP Address received in Serial Monitor of Arduino in web browser.

Project 9: Use Arduino to Upload free data from Environmental Sensors to Cloud Server.

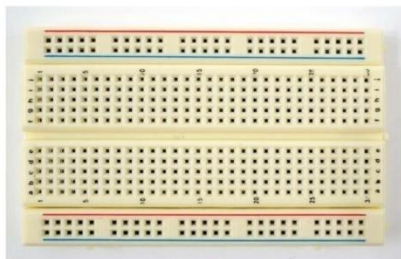
Components Required:

1. NodeMCU Board
2. DHT11 (Temp. & Humidity Sensor)
3. USB Cable
4. 4.7K Ohm Resistor
5. Breadboard
6. Jumpers Wire M-M

Steps to Follow:

1. Repeat Steps 1 to 6 of Project 2 – Reading Environmental Values.
2. Import DHT11 Lib in Arduino IDE software.
3. Login to your ThingSpeak Account & Click on Channel. Then Click on Create New Channel.
4. Give a Channel Name Weather Station, Select Field1 and write Temperature in Field1 Text Field. Select Field 2 & write Humidity in Field2 Text Field. Save.
5. Note the Write API & Channel Number from API tab.
6. Connect USB Cable from NodeMCU to Laptop.
7. Open the Sketch for DHT11-Thingspeak & enter the API Key, Channel Number, SSID & Password in program.
8. Upload the program to NodeMCU & then check your Things Speak Channel.

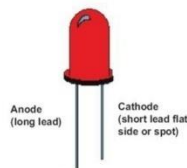
Major Electronics Components Images



Breadboard



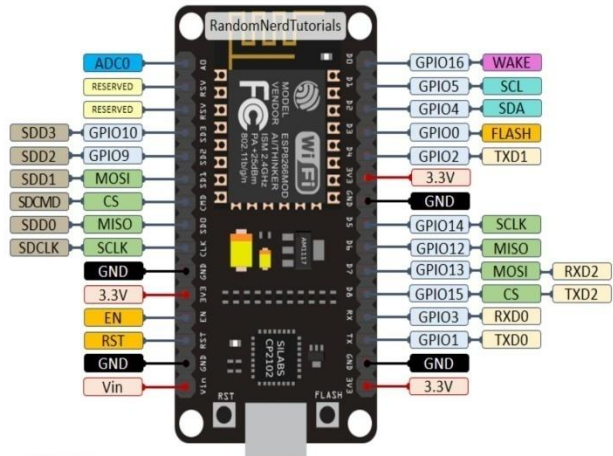
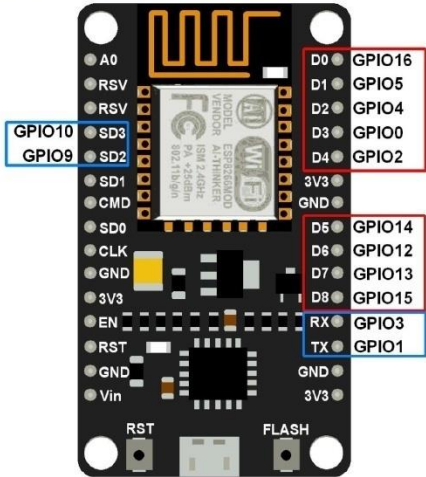
(a)



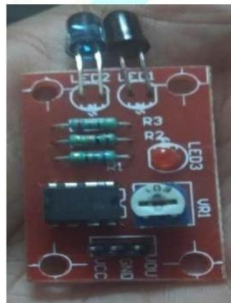
(b)

LED

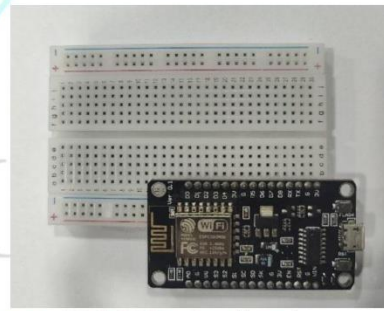
NodeMCU



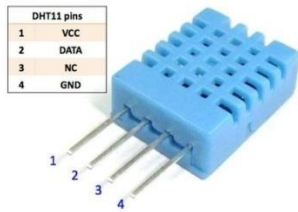
HC-05 Bluetooth Module



IR Sensor

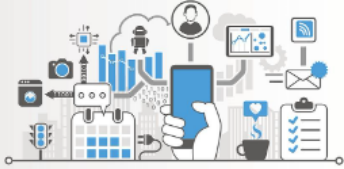


NodeMCU + Breadboard



DHT11 Temp & Humidity Sensor

IOT



IoT - Internet of things

"Anything that can be connected, will be connected"

CONTENT

1. Introduction
2. Benefits of IoT
3. Application and use of IoT
4. IoT challenges
5. What needs to be done?
6. Top IoT technologies and trends
7. Future of IoT
8. Q&A

***If you think that the internet has changed your life, think again.
The IoT is about to change it all over again!”***

— Brendan O'Brien, Aria systems.

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***“Why go Online to do things, when you can do it Offline !
Think- Internet of Things !”***

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INTERNET REVOLUTION

Internet of boffins	Internet of geeks	Internet of masses	Mobile Internet	Internet of things
				
1969 - 1995	1995 - 2000	2000 - 2007	2007 - 2011	2012 & beyond

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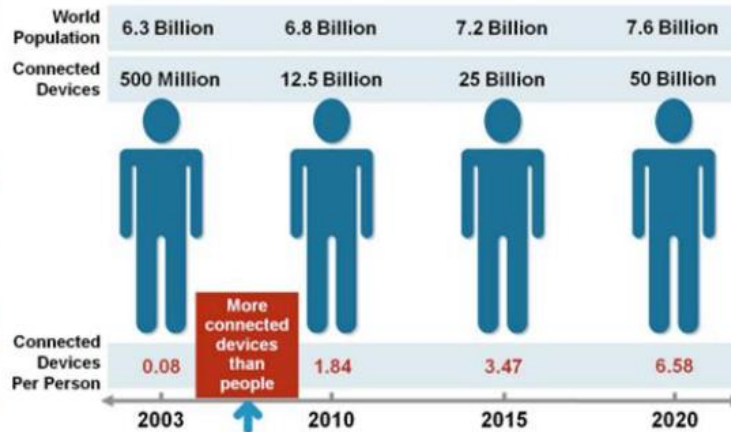
STARTING FROM THE INTERNET



- Internet appears everywhere in the world but it is still a connection between people and people

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INTERNET USAGE & POPULATION STATISTICS



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INTRODUCTION – WHAT IS IOT?

- The Internet of things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction - **IoT**
- A **thing** in the IoT can be a person with a heart monitor implant, a farm animal with a biochip transponder, an automobile that has built-in sensors to alert the driver when tire pressure is low or any other natural or man-made object that can be assigned an IP address and is able to transfer data over a network.
- IoT is a sensor network of billions of *smart devices* that connect people, systems and other applications to collect and share data.

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INTRODUCTION – CONT'D

- IoT is a concept of connecting any device with an on and off switch to the Internet (and/or to each other). This includes everything from cellphones, coffee makers, washing machines, headphones, lamps, wearable devices and almost anything else you can think of. This also applies to components of machines, for example a jet engine of an airplane or the drill of an oil rig – **Forbes**.
- The IoT is a giant network of connected "things" (which also includes people). The relationship will be between people-people, people-things, and things-things.
- The dominant *consumer IoT device*, worldwide, is the smart TV. Between 25-35% cent of consumers worldwide own a television that can connect to the Internet, according to a Deloitte research. However, other areas of the IoT market are growing rapidly.

WHY IOT?

- Organizations in a *variety of industries* are using IoT to operate more efficiently, better understand customers to deliver enhanced customer service, improve decision-making and increase the value of the business.

IOT ECOYSTEM

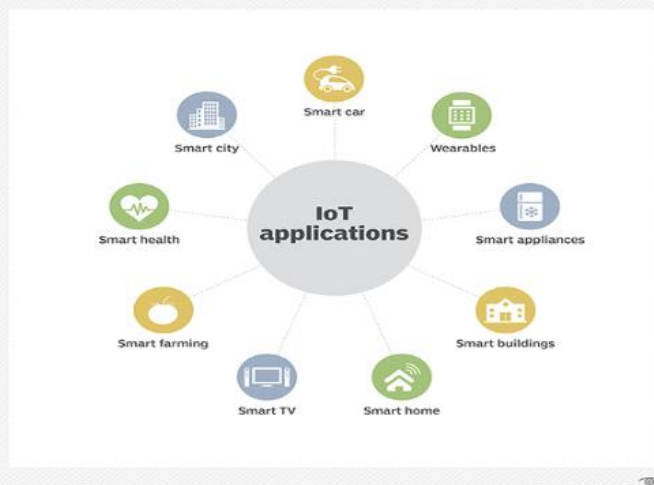
- An IoT ecosystem consists of web-enabled smart devices that use embedded processors, sensors and communication hardware to collect, send and act on data they acquire from their environments.
- IoT devices share the sensor data they collect by connecting to an IoT gateway or other edge device where data is either sent to the cloud to be analyzed or analyzed locally.

BENEFITS OF IOT

IoT offers a number of benefits to organizations, enabling them to:

1. Monitor their overall business processes;
2. Improve the customer experience;
3. Save time and money;
4. Enhance employee productivity;
5. Integrate and adapt business models;
6. Make better business decisions; and
7. Generate more revenue.

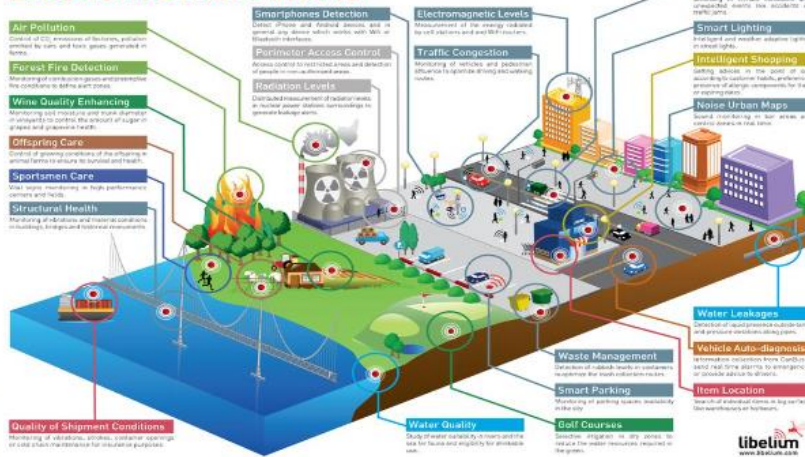
CONSUMER AND ENTERPRISE IOT APPLICATIONS



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THE SMART WORLD OF THE FUTURE – USING IOT

Libelium Smart World



Source:
<https://www.forbes.com/sites/iacobmorgan/2014/05/13/simple-explanation-internet-things-that-anyone-can-understand/#ef2433f1d091>

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IOT ECOYSTEM



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CONSUMER AND ENTERPRISE IOT APPLICATIONS



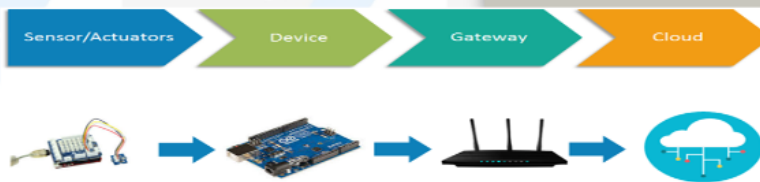
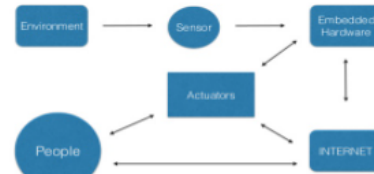
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IOT COMPONENTS & HOW IOT WORKS ?

Major Components of IoT



How IoT works ?



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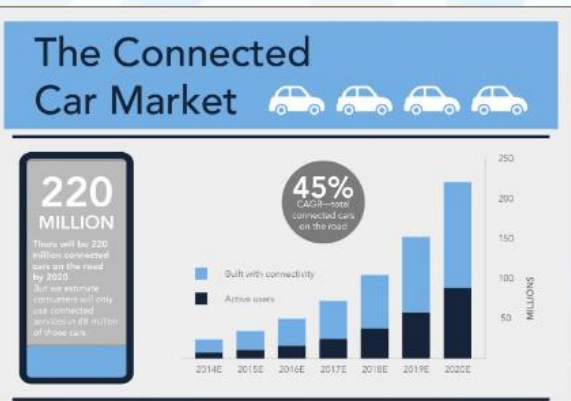
POLL

State whether true or false: An IoT network is a collection of interconnected devices.

- a) True
- b) False

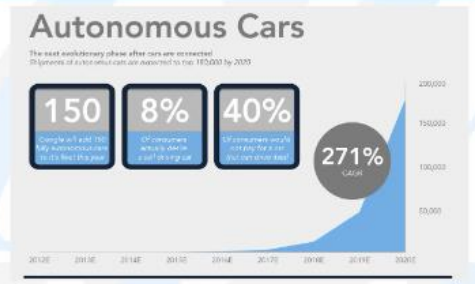
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CONNECTED CAR STORY



The connected car is equipped with internet connections and software that allow people to stream music, look up movie times, be alerted of traffic and weather conditions, and even power driving-assistance services such as self-parking.

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IOT CHALLENGES

Security, privacy and data sharing issues

- Because IoT devices are closely connected, all a hacker has to do is exploit one vulnerability to manipulate all the data, rendering it unusable. And manufacturers that don't update their devices regularly -- or at all -- leave them vulnerable to cybercriminals.
- However, hackers aren't the only threat to the internet of things; privacy is another major concern for IoT users. For instance, companies that make and distribute consumer IoT devices could use those devices to obtain and sell users' personal data.
- Challenges with IoT:
 - i. Security of data – same as above
 - ii. Reliability and stability – of IIoT sensors
 - iii. Connectivity of all the systems in IIoT setup – no maintenance envisioned?
 - iv. Blending legacy systems – IIoT is new in the market

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WHAT NEEDS TO BE DONE?

1. Consumer education
2. Product reviews and comparisons
3. Vulnerability disclosure and vulnerability markets
4. Self-certification and voluntary codes of practice
5. Trust marks and labels like Internet Society's Online Trust Alliance (OTA) IoT Trust Framework
6. Government initiatives
7. Mandated security requirements
8. Mandated certification
9. Liability reform
10. Etc.
- 11. No intervention!?**

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THE FUTURE OF IOT



- Bain & Company expects annual IoT revenue of hardware and software to exceed \$450 billion by 2020.
- McKinsey & Company estimates IoT will have an \$11.1 trillion impact by 2025.
- IHS Markit believes the number of connected IoT devices will increase 12% annually to reach 125 billion in 2030.
- Gartner assesses that 20.8 billion connected things will be in use by 2020, with total spend on IoT devices and services to reach \$3.7 trillion in 2021.
- By 2023, the average CIO will be responsible for more than three times as many endpoints as this year – Gartner
- Gartner forecasts that worldwide IoT Security Spending will be 3.11 billion by 2021 largely driven by regulatory compliance.
- Great improvements in the security of IoT devices driven by manufacturers' own initiatives as well users' demand for better secure devices.
- Global manufacturers will use analytics data recorded from connected devices to analyze processes and identify optimization possibilities, according to IDC and SAP.
- ***Business Insider forecasts that by 2025, 75 percent of new cars will come with built-in IoT connectivity.***

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CHALLENGES OF IOT



1. Technological Standardization in most areas are still remain fragmented.
2. Huge amount of Data
3. Managing and fostering rapid innovation is a challenge for governments
4. Privacy and security
5. Testing of Multi-Discipline Systems
6. Absence of governance

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CHALLENGES & ISSUES

• Issues

• Society: People, security, privacy

- A policy for people in the Internet of Things:
- Legislation

• Environmental aspects

- Resource efficiency
- Pollution and disaster avoidance

• Technological

- Architecture (edge devices, servers, discovery services, security, etc.)
- Governance, naming, identity, interfaces
- Service openness, interoperability
- Connections of real and virtual world
- Standards

CHALLENGES & ISSUES

IoT will inherit the drawbacks of the current internet on an infinitely larger, but more invisible scale

- Privacy – will be a huge issue when implementing IoT
- Identity - Online Fragmentation of Identity
- Efficiency – speed - person loses identity and is an IP address
- Decisions – do not delegate too much of our decision making and freedom of choice to things and machines
- Balancing

CHALLENGES & ISSUES

- Transition to IPv6 – Internet protocol v6
- Establishing a common set of standards between companies, educational systems, and nations.
 - The same type of cabling,
 - The same applications or programming
 - The same protocol or set of rules that will apply to all
- Developing energy sources for millions -even billions - of sensors.
 - Wind
 - Solar,
 - Hydro-electric

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M2M SCENARIO – ICE CREAM CABINETS

- The application provides consumer products companies with detailed information about the location and status of its ice cream cabinets.
- This information can be used to find these cabinets, supply them with new ice cream in time, and monitor their temperature in order to avoid ice cream becoming bad due to a defective ice cream cabinet.
- The ice cream cabinets become smart items that monitor their energy consumption, send alarms, and become an active part in the companies operation processes as well as sustainability efforts.



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IOT CONFIGURATION

- 2.5 million ice cream cabinets
 - Worldwide distributed
 - Biggest growth markets: China and India
- Sensoring
 - **Need to refill**
 - Avoid stock-outs
 - **Location**
 - Reliably find and refill
 - **Temperature / power outage**
 - Detect failures and avoid product loss
 - **Behavioral statistics**
 - Conclude conversion rate



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IOT INTEGRATION INTO BUSINESS PROCESSES

Roles and processes

- **CPG Backend**
 - Operational BI on supply chain efficiency
 - User behavior monitoring and campaign
- **3rd Party Supplier**
 - Real-time monitoring of daily logistics
- **Truck Driver**
 - Truck driver integration into process
- **Store Owner**
 - Push alarms to store owners for immediate actions
 - Resolve power outage / close lid to save energy
- **Consumer**
 - Guidance to next ice cream cabinet (source of happiness)



Scenario estimated benefit is 45 million additional profit per year

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IOT ENABLING TECHNOLOGIES

Sensor Technologies

To collect and process the data to detect the changes in the physical status of things

Microcontrollers

RFID

Energy harvesting technologies

Wireless Communication and Networking

To enable the communication between the sensors and the system

machine-to-machine interfaces and protocols of electronic communication

Smart Technology and Computing

Cloud

Big Data

To enhance the power of the network by devolving processing capabilities to different part of the network

Actuators (NANO TECH)

To make the smaller and smaller things have the ability to connect and interact.(nano-tech)

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END

Thanks for listening

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Presentation on IIoT-Industrial Internet

Photos:

