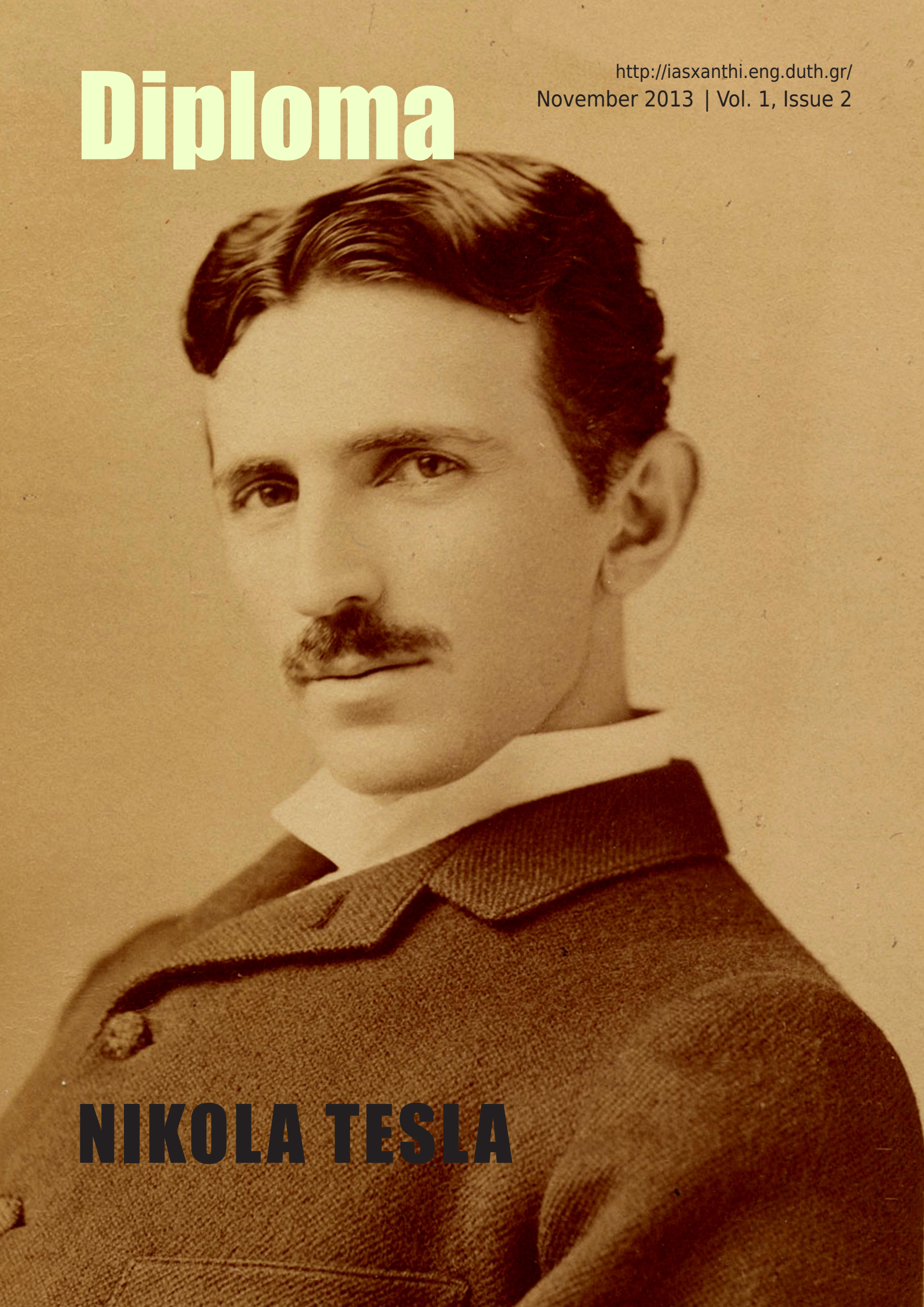
Diploma

http://iasxanthi.eng.duth.gr/
November 2013 | Vol. 1, Issue 2



NIKOLA TESLA

Democritus **I**ndustrial Ap**PL**icati**O**ns **MA**gazine

IN THIS ISSUE

WHAT'S NEW

ABOUT US

ENGINEERING

CONFERENCES

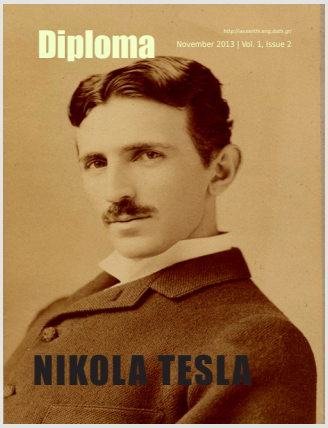
GET CONNECTED

Industry Applications Society

SBC·DUTH

ias

DIPLOMA



Coverstory:
Nikola Tesla

Letter from the Advisor

Dear colleagues, students and friends of the IEEE Industry Application Society Student Branch Chapter of Democritus University of Thrace, Greece,

I am more than proud to introduce to you the second issue of our Diploma Magazine, which reflects the great efforts of our student members during the last period. In this issue you will find information about our Chapter's recent activities, more scientific articles and an open communication window for similar Chapters worldwide.

Almost one and a half year after our Chapters foundation we grew up from 11 members to more than 50, we received some important awards from IAS, but most of all we made friends from all over the world and that is our greatest achievement. Your comments or contributions are most welcome.

Prof. Athanasios Karlis

Chapter's Advisor

ON THE COVER: Nikola Tesla

ADVISOR
Athanasios Karlis |
akarlis@ee.duth.gr

ART DIRECTOR &
EDITOR IN CHIEF
Christina P. Malliou |
xrispa_m@hotmail.com

WRITERS
Farmakis Aristotelis
farr_ari@hotmail.com

Kondyli Galini |
galini_kon@hotmail.com

Malliou Christina P. |
xrispa_m@hotmail.com

Noula Antigoni |
antigoni1988@hotmail.com

Pnevmatikos Chistos |
chripnev@ee.duth.gr

Sfoungatou Maria |
mariasfoungatou@hotmail.com

Brijesh Kumar |
brijesh68kumar@gmail.com

Jon Lister |
JonA.Lister@yahoo.com

Giorgos Barlas |
georbarl@ee.duth.gr

IEEE DAY PHOTO CONTEST

by Galimi Kondyli, DUTh SB IAS Chapter Chair

This year, our Student Branch Chapter took part, **for the first time**, in the **IEEE Day Photo Contest**, with two pictures taken during **our activities in the IAS Annual Meeting 2013** in Orlando.

Our **first activity** took place during the **Student Poster Session**, were we organised an event in order to promote our Chapter. **Students and IEEE members were filling our poster with stickers, on which they wrote their own wishes for our chapter.** We also distributed **DIPLOMA, candy with OUZO and pins with the IEEE IAS DUTh SBC logo.**

An IAS member is signing a sticker while our representatives are helping him.

In addition to this, during our trip to the **Kennedy Space Center** in east central Florida, we got to visit the **NASA Rocket Garden** where we admired the very same **Redstone, Atlas and Titan Rockets and Mercury, Gemini and Apollo capsules.**

Two of our representative in front of this amazing "Landmark" to the Photo Contest.

We submitted a picture with two of our students in front of this amazing "Landmark" to the Photo Contest.

Unfortunately our pictures were not chosen, but **another Greek entry was amongst the winners.** We are really glad that the picture from **IEEE NTUA SB was voted as: The Best Photo Including "Landmark".**

PRESENTING OUR NEW BOARD

by Galini Kondyli, DUTh SB IAS Chapter Chair

On October 18, we held our annual elections in order to choose the Chapter's new board. We were excited to find out that o**ur new members wanted to take up more responsibilities** and put in for a board position.

We are pleased to announce the new board members and their respective positions:

- **Galini Kondyli,** our former Vice Chair, was appointed **Chair** of our Chapter
- **Christina - Panagiota Malliou**, our former Chair, was appointed **P.R. Manager**
- **Aristotelis Farmakis**, our former General Secretary, is now our **Vice Chair** and
- **Christos Pnevmatikos** remained at his position as our **Webmaster**

We are honoured to announce that **the rest positions were assigned to new members**:

- **Maria Sfoungatou** assumed the position of the **Financial Manager**,
- **Antigoni Noula** is presently our **General Secretary** and
- **Iason Petrogkas** is our **Membership Development Officer.**

On behalf of the new board, I would like to promise that we will all d**o our best to continue the good work that the founders did and set higher goals to achieve.** We plan to organise **more events**, **invite distinguished lecturers and IAS members to our university**, t**ake part in international contests and conferences**, **make more educational trips for our students** and **increase the members in our chapter.** Nevertheless, our main goal is to **expand our horizons globally.**

AWARDS AND CONTESTS

by Galini Kondyli, DUTh SB IAS Chapter Chair
and Christina Panagiota Malliou, DUTh SB IAS Chapter P.R. Manager

The IAS DUTh Student Branch Chapter has a **remarkable course**. As students in this chapter and in this university we are always doing our best. We organize many **lectures and activities**. We try to take part in as many **contests** as we can. This is why we have received **many awards**, although it has only been a year since our chapter was founded.

For the activities and our progress, our chapter has received

- the **"2013 IAS Outstanding New Student Branch Chapter Award"**
- the **"2013 IAS Chapter Web Contest, 1st Prize Award"**
- "**The Most Happening IAS Chapter Contest 2013, 2nd Prize Award"**.

Our webmaster, Mr. Christos Pnevmatikos, receiving the "2013 IAS Chapter Web Contest, 1st Prize Award"

Our past chair, Ms. Christina - Panagiota Malliou, receiving “Outstanding Student Branch Chapter Chair” Award.

In addition to this, **our past chair Ms. Christina – Panagiota Malliou received the “Outstanding Student Branch Chapter Chair”** for her successful leadership of our Chapter.

Moreover, during the IAS Annual Meeting 2012 that took place in Las Vegas, our presentation for the Multicultural Event received the 2nd prize award. On June 3 when **Mr. Blake Lloyd** and **Dr. Peter Magyar** visited our chapter we had also the honour to receive our awards for this presentation.

IAS Students and Chapters Activities Workshop - Awards Presentation

Our team during the Intercultural Event

Continuing our successful course in the IAS Annual Meeting 2013 in Orlando, our team won the 3rd prize in the “Inter-Cultiral Event and Contest”. Last but not least, our Student Poster Presentation about DIPLOMA and the Student Poster Presentation and Student Technical Presentation about “Electrical Machines Insulatio Systems, Power Electronics and Occurring Problems” received certificates of appreciation.

Our team receiving Certificates of Appreciation

IAS DUTH SBC ACTIVITIES

by Christina Panagiota Malliou, DUTh SB IAS Chapter P.R. Manager

On June 3, 2013 we had the pleasure and the honour to attend a series of lectures by **Mr. Blake Lloyd** and by **Dr. Peter Magyar** about *IAS, Student and Chapter Activities* and *"The Electric Car and the Renewable Energy Sources - Hype or Solution?"*. In addition, during their stay, **a visit was taken place in a local photovoltaic park.**

Chapter Meeting with Mr. Lloyd and Dr. Magyar

After the return of our members from the **Annual Meeting 2013**, we started the **preparations for our elections** and our **upcoming activities**.

First of all, we filed our proposal for hosting the **IAS Executive Board Meeting 2014** in cooperation with the **Hellenic Institute of Electric Vehicles** (HEL.I.E.V).

Our first activity for the new academic year was an **educational trip to a local power plant station**. We visited the power plant at **Komotini**, **a town near Xanthi and the capital of Rodopi Prefecture**. It is a **Natural Gas fired station**, manufactured in a **focal point of the gas pipeline** and it also has the capability to **burn petroleum as an alternative fuel.**

The unit of Komotini has a **total installed power** of approximately **485000KW** and consists of **two gas turbines with their generators with power 165100KW** and **efficiency 35.7%**, t**wo heat recovery boilers and a steam turbine with its generator.**

Komotini Power Plant

Control room

During our visit the we had the opportunity to be informed from the personnel about the operating mode of the power plant, the parts of which it consists and the occurring problems.

Our members at the end of our visit

IAS DUTH SBC ANNUAL PRESENTATION 2013

by Christina Pamagiota. Malliou, DUTh SB IAS Chapter P.R. Manager

During our Annual Presentation 2013

On November 20 we organized our second Annual Presentation along with the Annual Presentation of the IEEE Student Branch of Thrace. We had the chance to inform our colleagues about our activities, our vision, our awards and our goals for the year to come. We also distributed a newsletter created my our members with the benefits of being a member of IAS and some information about our chapter.

WHAT'S NEXT?

by Christina Panagiota. Malliou, DUTh SB IAS Chapter P.R. Manager

In local level, **visits and tours to local companies** and to **local industries** are scheduled in order to create a connection between students of **IAS DUTH Student Branch Chapter** and industry professionals.

During this academic year we plan to visit the local power plant of Thisavros. This is one of the largest rock fills dams in Europe and the largest in the Balkans. It has 175m/574ft height, 11,000,000 cubic meters/ 388,461,332 cubic feet volume and a capacity of 700 million cubic meters/ 24,720,266,600 cubic feet.

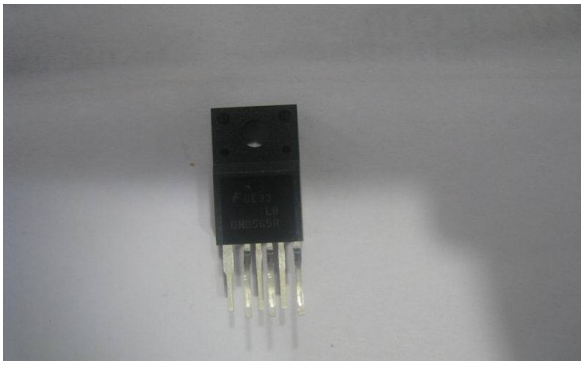
As **IAS DUTH SBC's vision** is also to provide knowledge, we are planning to organize a lecture through the Distinguished Lecturer Programme given by **Prof. Frede Blaabjerg**, a distinguished professor with more than 500 publications in the field of Energy and Industrial Engineering. We are also waiting the announcement of the new lecturers fro 2014-2015 approved by the IAS Executive Board during the Annual Meeting in order to give our members the opportunity to get in contact with distuinguished professors.

Moreover, we plan to organize a lecture concerning the safety and the laws that apply in internet by Prof. Vasileios Katos and professors from the Law School of our university.

Last but not least, we are planning to organize a lecture by Greek IAS Chapter Chair, **Prof. Stefanos Manias** titled *"The Application of Power Electronics in new technologies"*.

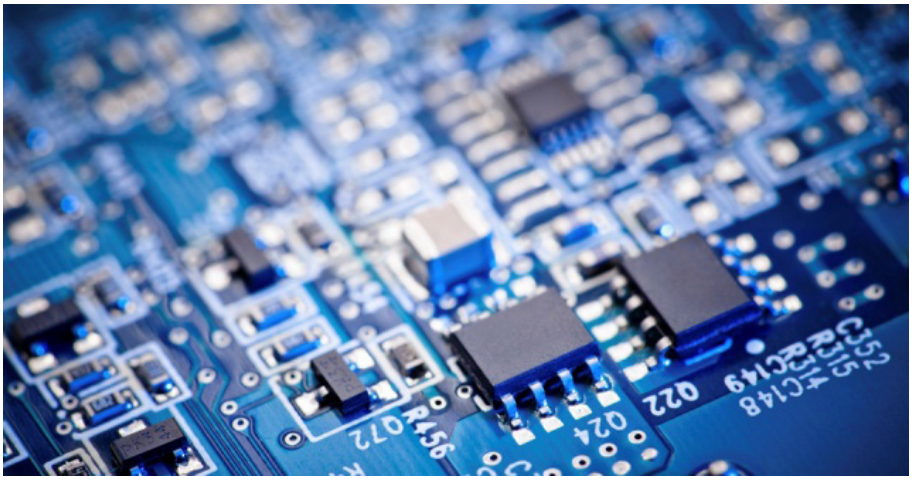
POWER ELECTRONICS, A POWERFUL TOOL FOR MODERN TECHNOLOGIES

by Antigoni Noula, DUTh SB IAS Chapter General Secratery



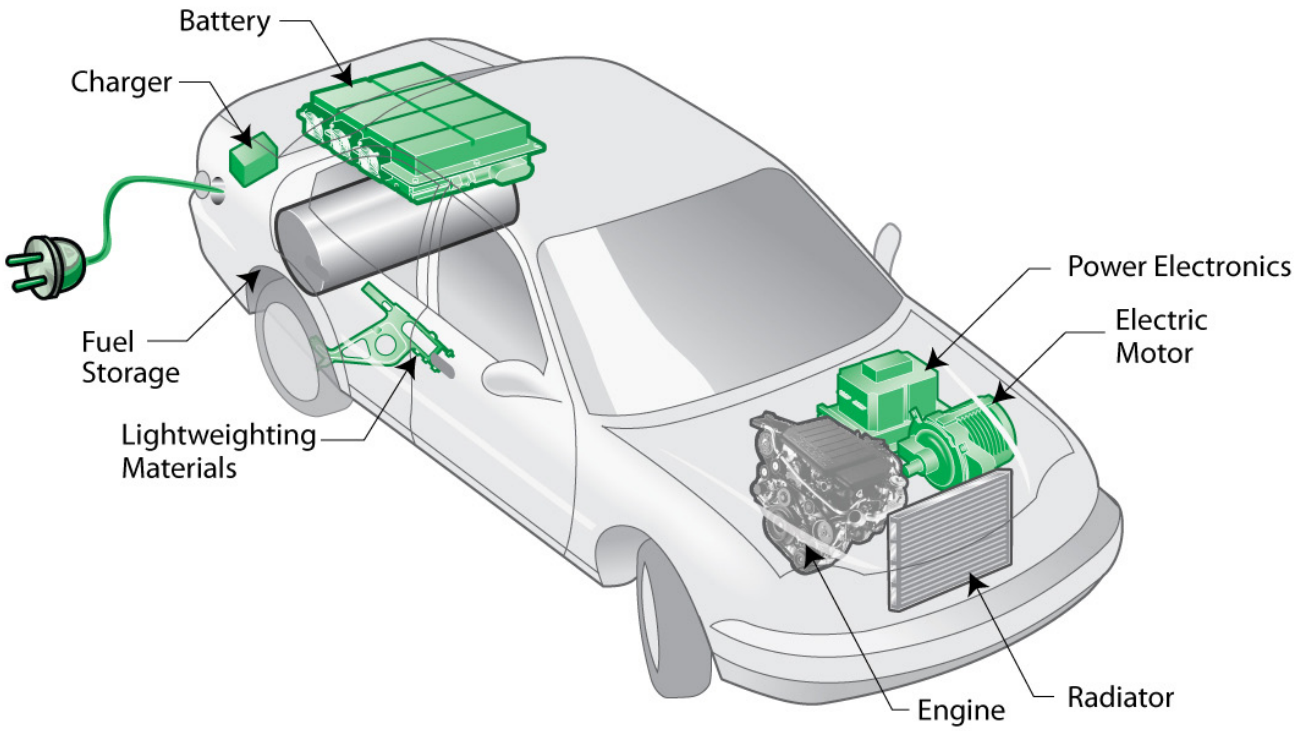
One of the goals of modern electrical industry is the processing and conversion of electrical energy with high efficiency. The science of power electronics constantly contributes to the production of more and more efficient appliances and technologies. Structural elements of power electronics are the semiconductor power switches. The progress in semiconductor technology and microcomputers contributed to their rapid and massive development. Apart from traditional applications in electric drive systems, computers and mobile phones, challenge for the development of this discipline are the growing trend of exploitation of renewable energy sources and the expected mass production of hybrid electric car.

A simple example from our daily life that shows the significant value of power electronics is the function of heating, ventilation and air conditioning (HVAC) systems. Without power electronics inverters, the motors running these systems would continually be running at full speed, consuming vast amounts of unnecessary energy. In addition, power electronics have improved the quality of our life, because they have been a key element in creating an efficient electricity transmission network. This is accomplished by power electronic converters, which transform alternating current (AC) into high-voltage direct current (DC) and vice-versa. In the case of renewables, solar and wind power could not be fed back to the electricity grid without power electronics.



But the case of application of this science that makes more impression is the electrification of vehicles. The drive trains of electric vehicles (EVs) and hybrids consist of many power electronic devices. EV batteries can be charged in 15-30 minutes in DC fast-charging stations. Otherwise it takes many hours using standard residential charging ports. Also power electronics can be used to store braking energy and to supply it back to the battery as needed.

Because of the demands of modern society for energy-efficient technologies are growing more and more, the field of power electronics will constantly facing new challenges.



MODIFIED MICROSCOPE, IMAGE PROCESSING AND HANDSET FOR DISEASE DIAGNOSIS

by by Brijesh Kumar , DA-IICT, India

Today diagnosing diseases require high end medical testing conducted by highly skilled Pathologist. Thus people who can't afford high expenses remain deprived from proper treatment. Poor and tribal people don't even have access to proper hospital because of their living at a remote location.

What is the protocol a common person follow when he get sick? First, he approaches to Primary Health Care (PHC) center, such as local doctor or clinic. Then that person goes to Secondary Health Care Center like local hospital. In the end person approaches to Tertiary Health Care center, which have all high end medical testing and facility under one roof.

PHC plays the important role in local community in terms of health care services. professionals working at PHC act as first point of consultation for all patients within the health care system. PHC cover most of the basic disease and having treatment at PHC level are affordable and inexpensive.

Current diagnosis are being done by highly skilled and qualified pathologists and microbiologists. These tests are being done in well-established and expensive labs available at Tertiary Health Care center.

Since the number of qualified experts to conduct test are limited, this situation resulting to unavailability of doctors at rural areas, or heavy work load on the periodic visit of doctor in rural area thus effecting his efficiency.

Novelty of Ideas

We started with the basic understanding of high power digital laboratory microscope. Then tried to build our own microscope. We have worked with basic Cmos sensors and made a model whose resultant images were of same quality as being captured by the commercially available expensive microscope.

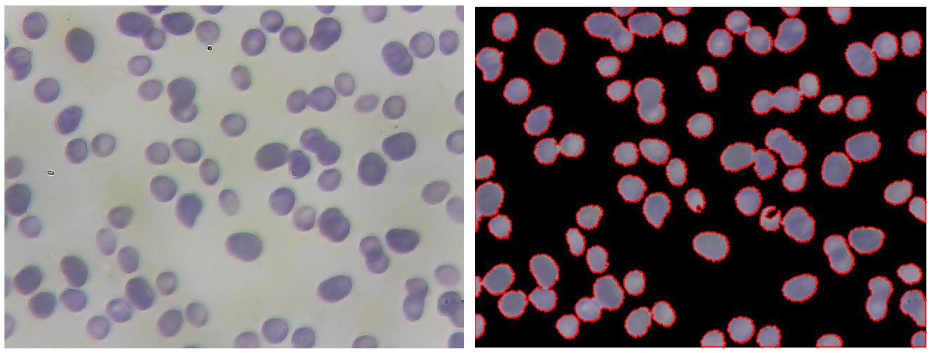
Later we tried to apply image processing techniques on the acquired results. As per the specific symptoms of a particular disease we tried to design few algorithms. Beauty lies in the fact that these all results were taking less than 10 seconds. We could even implement multiple algorithms simultaneously on the same medical slide images to detect other diseases and could show the result simultaneously. Ultimately this saves the time by a large proportion.

1. Feasibility of Ideas

Following are some of the results obtained from the new design we are developing. Furthermore after using the image processing approach we were able to filter out the unwanted pixels in the images. This could be used to directly get the images and draw the conclusion along the lines of the disease.

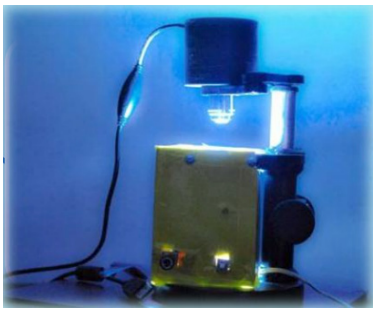
Following are the prototypes we are working on. Operating costs of devices like these would be very minimum. Even the "Anganwadi" or " Mitanin " ladies who help at primary level of hospitals maintained by government in India can operate the device. Later they can inform the doctor in case if they find anything suspicious about the patient.

One device per village would be enough to help the entire community. Thus making the tests more affordable and reachable.

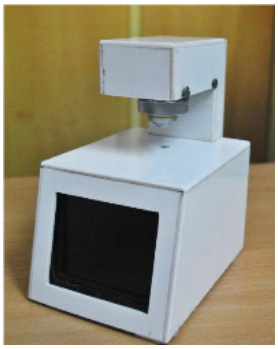


Left: Image acquired, Right: After image processing algorithm

A. Embedded devices



B. Non-Embedded device



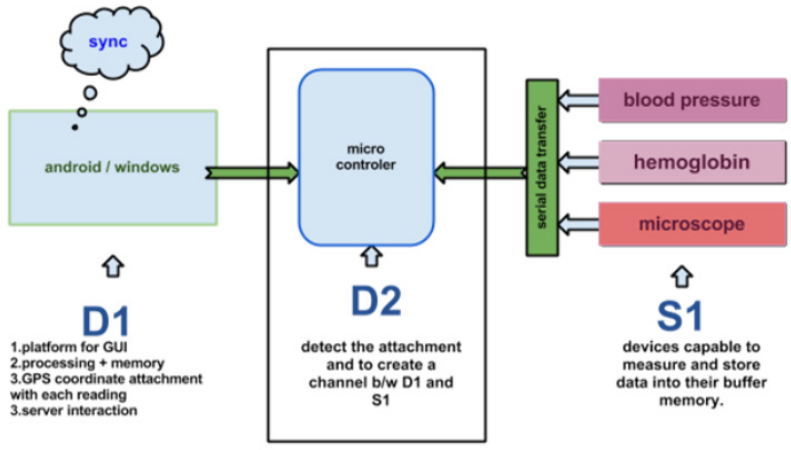
2. Value Proposition

Hardware developed reduces the cost of current Digital microscope by more than 80% keeping the image magnification and image quality of almost the same standard. Comparing it with the current expense that a patient spends on diagnosis, the expenditure would be reduced by 70%.

Attaching the device with smart-phone devices in future will further enhance its efficiency by providing easy I/O interface through Apps, Data storage, Uploading on server, Processing power and Portability. Algorithm can use the GPS sensor to attach the geographical coordinate with every reading. Using it microbiologists could analyse the behaviour of a disease in a particular village over a period of time. This would help the government in more reliable data and accurate study of diseases in a given locality.

3. Conclusion

Attaching smart-phone device to the current developed system would make the entire system portable. Further a web engine can be designed to do the entire processing of medical images on the server and inform the concerned doctor. This saves the time spent on Referencing / finding a doctor or searching the group of patients suffering with the same disease.

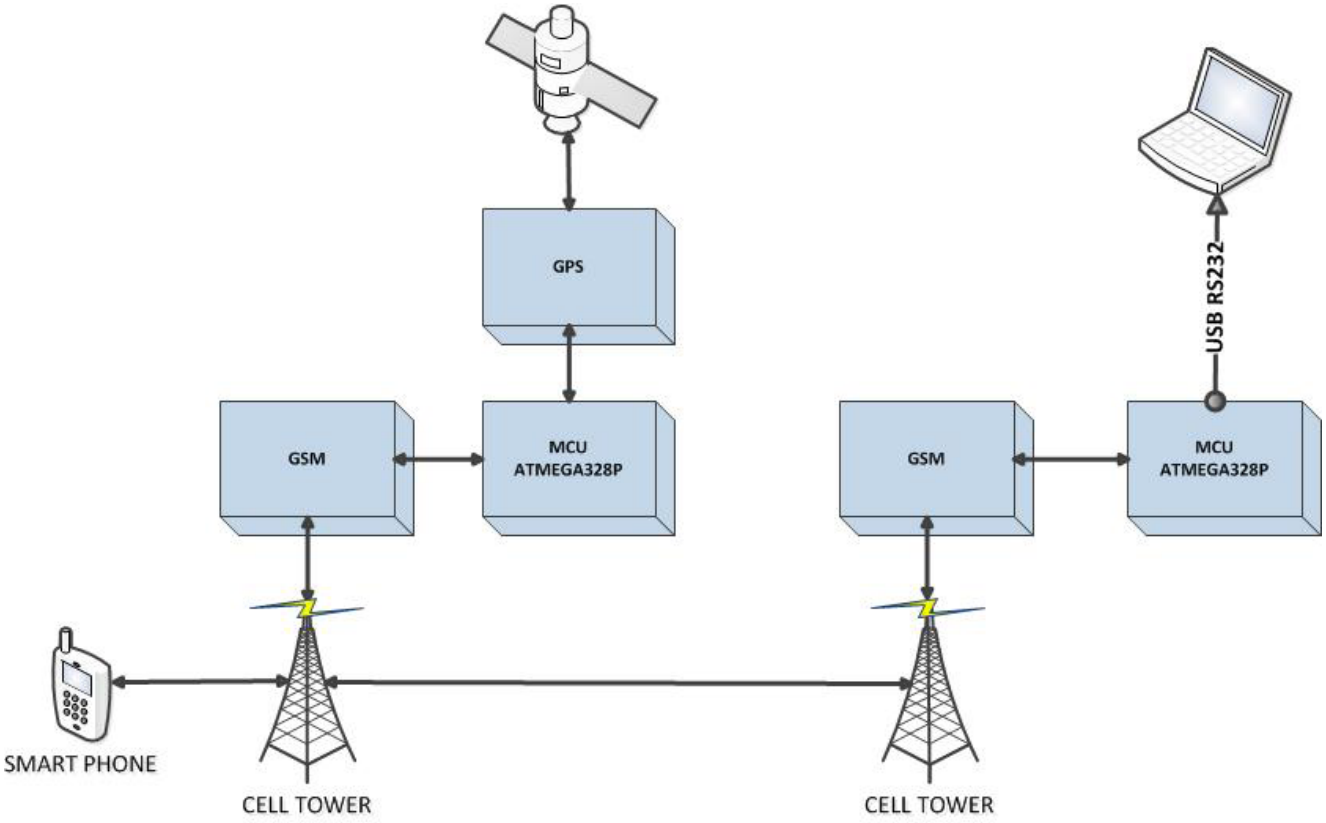


Block Diagram of the device

GSM GPS TRACKING SYSTEM

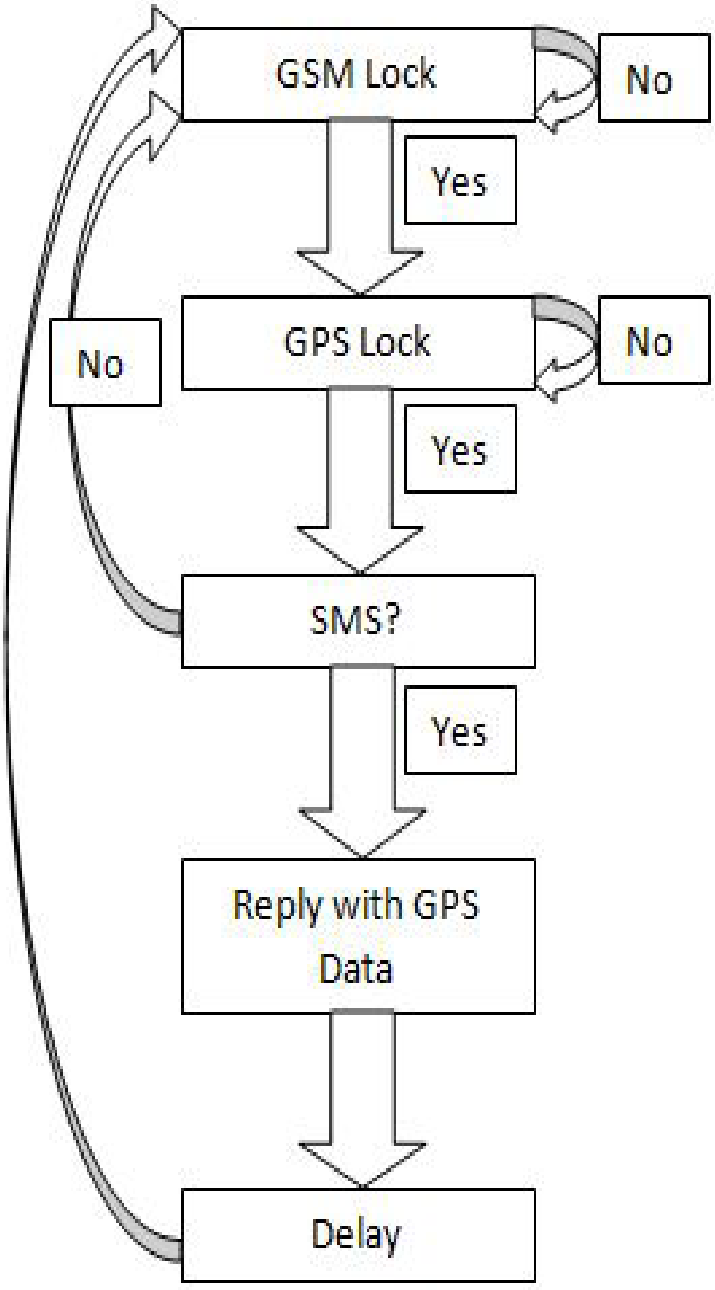
by Jon Lister, Aster Pastoral and Chris Doorbal
University of West Florida, USA

In order to graduate with a Bachelor's Degree in Electrical Engineering, each student has to complete a "Capstone Project" showing off what they have learned in their time at the university. These projects are done in small groups, mine consisting of myself, Aster Pastoral and Chris Doorbal. For our project we decided on a GPS Tracking System, using the GSM Cell Phone Network to transmit the GPS Coordinates of the tracker.



Functional Block Diagram of System

The project was originally a Vehicle Tracking System for fleet vehicles so we wrote some software to receive the coordinates on a computer and display them on screen using Google Maps. Since the tracker sent the coordinates over the Cellular Network, the decision was made to allow smart phones to access the coordinates as well, given that the smart phone sent a text with the correct password to the tracker. This led to a transition of the project, and the addition of an emergency "SOS" Button on the tracker, making it a generic tracker and safety device.

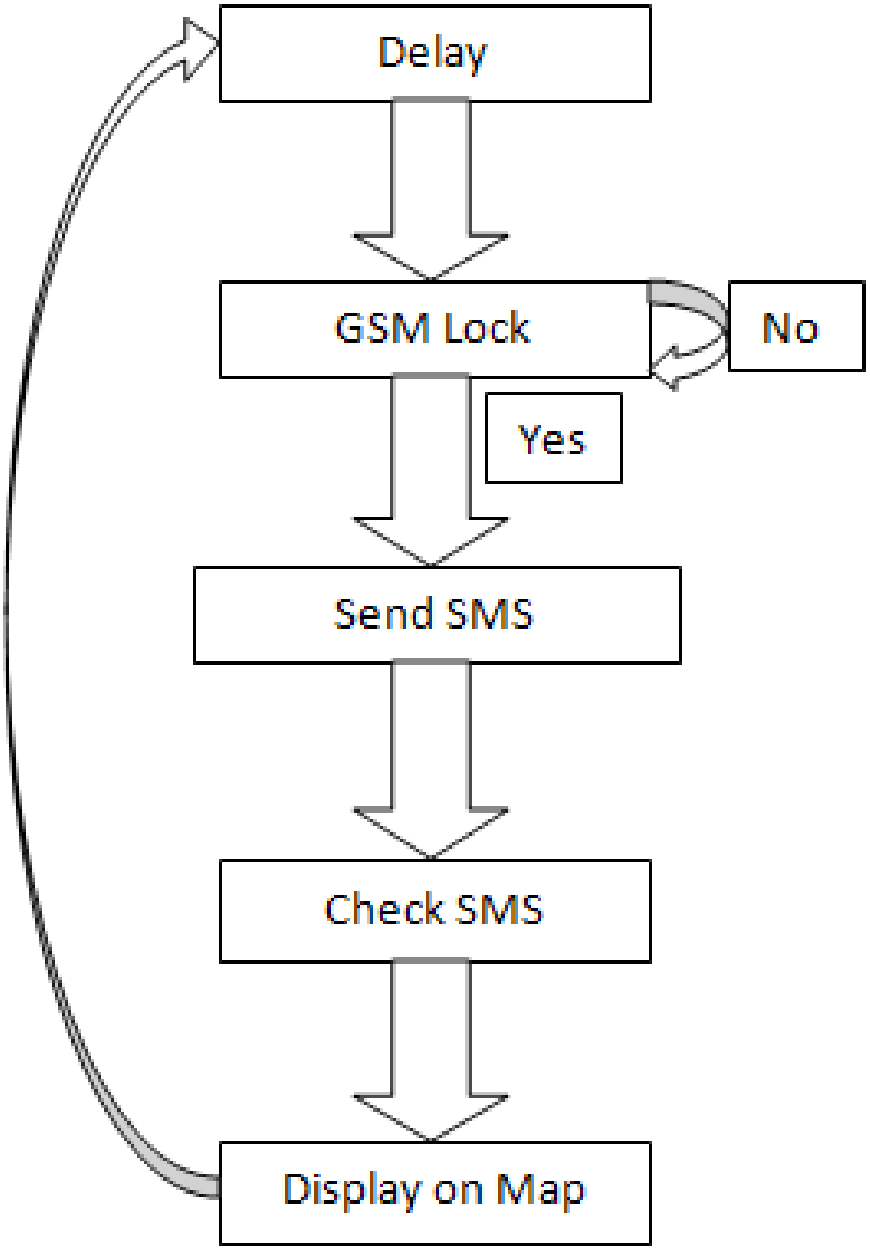


Field Device Flowchart

Since the devices are ran with microcontrollers we needed some flowcharts for the programs that control the devices. The Field Device, the actual tracker itself, has a more intricate program than what is shown in the flow chart. In order for the GSM Module to work it has to lock onto a Cell Tower and register itself in the network. Then the GPS Module has to get a lock on the GPS Satellites so that it can calculate the exact coordinates of its location. Once they are ready the program checks if there is an SMS Text Message in the Buffer of the GSM Module. If not then it goes back through the startup cycle. If there is a message then the program checks the contents for the password and if it is correct then it replies to the phone number with the current GPS Coordinates. After sending the coordinates there is a delay preprogrammed in that allows time for the message to be deleted from the memory of the GSM Module. Part of the program kept out of the flowchart for simplicity's sake is the "SOS" Button.

This is a button on the device that when pressed sends the tracker's current coordinates to a preprogrammed phone number with a message that reads: "I NEED HELP!" This gives the tracker an included safety feature.

The Computer Interface Device is similar to the tracker excluding the GPS Module. The flowchart for this device is much more deceptively simple than the actual flow of the project. This part of the project is actually split with the device and a program on the computer each doing part of the total process. The device sends a message the computer has two ways of initiating the process that sends the text message to the tracker. The first is a predetermined delay that automatically updates the map shown on screen. The other way to have updated coordinates is to click a button on screen, added in the software by the program running on the computer. This updates the map without having to wait for the next delay. When the program receives the coordinates from the interface device it opens a Google Maps URL with the coordinates in the center of the map and an arrow pointing at the exact location.

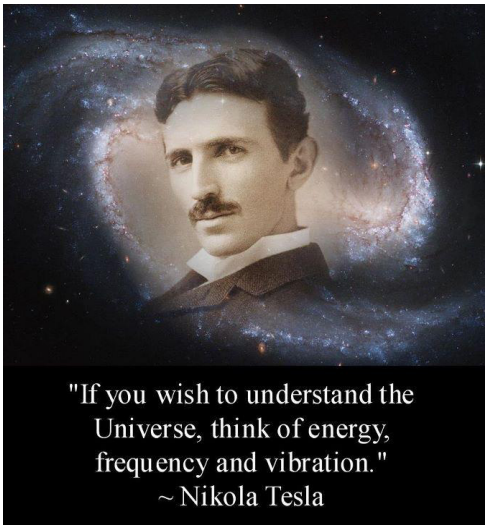


Computer Interface Flowchart

When using a smart phone, the tracker simply replies with a Google Maps URL that when clicked on opens a mobile browser version of Google Maps, again with the coordinates in the center of the map and an arrow at the tracker's location.

NIKOLA TESLA

by Giorgos Barlas, DUTh SB IAS Chapter Member



"The progressive development of man is vitally dependent on invention. It is the most important product of his creative brain. Its ultimate purpose is the complete mastery of mind over the material world, the harnessing of the forces of nature to human needs. This is the difficult task of the inventor who is often misunderstood and unrewarded. But he finds ample compensation in the pleasing exercises of his powers and in the knowledge of being one of that exceptionally privileged class without whom the race would have long ago perished in the bitter struggle against pitiless elements." Nikola Tesla

He was born in the village of Smiljan, Austrian Empire (modern-day Croatia). His father, Milutin Tesla was an orthodox priest and his mother Đuka Tesla (née Mandić) whose father was also a Serbian Orthodox priest. His father's desire was Nikola to be a priest but plans changed when he got cholera. When he was teenager he got cholera and he was confined to bed for nine months with scarcely any ability to move. One day Nikola said to his father "Perhaps, I may get well if you will let me study engineering." "You will go to the best technical institution in the world," he solemnly replied and so it happened. Tesla was the fourth of five children. He had an older brother named Dane and three sisters, Milka, Angelina and Marica. When Tesla was five years old, in front of his eyes, his brother Dane was killed in a horse-riding accident.

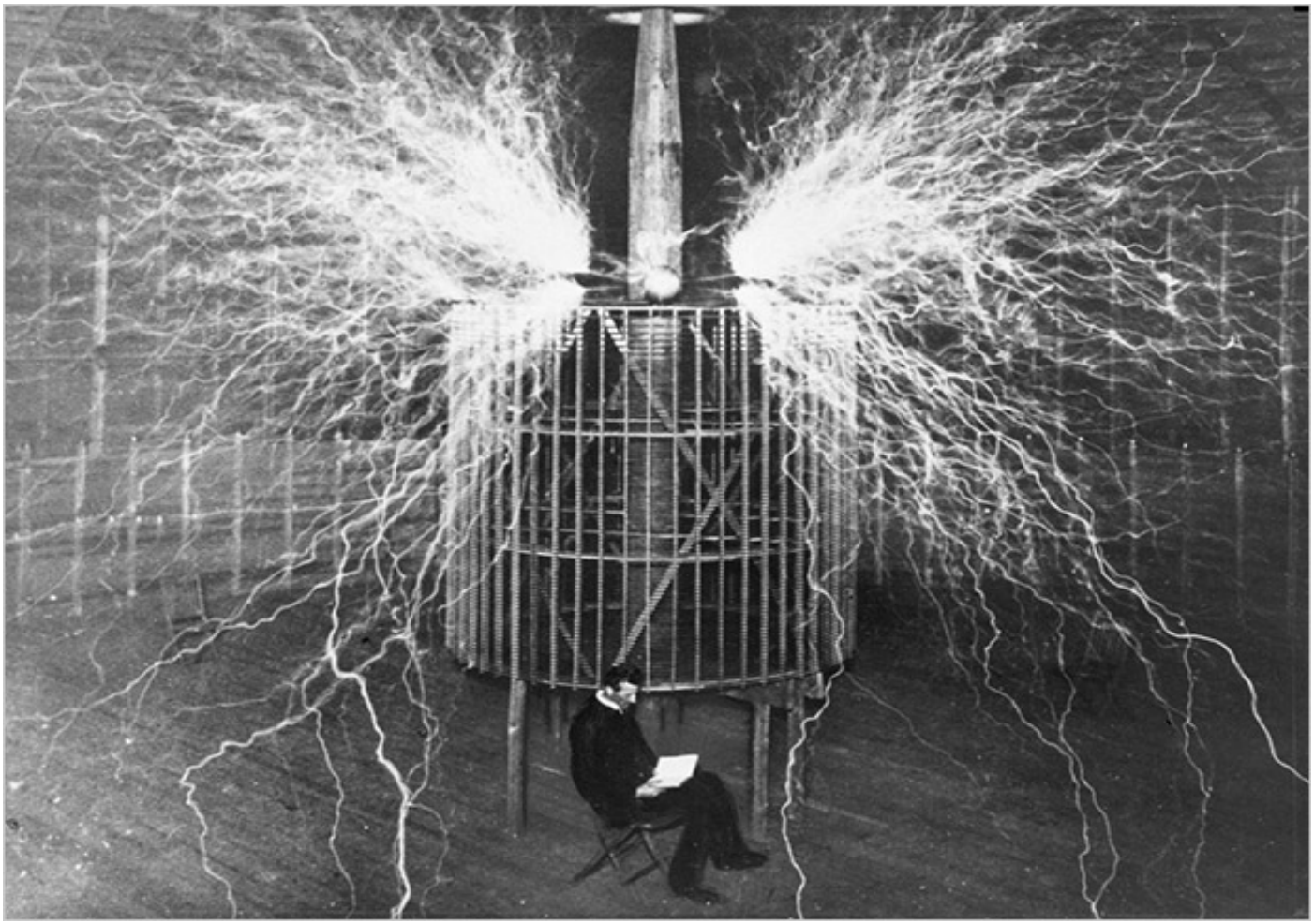
Books were his passion. He was bookworm but his father prohibited him to read.

His father had a large library and Tesla was reading slinkingly mostly at nights when all others slept and often till dawn. He rarely slept more than three hours at night and some nap of ten minutes to refresh his mind. Somehow, the novel entitled “Abafi” (the Son of Aba), of a well known Hungarian writer, Josika, awakened his dormant powers of will and he began to practice self-control. In his boyhood he suffered from a peculiar affliction due to the appearance of images, often accompanied by strong flashes of light, which marred the sight of real objects and interfered with his thought and action. They were pictures of things and scenes which he had really seen, never of those he imagined. He managed to control these images and in some way he could live in them. In this way with this ability he could construct his inventions with very detail in his imagination.

“The moment one constructs a device to carry into practise a crude idea he finds himself unavoidably engrossed with the details and defects of the apparatus. As he goes on improving and reconstructing, his force of concentration diminishes and he loses sight of the great underlying principle. Results may be obtained but always at the sacrifice of quality.” Nikola Tesla

He was a constant servant of science. He didn’t have the need of vacation, he worked 365 days per year. He believed that an inventor’s endeavor is essentially life-saving. His biggest ambition was World-System. With that he could managed to transfer wireless energy and communication in all over the world. He said that, the first World-System power plant can be put in operation in nine months.

“War can not be avoided until the physical cause for its recurrence is removed and this, in the last analysis, is the vast extent of the planet on which we live. Only thru annihilation of distance in every respect, as the conveyance of intelligence, transport of passengers and supplies and transmission of energy will conditions be brought about someday, insuring permanency of friendly relations.” Nikola Tesla



IAS ANNUAL MEETING 2013

by Galini Kondyli, DUTh SB IAS Chapter Chair
Christina Panagiota Malliou, DUTh SB IAS Chapter P.R. Manager
Christos Pnevmatikos, DUTh SB IAS Chapter Webmaster
and Maria Sfoungatou, DUTh SB IAS Chapter Financial Manager

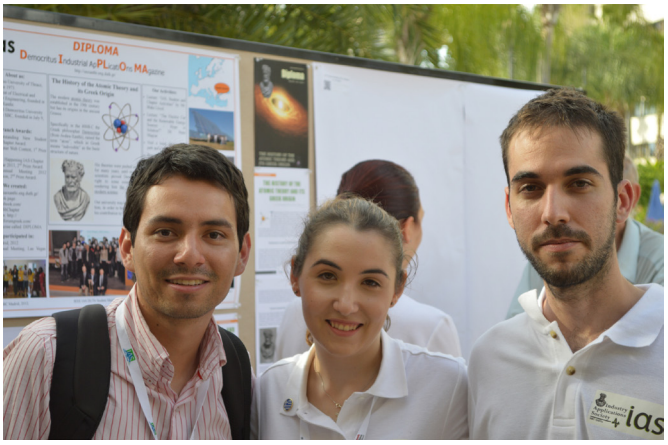
In the latest **IAS Annual Meeting**, we had **5 representatives**. 4 of our student members (Christina-Panagiota Malliou, Christos Pnevmatikos, Galini Kondyli, Maria Sfoungatou) and our **chapter's advisor** (Athanasios Karlis) had the opportunity to attend the meeting and obtain useful experience, while meeting people from all over the world.

While the trip to the USA was long and tiring, the experience was totally worth it and the experience rewarded us in the best possible way.

The first day, we attended the **Chapter and Membership Development (CMD) Workshop** where we had the chance to attend many **student presentations and presentations about student chapters.** We also got to meet many people from all around the world. Two of our students, **Ms. Galini Kondyli and Ms. Christina – Panagiota Malliou, got to present our chapters activities.**

In the afternoon, the Student Poster Session took place. One of our students, Ms. Christina – Panagiota Malliou presented the **technical poster "Electrical machines insulation systems, power electronics and the occurring problems"** and Ms. Galini Kondyli presented a poster about **our chapter**

and our magazine called “DIPLOMA” with cover story “The History of the Atomic theory and its Greek Origin”.



During the poster session, our chapter had the initiative to distribute the first issue of DIPLOMA to the attendees along with pins with our chapter’s logo and candies with ouzo, a traditional Greek drink, giving the opportunity to the attendees to come in contact with the tastes and the aromas of our country. Both the magazine and the chapter’s logo were created entirely from our members. Finally, we encouraged the attendees to write wishes and comments on a poster that we brought home with us. The poster is now hanging proudly on the Chapter’s Office wall.

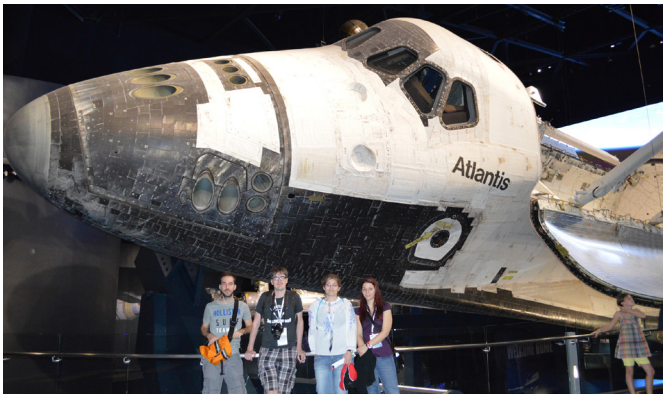
On the **second day**, we attended the **Student Technical Sessions**, where one of our members, **Ms. Christina - Panagiota Malliou, presented her project on “Electrical machines insulation systems, power electronics and the occurring problems”**, in front of many students and professors.

We also had the chance to attend the presentations of **IAS Myron Zucker Undergraduate Student Design Contest winners** and we got motivated to take part in a Zucker program.

In the afternoon, we had the honor to receive the **certificates and the awards** from **Dr. Magyar, CMD Chair.**

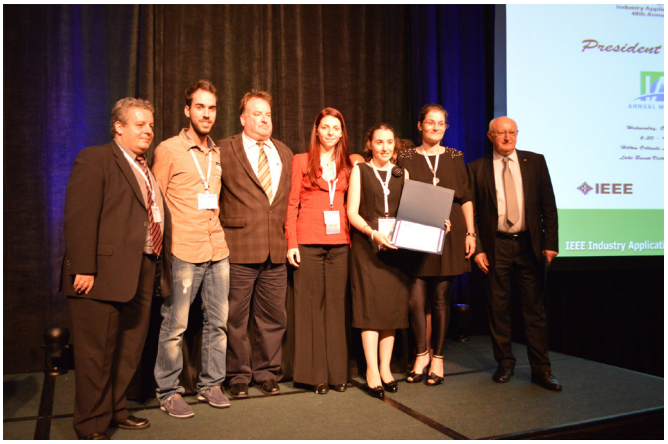
In the evening, we attended the **CMD Dinner** and took part in the i**ntercultural contest** by presenting the city of Xanthi and the nearby area. **Our presentation got the 3rd prize.**

On the third day, we had the opportunity to visit **Kennedy Space Center**, which was a unique experience. Everyone was **amazed by the exhibits, the rockets and the spaceships**.



We were able to ride a **simulator of an astronaut's training** and a space shuttle launches that reached 4G and we were thrilled. Before we leave Kennedy Space Center, **we hadv lunch with an astronaut, Mark C. Lee,** who explained to us everything about his life in space and he answered all our questions.

On the fourth day, we attended many **technical sessions** about **Electrical Discharges and Motor Drives**. **In the evening** the Greek team attended the **President's Reception and Awards Banquet.**



During the **Awards Banquet** our team received many awards, **IAS Outstanding New Student Branch Chapter Award, IAS Chapter Web Contest 1st Prize Award, The Most Happening Chapter of the Year 2013 2nd Prize Award** and our Past Chair and current P.R. Manager, **Ms. Christina-Panagiota Malliou was awarded as an Outstanding Student Branch Chapter Chair.**

On the fifth day, we attended **technical sessions** about lamps and we got to **hang out with the friends we had made** in the annual meeting, **discussing about our future plans and planning our upcoming common activities**. **On the last day,** after our breakfast with Mr. Magyar, we had to take the plane back home.

This trip was a really **great opportunity to meet people from other countries** and **learn many innovative techniques about industrial applications.** During the conference we had the opportunity to dinner with all the attendees and meet with each other in a more loose and free way. Most of the presentations we attended were really **educative** and we plan to **use the knowledge we gained in our studies** and base on it, for our **future papers and research.**

THE J.F. KENNEDY SPACE CENTER

by Maria Sfoungatou, DUTh SB IAS Chapter Financial Manager

The **John F. Kennedy Space Center (KSC)** is the United States launch site that has opened its doors in 1st of July 1962. The KSC is a Launch Operations Directorate and a Launch Operations Center and has been used for every NASA human space flight since December 1968 and continues to manage and operate unmanned rocket launch facilities for the U.S.

Kennedy Space Center (KSC) is Located on Merritt Island, Florida, the center is north-northwest of Cape Canaveral on the Atlantic Ocean, midway between Miami and Jacksonville on Florida's Space Coast.

Facilities at the Kennedy Space Center are directly related to manned and unmanned missions. Facilities are available to prepare and maintain spacecraft and payloads for flight.

1. **Headquarters** (HQ) building houses offices for the Center Director, library, film and photo archives, a print shop and security.
2. **Operations and Checkout** (OC) building
3. **International Space Station**
4. **Space Station Processing Facility** (SSPF) (two processing bays, an airlock, operational control rooms, laboratories, logistics areas and office space for support of non-hazardous Station and Shuttle)
5. **Vertical Processing Facility** (VPF)
6. **Hypergolic Maintenance and Checkout Facility** (HMCF)
7. **Vehicle Assembly Building** (VAB) is the fourth-largest structure in the world by volume

The Kennedy Space Center Visitor Complex is the visitor center at NASA's Kennedy Space Center in Florida. It features **exhibits and displays, historic spacecraft and memorabilia, shows, two IMAX theaters, a range of bus tours of the spaceport, and the Shuttle Launch Experience**, a simulated ride into space. It also encompasses the separate **Apollo/Saturn V Center** and United States **Astronaut Hall of Fame**.

Attractions

1. **US Astronaut Hall of Fame**. A museum featuring the world's largest collectionof personal astronaut memorabilia.
2. **Rocket Garden**. An outdoor display of historic rockets that put Americans and satellites in space. Visitors can walk up to and around the base of the rockets. The Mercury-Redstone, Mercury-Atlas, and Titan II rockets launched astronauts and the Juno I, Juno II, Thor-Delta, and Atlas-Agena rockets launched satellites from Cape Canaveral.
3. **Apollo/Saturn V Center**. is only accessible to visitors by bus tours from the Visitors Complex. The building was built to house a restored Saturn V launch vehicle and features other exhibits related to the Apollo program. The rocket's second (S-II) and third stages (S-IVB) are from the canceled Apollo 19 mission.
4. **Space Shuttle Atlantis display - Shuttle Launch Experience**. NASA announced that Atlantis would be provided to the visitors center for display after its last flight on STS-135 and subsequent decommissioning.
5. **Space Mirror Memorial**
6. **Angry Birds Space Encounter**

Visiting Kennedy space center.

John F. Kennedy Space Center (KSC) is **great for anyone having a general interest in technology and/or space flight history.** Of course is a "must see" for someone with a specified interest in space missions, like me. **It is a well-organized walk through how the technology advanced from the first basic rocket up to the "Saturn V" moon rockets and Space Shuttle missions.** Me and my colleagues, in crime both, we enjoyed the day. The ticket gets you into the movies and also the bus tour and other attractions.

Unfortunately, due to the government shutdown we could not take part to the bus tour which takes you out to the launch pad where the actual moon rockets took off. They have the old transporter for the shuttles and the massive assembly building that you'll drive by. You'll find a massive Saturn V rocket that you can walk right under as well as many other displays, like lunar landers and crew capsules.

In noon, we have the honor to dine with **Mark Charles Lee, USAF Colonel, former NASA astronaut who flew on four Space Shuttle missions (STS-30, STS-47, STS-64,STS-82).**

What impressed us the most was the space shuttle **Atlantis exhibition.** I'll just say that how they set this attraction up was excellent. **Very dramatic entrance is all I'll say and for real, you can almost touch the shuttle.**

As an aeronautical Engineer, **I am absolutely impressed and I wish we could have stayed for ever.**

COMMUNICATION IN LIFE

by Christos Pnevmatikos, DUTh SB IAS Chapter Webmaster

One of the main aspects of human life, that made it possible to evolve and flourish, is communication. By definition communication is the main activity through it information about the needs, desires, perceptions of life, knowledge are transmitted from one individual to another.

It would not be an exaggeration to say that whatever mankind has achieved is the product of communication whether that was expressed through lucrative dialogue between people or if it was due writings and knowledge that passed from one generation to another. For instance if it would not been for Democritus and Leucippus that first imagined the atomic theory and gave that knowledge to mankind then historically more possible there would be another outcome until Rutherford and his colleagues described the so called Rutherford nuclear model of atom. And although communication through writings may take centuries, a new era has risen with the invention of internet something that lead this exchange of information to become extremely fast in a worldwide scale only with the touch of a button.

Although understanding the importance of communication between people and nations is easy enough, overcoming the imaginary differences that society has created is another issue. What is more, it is difficult in the daily life to come in touch with people from different counties all over the world but in a manner of you can truly communicate, but with the right opportunity given, people could eventually understand that they share common thoughts, fears, hopes for the future they want to create and furthermore find out ways and share ideas with each other in order to achieve that.

In a nutshell taking all into consideration, if imagined that the connection of information between cell brains is actually one human's consciousness and personality, it would be a common sense to think that only with the right communication, and humans can work as a unit, connecting their thoughts and feelings and take the next step to the scale of evolution.

IAS COLOMBIAN CHAPTER

by Jenifer Castillo and Lizeth Vega-Medina

Since its establishment on October 2nd 2009 when Eng. **Johanna Castellanos** leaded this initiative, the IAS Colombian Chapter has been working as a team in developing events to grow as a chapter in Colombia, working very hard on the membership growing in the country, not only motivating the members but also the student members.

On 2012 **Jenifer Castillo** became the chair of the chapter, and count with an outstanding group of young professionals and students that followed this goal of growing and we gladly reached a 78% of growing in 2013 and we keep pulling together to be better every day.

This **team** is formed by:

- Jenifer Castillo – Chair
- Oscar Rodriguez- Vice Chair
- Andrés Ladino - Secretary
- Viviana Gualteros – Treassurer
- Lizeth Vega-Medina - Student Branch Coordinator
- Johanna Castellanos – Past Chair
- Carlos Andrés Lozano-Garzón – Past Treassurer
- Byron Perez-Gutierrez – Webmaster

And in 2013 the IAS Colombian Chapter won the **first prize** in the CMD Chapters Web Contest among 50+ submissions. The award was received during the 2013 Annual Meeting in Orlando, FL, on October 9th.

Student Chapter and volunteers awards 2012 – 2013

SB Chapter Awards:

- Outstanding Student Chapter Award 2012: Nueva Granada Military University SB Chapter.
- Outstanding New Chapter Award 2012: San Buenaventura University SB Chapter.
- Outstanding Student Chapter Award 2013: San Buenaventura University SB Chapter.
- Outstanding Student Chapter Award 2013: Distrital University SB Chapter.

Volunteers Awards

Myron Zucker Travel Award 2012:

- Lilian Puerto – UMNG SB Chapter.
- Laura Daza– Pontificia Javeriana SB Chapter.
- Ana Lozano, Daisy Riveros – Distrital SB Chapter.
- Alexandra Moreno – Andes SB Chapter

Graduate Student Master Thesis Contest 2012:

- Andrés Mauricio López Cañon - First Prize Recipient. Pontificia Javeriana University
- Johanna Stella Castellanos Arias, Second Prize Recipients. Pontificia Javeriana University
- Andrés Alberto Ladino López - Second Prize Recipients. Pontificia Javeriana University

Myron Zucker Travel Award 2013:

- Daniela Ortiz Aldana – San Buenaventura University.
- Leidy Ferro Lara – Distrital University

Myron Zucker Undergraduate Student Design Contest 2013:

- Vanesa Rueda / Andrea Perez – Pontificia Javeriana University

Some of the event we have developed in order to accomplish the goals we have are:

IAS Colombian Workshop, which is held every year and has the purpose of encourage members and non-members to know more about the IA society and involve as volunteers, trough leadership workshops and technical conferences.

Once the chapter got to a good membership level the events start to have technical focus, in this way we joined events as:

1. **Andescon** (Andean Regional International Conference) 2011, held in Bogotá on September 15-17.
2. **SIFAE** (International Symposium on Alternative Energies and Energy Quality) 2012, held in Barranquilla on October 25 and 26.
3. **SIFAE 2013**, to be held on November 14th in Bogotá, Colombia.

Nowadays we want to be a good channel between the academy and the industry in Colombia; therefore, we are focusing our upcoming activities on it.

FOURTH
INTERNATIONAL SEMINAR ON
ALTERNATIVE ENERGIES AND
ENERGY EFFICIENCY
SIFAE 2013

DA-IICT SBC

by Saksham Gupta

About DA-IICT: Dhirubhai Ambani Institute of Information and Communication Technology was established in 2000. It is one of the leading institutes in India and is considered to be the pioneer in ICT.

Association with IEEE: DA-IICT has been associated with IEEE from the very beginning since its establishment. The **IEEE Student Branch** plays a very vital role in the lives of the students. The major events are **IEEE summer school** and **i-Fest** (annual technical festival). **WIE** also takes lead in promoting technical activities among women in college and outside. **STAR** program and **technite** are the major events conducted by WIE. The IEEE student branch has been winning the best student branch award in our section for the last five years.

IAS SB DA-IICT: Industry Applications Society came to DA-IICT with the visit of **Mr. Peter Magyar** in Dec, 2011. Our major **objective** is to bridge the gap between academics and industry. **Benefits** to members include free participation in events like Industrial tours and Technical sessions. We also provide **financial support** and **mentors** to projects that have industrial applications. IAS also provides opportunities for attending **international** and **national conferences**.

IAS SB DA-IICT has bagged a lot of awards since its establishment. The list includes the **1st prize in the Web Chapter contest**, 2013 (check out our website at: http://ias.daiict.ac.in), **3rd in the Most happening Chapter contest** and **1st in the intercultural event** held during the IAS Annual Meeting in 2012 and 2013. We also acclaimed the title of being one of the **Outstanding Young Chapters** in 2013. Several student members have won the **Zucker Travel award** both in 2012 and 2013. **Ms. Megha Tak**

was awarded with the title of being the **Outstanding Student Chapter Chair in 2012**.

The chapter has been involved in a plethora of activities ranging from **technical, social, administrative, membership development, tutorial and Industry tours**. The student branch has sponsored several **projects**, the latest being the UAV (unmanned aerial vehicle) project. The key events this year include the visit of **Mr. Blake Llyod and Mr. Peter Magyar** in April. They became part of our winter semester's '**members meet**' and they also took an enlightening session on IAS and its role. Another key event this year was the **Women in Industry Awareness Challenge** where IAS and WIE partnered up for the celebration of International Women's Day.

Upcoming events include **iBot**: a robotics competition and a **session on Web development**. This year's major achievement has been that membership development activities like **junior orientation** and **members meet** have helped making our society grow even more with 67 members.

Message from the Prof. Rahul Dubey (Chapter Advisor):

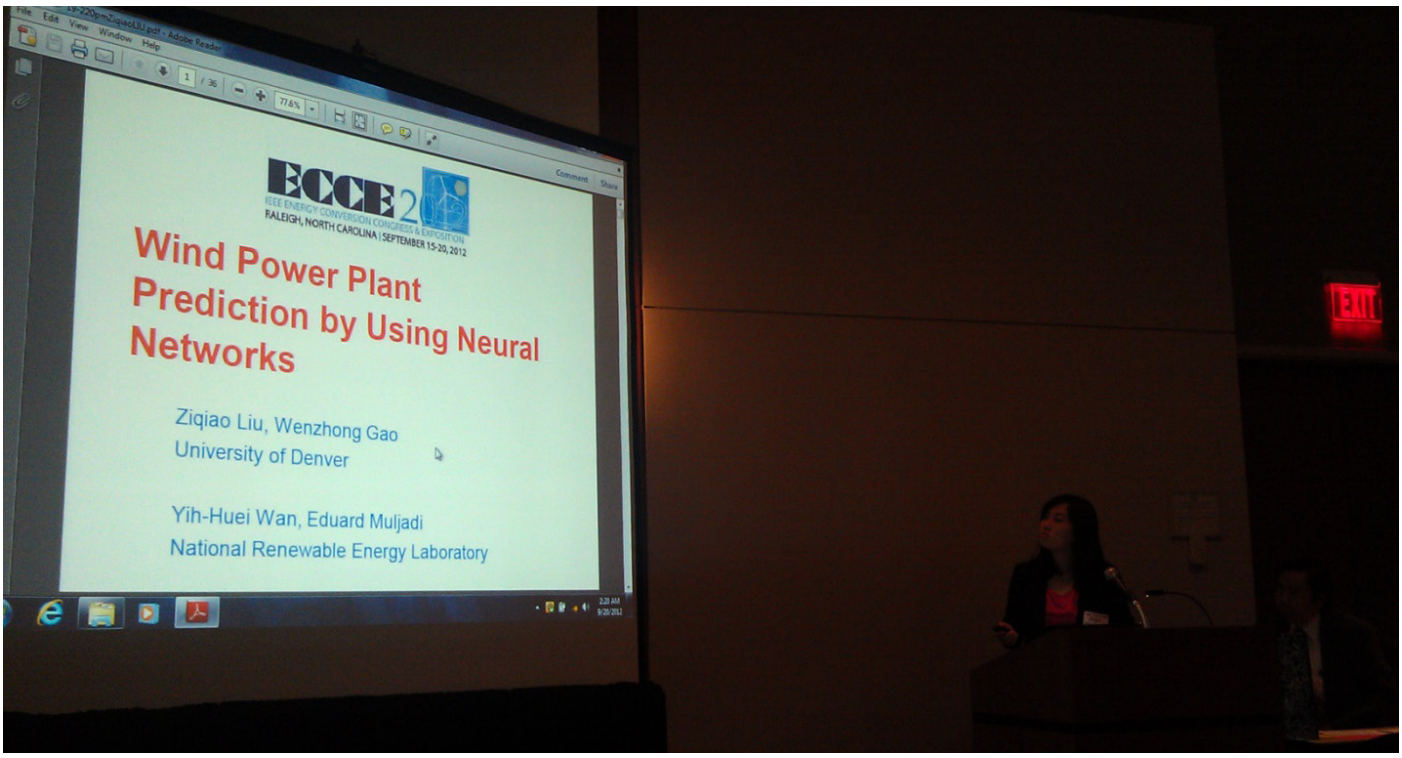
It is very heartening to see the Industry Application Society (IAS) student branch at DA-IICT getting better by the day. In the past one year of existence, the student branch has conducted several factory visits and workshops for students. All the events have been well attended and there has been lot of enthusiasm. The credit for this great beginning goes to the branch chair and its members.

I see the IAS student branch in playing a very vital role at DA-IICT. Our education system is unable to provide real world understanding and synergy to the content taught in the class room. The IAS student branch will provide for this much needed industry connectivity. This should help the students to relate with the concepts taught in the classroom and make engineering fun.

DENVER UNIVERSITY SBC

by Ziqiao Liu

I am a PhD student in Electrical Engineering major at D**aniel Felix Ritchie School of Engineering & Computer Science, University of Denver (DU)**. Doing research on renewable energy and write my research results into academic paper is the main part of my life. Luckily, I got a publication on **ECCE 2012** and attended ECCE 2012 as a speaker for my publication which is related to wind energy. Then I had a chance to know I**EEE Industry Application Society (IAS)**, which changed and riched my life. The first person I met in IAS was **Dr. Peter Magyar**, who is IEEE IAS Chapters and Membership Development Department Chair and he introduced IAS to me during the break in ECCE 2012. Later on, Dr. Peter Magyar proposed to build a Student Chapter at University of Denver, since there is no such organization in our school for students, which is an excellent opportunity.



After I went back to DU, I talked about IAS Student Chapter to my colleagues at the engineering department, who shown great interests. With their support, the guidance from **Dr. Peter Magyar** and the help of **Professors Mohammad Matin** and **Jun Zhang**, I formed my IEEE Student Chapter petition and submitted to IEEE official site on Sep 10 2013, which is the 193rd IAS chapter and the 57th IAS SB chapter worldwide.

On Sep 15 2013, Dr.Peter Magyar came to DU with 3 IAS members from Indian to have an informal meeting with me Dr.Peter Magyar gave me more detail suggestions on IAS Student Chapter operation, which includes Student Chapter news updating, IAS Student Chapter website building, etc. Moreover, they visited our campus in order to have a deep impression of DU.

The purpose of IEEE IAS Student Chapter at DU is to **promote students communication in engineering discipline** and **get more connection with industry**, board students engineering view in academic and practical. Now there are 10 members in IAS DU Student Chapter, which includes 6 PhD students and 4 Master students. And the number of our member is increasing since we are enrolling more undergraduate students.

After the petition form was submitted, the **first IAS Student Chapter**

activity in DU was immediately going on with the **opening of ECCE 2013** in Denver. Our first activity was a **seminar regarding microgrids** presented by Dr. Josep M. Guerrero from Aalborg University. The topic was **“Research Challenges in Microgrids Technologies”**, which is very hot in power research area.

Here I would like to thank you Dr,Josep M.Guerrero, who gave our chapter a successful start and helped to propagate IAS DU Student Chapter during ECCE 2013.So in our first seminar on Sep 17 2013, not only students at DU attended, IAS president Dr. Blake Lloyd, IAS CMD Chair Dr. Peter Magyar and researchers from other universities who were attending ECCE 2013 also came to support.

During awards luncheon ECCE 2013, our Student Chapter had the honor to meet IEEE President Dr.Peter W. Staecker to introduce the youngest IAS Student Chapter and we had a nice conversion about the IAS activities in Indian area.

TEXAS A&M UNIVERSITY PELS - PES - IAS CHAPTER

by Michael T. Daniel

The **Texas A&M University IAS SBC** was founded in October of 1998, making it the **oldest IAS SBC worldwide**! Since that time, our group has added student chapters of the Power Electronics Society and Power & Energy Society to our SBC, making it officially the **Texas A&M University PELS-PES-IAS SB Joint Chapter**. The chapter is currently chaired by **Michael T. Daniel, PhD student in power electronics**. The chapter advisors are **Dr. Robert S. Balog, professor of power electronics, and Dr. Le Xie, professor of power systems.**

The chapter has grown rapidly over the last two years under the leadership of past chair **Qin Yan, PhD student in power systems**. The chapter now boasts 70+ student members, and we are continuing to reach out to new groups of students to continue to grow!

The chapter uses the following mission to help guide its activities and pursuits: We encourage **professional and technical growth** in our members, offer **networking and recruiting opportunities** to our members, and **improve the public's understanding** of our profession.

The chapter has recently added many new activities it's agenda, such as a **weekly seminar series,**

technical field trips, technical workshops, and a chapter logo design contest!

In the past year the chapter has hosted approximately **25 invited seminar from institutions such as UC Berkeley, Aalborg University, US Department of Energy, ABB Corporate Research**. Our seminars regularly attract approximately 30 attendees, and many more for the more interesting lectures!

The chapter has also put on **several field trips** to nearby industries, including three natural gas power plants, a 2 MW nuclear research reactor, and Toshiba International Corporation.

After winning **several awards** in the past year for recent activity, the chapter is excited for the future! Plans for **future activities** include hosting an **IEEE conference in 2015**, adding **social events** for members, **increasing undergraduate membership**, and **common activities with other SBCs**!

Chapter Chair: Michael T. Daniel (michael.t.daniel@tamu.edu)
Chapter Advisor: Dr. Robert S. Balog (rbalog@tamu.edu)
Chapter Advisor: Dr. Le Xie (lxie@ece.tamu.edu)
Chapter Website: ieee-powerengineering.tamu.edu

Democritus University of Thrace (DUTh), named in honor of the ancient Greek philosopher Democritus, who hailed from the town of Abdera in Thrace, was the **first Greek polyhedral regional university.** Established in July 1973, it has been an indisputably significant contribution in the **strengthening of national and cultural identity** of the border region of Thrace. Based on its high quality of teaching and research level, it has proven to be **among the best Greek Universities.**

As a University, the DUTh is a **Public Entity** with complete administrative autonomy, supervised and funded by the State via the Ministry of Education and Religious Affairs. Operating **18 Departments**, grouped into **8 Faculties, in four cities of Thrace** (Xanthi, Komotini, Alexandroupoli and Orestiada) with a total of thirty-two active student groups (one of them being **IEEE IAS SBC**), two clubs of intern students and three Cultural Clubs.

Amongst others, **DUTh Career office** is an incredibly organized, well connected, student/graduate assistance structure, offering personalized guidance to each and every individual, **aspiring to link the Academic and the Productive Community.** Trusted not just allover Greece, but lately, abroad as well, it has proven to be a valuable asset to this university.

DUTh Engineering Faculty consists of five separate departments. The **Department of Electrical and Computer Engineering (DECE)**, in particular, was the third department of DUTH to be funded. Starting in 1975, it has been a leading academic entity ever since. **Space Internetworking Center (SPICE)**, is an excellent example of the department's **academic work and research potentials**. SPICE, a scientific project of the DUTH Internetworked Systems Lab, has already defined a **cooperation framework with ESA, NASA** and a number of the world's best ranked universities like **MIT** and **Cambridge**. Just give us a chance!