زیست
SPRING 2014

Pakistan Institute of Engineering & Applied Sciences
Nilore, Islamabad

Editorial

A certain shopkeeper sent his son to learn about the secret of happiness from the wisest man in the world. The lad wandered through the desert for forty days, and finally came upon a beautiful castle, high atop a mountain. It was there that the wise man lived. "Rather than finding a saintly man, though, our hero, on entering the main room of the castle, saw a hive of activity: tradesmen came and went, people were conversing in the corners, a small orchestra was playing soft music, and there was a table covered with platters of the most delicious food in that part of the world. The wise man conversed with every one, and the boy had to wait for two hours before it was his turn to be given the man's attention. "The wise man listened attentively to the boy's explanation of why he had come, but told him that he didn't have time just then to explain the secret of happiness. He suggested that the boy look around the palace and return in two hours. "'Meanwhile, I want to ask you to do something,' said the wise man, handing the boy a teaspoon that held two drops of oil. As you wander around, carry this spoon with you without allowing the oil to spill. '"The boy began climbing and descending the many stairways of the palace, keeping his eyes fixed on the spoon. After two hours, he returned to the room where the wise man was. "'Well,' asked the wise man, 'did you see the Persian tapestries that are hanging in my dining hall? Did you see the garden that it took the master gardener ten years to create? Did you notice the beautiful parchments in my library? '"The boy was embarrassed, and confessed that he had observed nothing. His only concern had been not to spill the oil that the wise man had entrusted to him. '"Then go back and observe the marvels of my world,' said the wise man. "You cannot trust a man if you don't know his house" Relieved, the boy picked up the spoon and returned to his exploration of the palace, this time observing all of the works of art on the ceilings and the walls. He saw the gardens, the mountains all around him, the beauty of the flowers, and the taste with which everything had been selected. Upon returning to the wise man, he related in detail everything he had seen. "'But where are the drops of oil I entrusted to you?' asked the wise man. Looking down at the spoon he held, the boy saw that the oil was gone. '"Well, there is only one piece of advice I can give you,' said the wisest of wise men. 'The secret of happiness is to see all the marvels of the world, and never to forget the drops of oil on the spoon.'"

Taken from Paulo Ceolho's "The Alchemist", this tiny excerpt has summed up all what one needs to know about joy and happiness in this world. It's spread everywhere but yet easily neglected. You as well might be longing for it; spending too much time in caring about those two drops of oil. If you do; then try taking a break. Forget about all the worries, get out of your nutshell and enjoy the marvels.

The oil might get spilled in doing so, but you will indeed get to know another face of life. The beautiful one.

Your Editors

غزل

ترے قدموں میں رکھنے کو متاعِ جاں لے آئے

کوئی صدمہ ،کوئی ٹوٹا ہوا پیمان لے آئے

یہ دل میرا نہیں کیوں کہ یہ میری کچھ نہیں سنتا

یہ اب شاید تمہارا ہے، تمہارا جان لے آئے

کسی دل کا تبسم اور کسی کی آنکھ کے آنسو

لٹانے ہم سب لوٹا ہوا سامان لے آئے

ہمارے رت جگے ہیں اور تمہاری یاد کے جگنو

ہمارے جی کو خوش کرنے تمہارا مان لے آئے

وصیت پڑھ کے بھی مری نہ جانے کیوں میرے ہمدم

میری میت تیرے کوچے خدا کی شان لے آئے

تغیر میری ہستی کا وہ شر انگیز پہلو ہے

میں جس وحشت کو بھی ماروں ،اسی میں جان لے آئے

تساہل میں تغافل آپکو شہرزاد سے کیوں ہے

برے وقتوں کی سنگت ہی کوئی طوفان لے آئے

محمد شہزاد :ایم ایس مکینیکل ۱۲۔۱۴

Fly It High

Usman Mehboob BSME-11-15

"Aim for the sky and if you do not reach there you will surely fall among the stars"

Design Build and Fly Competition is a national level event which is held in GIKI every year. It is a joint venture of AIAA GIKI chapter, PIEAS and STEM Careers Program. The Competition aims to provide a real world aircraft design experience to engineering students by giving them the opportunity to validate their analytical studies.

The competition basically focuses on the designing of an aircraft capable of lifting simulated crew passengers in the form of aluminum blocks of pre-defined dimensions. It is a fact that mechanical efficiency of an engine driven propeller is much greater than the propeller rotated by DC motors. In this competition only electric driven radio controlled planes are allowed. Some constraints of maximum current and compulsion of low discharge NiMH batteries make this competition a real challenge for the engineering minds.

To advance through this competition successfully three things had to be kept in focus. The Design report, Viva plus written test and the flight performance on the competition day were the most important considerations during the project. Before doing any engineering project you ought to pass through 5 phases which are conceptual, preliminary, detailed design, manufacturing plan and process and finally the assembly testing. In technical design report of DBFC these phases have to be documented. Viva plus written test preparation is done through the aerodynamics book provided by the supervisor. Finally a test flight is conducted to ensure optimum flying on the competition date.

PIEAS is fortunate to have aeronautics enthusiasts who have brought glory to the institute over the years. Last year the first ever participation of PIEAS in DBFC was historical. Technically the team drag fighters of PIEAS was first. They surpassed all the heavy weights of the DBFC like I.S.T, PAF and EME NUST. This year PIEAS is again participating. This year two teams are going to participate with more passion and more efficient design. The teams comprise of students from all batches of mechanical and some senior batches of electrical. The names of the two teams are PULSAR and ACCIPITER and they have successfully built and conducted test flight of their Aircraft which are named SUPERNOVA and GOSHAWK respectively.

NUKTA' 13

Thrill Surprise, Talent and Enjoyment! Combined into one package and tied with the ribbon of the most experienced and professional judges and guests from the twin cities, NUKTA' 13 offered the best of everything. The annual gift of PIEAS Debating Society and PIEAS Performing Arts Society to students all around Pakistan, this year's NUKTA proved beyond doubt that Pakistan is a land of many diverse and talented souls. The 3 Day Mega Event held at

PIEAS Auditorium on 7th, 8th and 9th of December captured the attention of old and young alike and was a major source of entertainment as recorded by many youth magazines around Pakistan.

Over 50 teams from institutions all over Pakistan participated ardently in the competition and this was the biggest participation recorded in the History of NUKTA since its inception. NUKTA '13 comprised of 3 major categories of events which were further divided as shown :

Declamation
English Serious
English Humorous
Urdu Serious
Urdu Humorous
Videography (short films and/or documentaries)
Dramatics
Comedy plays
Serious Plays

Pakistan is a land blessed with bountiful talent and this fact manifested itself when students from all over Pakistan left the audience spellbound with their awe-inspiring dramatic performances and booming words during declamation contest. In short to summarize such an event and leave out the beautiful details would be a crime to talent itself because even a thousand words fail to do justice to the memories that are NUKTA!

Day 1: Registrations and NUKTA Begins:

The first day of NUKTA started off with a bang when many teams from far away universities arrived at PIEAS even before the break of dawn. The registration team got into action however and effectively

smoothed the process for their registration and comfortable stay at PIEAS Hostels. The crowds started to roll in around early morning and keeping tight to the schedule NUKTA Management immediately started the **Declamation** event as soon as the Respected Judges arrived at PIEAS.

Declamation is said to be an art of emotions. To take the audience with you on a roller coaster ride of downfalls and upheavals and to make them believe that what you tell them is the only shred of truth in the auditorium. Many contestants were able to create such an atmosphere during the serious declamation topics and on the other hand talented comedians had people rolling on the floor laughing (ROFL) with their hidden puns and extremely funny parables. The 1st Day of NUKTA Declamation came to a close when there were too many participants and the judges were running short on another schedule so the participants left from the 1st round were moved on to the second day.

The day might have ended with Declamations but it was the night that filled the auditorium with colors and energy. Staying heavy on the visual effects the PIEAS Performing Arts Society alternated playing videos from videography contestants with the amazing stage performances given by the dramatics participants. As is always the case with live performances, the actors always worked hard to get attention from the audience but some failed to do so while a few exhibited themselves so flawlessly with perfect execution of script work that they garnered the complete attention of the Judges and audience as well at the same time.

Although the audience were enjoying to their fullest but the NUKTA Management had to call it a day after a fixed number of plays and videos had been shown. Therefore the 1st Day of NUKTA came to a close with the audience in anticipation as to what surprises awaited them on the 2nd Day.

Day 2: Round 2; a new beginning:

With baited breaths and pounding hearts the audience started pouring in as soon as the gates of the auditorium were opened. The first priority as soon as the Judges arrived was to wrap up the 1st round of Declamations and it would have been a source of regret if the participants were not given a chance as many performances given by debaters surpassed even those of the previous day. With the auditorium resounding with booms of emotional outburst to the deathly silence when the contestants wanted the audience hanging onto every word; the 2nd day turned to be as good a start as the first if not better.

Another tradition set by the PIEAS Debating Society was that Host Debaters opened the floor for the contestants by making a speech themselves to set the pace for what was to follow. By mid-afternoon, the 2nd

round of the Declamation started with some debaters out of the race but the competition became even tougher as only the best progressed further. With new topics being given for English Humorous/ Serious and Urdu Humorous/Serious the stage was a new battleground altogether. It was a new beginning for all contestants and that of course made it all the more interesting for the audience and judges.

The Actors and Video Editors amazed the audience as well as soon as night came by and the Auditorium was filled with vibrant colors once more. Many of the videos shown on the 2nd Day were so emotional

they moved the audience to tears and resulted in standing ovations from the crowd.

Closing Ceremony and the Prizes:

With 3 days of extreme pleasure and enjoyment behind them it was hard for the participants and audience alike to bid goodbye to such a fantastic display of talent and skill. However as they say, "All good things must come to an end" and this is the reality that all had to accept as they waited with baited breaths for the closing ceremony. Some were sad and some were in deep anticipation for the rewards that their hard work was to reap for them and of course like every other event some were in for some huge surprise results! Therefore to keep the readers from any further anticipation and guessing here are the complete list of Judges and winning participants for every event at NUKTA '13:

Judges:

Declamation:

        Waleed bin Rashid (PTV News Caster and Renowned Debater)

        Abdul Wahab (Renowned Debater and former President of UET Debating Society)

        Abdul Wahid (Mphil PIEAS Student, Vice President UET Debating Society)

        Muhammad Faisal Fateh(The most famous Debater of PIEAS and Renowned Orator)

Dramatics And Videography:

        Mussarat Naheed Imam(Famous Artist and Director Visual arts PNCA)

        Farooq Abbas (Director)

        Musarat Malik (Actor)

        Tariq Malik (Actor)

        Sajid Munir (Director Lok Virsa Islamabad)

        Wasim Haider (Music Director)

In short this year's NUKTA proved beyond doubt that Pakistan is a land of many diverse and talented souls and to summarize such an event and leave out the beautiful details would be a crime to talent itself because even a thousand words fail to do justice to the memories that are NUKTA!
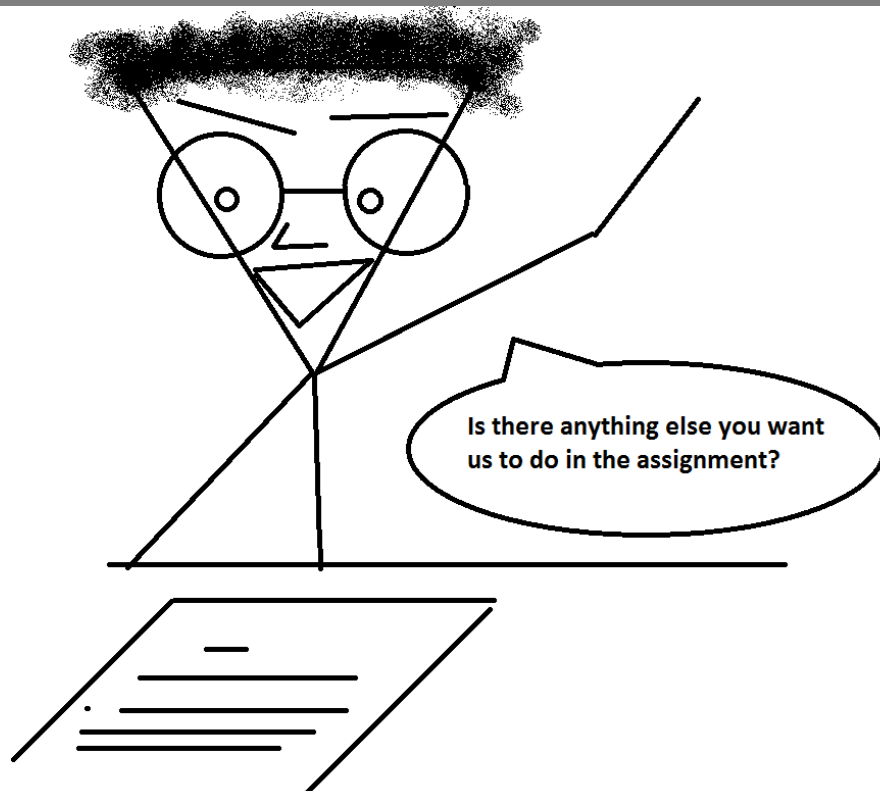
PIEAS Islamic Society

All Pieas Qirat and Naat Competition

Pieas Islamic Society organized "All Pieas Qirat and Naat" Competition that was held on Wednesday, 18 December 2013 at Pieas Auditorium. A large number of students from BS and MS participated in the competition with great zeal. Productive aspect of the event was that students with talent and devotion were given confidence and the platform to show their qualities in the respective field. This event also manifested the team that would represent the university in future events in inter universities competitions.

 Dr. Abdul Jalil and **Dr. Yousuf Hamza** in Naat contest while in Qirat competiton **Prof. Muhammad Sarwar** and **Muhammad Asif** were given the honour of judgment. Event carved its way successfully to the end without any disturbance. At the end, Qirat and Naat souvenirs and certificates were awarded to the winners and participants.

A Colloquium with Dr. Anis Ahmad

As the world is progressing and new and young scientist and engineers are emerging in different fields of science ,a Muslim has to play his role in this developmental race also according to the predefined rules of Islam and for this very purpose *Pieas Islamic Society* invited a renowned personality Dr.Anees

to deliver a speech on a topic "Role for Muslim Engineer and Scientist in a Society" .Who is well known for his astounding and sound knowledge and his wonderful achievements and his intellectual efforts which he has put forward for guidance of students.

Dr.Anees's speech was very persuasive and thought provoking and circumscribed all spheres of Islamic life. He also addressed the whole faculty staff members to cultivate sense of moral discipline, honest and constructive thoughts in their students. Dissolving the ambiguity in the thoughts of students, he also gave them a sense of courage and hope that one day we will be acknowledged by the whole world if we embrace all those principles with the open heart which Islam wants us to be equipped with.

He ended his speech by giving the answer to the audience questions. This event shall show great impacts in future, Insha Allah.

"Allah is the ally of those who believe. He brings them out from darkness into the light."

Surah Al-Baqarah: 257

Revive The Light Within, Let The Change Begin

Shifa Inter-Scholastic Tournament 2014 held at Faisal Mosque Auditorium Islamabad was a two day event comprising a diverse range of competitions on nearly every subject of life. PIEAS recorded its first participation in the event with gusto and excitement. The team from PIEAS named PIEAS Mujahedeen comprised of a total of 14 members led by Nauman Shahid Khan of BS Mechanical 2012-2016 with participation in almost all the categories being offered at the competition. PIEAS shined out at this event as well with mention of PIEAS Mujahedeen team members being made in every nook and corner of the Faisal Mosque Auditorium. It was a proud moment as PIEAS students to feel such recognition on an external platform and compete with many other famous universities of Pakistan. Team PIEAS Mujahedeen stood out in the following events:

Tajweed/Tilawat of Holy Quran: 1st prize won by Hafiz Mutahir of MS 13-15

Nasheed/ Naat: Sweet and melodious praise for the Holy Prophet (SAW) drifted through the crowd delivered by Syed Ibtehaj (BSME 12-16) and Hafiz Mutahir of MS 13-15.

Islamic Jeopardy/ Quiz: Team from PIEAS won 2nd prize and went head to head with RMC college team in the finals losing by only 1 question. The quiz team was as follows:

>   Nauman Shahid Khan (BSME 12-16)
>
>   Bilal Ahmed (BSME 12-16)
>
>   Abdul Rafay (BSME 12-16)
>
>   Sultan Abdul Wasay (BSME 12-16)
>
>   Muhammad Abdullah (BSME 12-16)

Debates: PIEAS Mujahedeen Team Leader Nauman Shahid Khan(BSME 12-16) debated in the Final round of the SIST Debates and was applauded by the audience but unfortunately could not grab the position.

On-spot Essay Writing:

>   Abdul Rafay (BSME 12-16) participated in Urdu Essay Wiriting
>
>   Usman Ashraf (BSEE 12-16) participated in English Essay Writing

Bait Bazi: Usman Mahboob (BSME 11-15) and Muhammad Imran (BSME 12-16) displayed their amazing proficiency of the poetry of Iqbal.

Photography: A brilliant depiction of talent by Haseeb Shafaqat (BSME 12-16)

Calligraphy: A Splendid work of art portrayed by Khatat Muhammad Abdullah (BSME 12-16)

Overall out of a total of 35 teams that participated in SIST 2014, Team PIEAS Mujahedeen attained 5th position in terms of participation and prizes won. It was also one of the biggest teams officially representing an institution present at the event.

<u>Congratulations to all the winners and all participants for making PIEAS proud yet again.</u>

Summary of Event By TEAM LEADER Nauman Shahid Khan BSME 12-16

IEEE PIEAS Student Branch

GRE Workshop

IEEE PIEAS SB in collaboration with **United States Educational Foundation** in Pakistan (USEFP) arranged 8 hours' workshop on GRE (Graduate Record Examination) at **PIEAS Teleconference hall** on **23rd of October**. Workshop was attended by students of BS (Senior Semester) and MS Fellows. Be-

sides some enthusiastic students of 3rd and 2nd year also attended the workshop.

IEEE Fast Week

FAST organized a mega event by the name IEEE Week from **2nd -7th December**. IEEE PIEAS SB participated in two events of this IEEE Week, by the names;

- Race Coding
- MatheMagician

In Race Coding, 2 teams participated from IEEE- PIEAS SB, along with about 15 teams from various universities including hosts FAST.

In MatheMagician 3 teams from IEEE PIEAS SB competed against 20 teams of various universities including hosts, FAST. *Team Alpha* from IEEE PIEAS SB won both the competitions by securing 1st position in both Race Coding and MatheMagician.

Role of Women in Engineering and Women Empowerment (WIE event)

The event was arranged by WIE IEEE PIEAS SB. A talk was followed by a discussion and Q/A session between the experts from the field of engineering and Students. About 30-35 female engineering students attended the event. Guest speakers were:

Engineer Dr Durdana Habib (CHAIR WIE AFFINITY GROUP, FAST NU, Islamabad)
Engineer Dr Rizwana (Principal Engineer ICCC)
Engineer Asma Rana (Senior Engineer ICCC)
Miss Qura-tul-Ain (Ph.D. Fellow DEE PIEAS)

Pi-Electric

Pi-Electric was an event of its 1st kind ever organized by any society in PIEAS, employing the Mathematics, Digital logic designing and Programming skills of the participating students. It was a 2 day event (19-20 December 2013) & comprised of:

Leibniz of 'PIEAS

An Integration/ Differentiation/Modelling based mathematics test- as is obvious from the name. About 30 students participated on individual basis in a written test of 90 mins. (Venue: I-102)

Innovate to win

About 12 teams (2 members/ team) participated in a logic based IQ test comprising two rounds:

Round 1 (40% credit) à based on simple logical questions.
Round 2 (60% credit) à based on logic design problems.

Programmer-X

About 12 teams (2 members/ team) participated in a C++ programming competition consisting of intense programing skills demanding C++ problems. (Venue: CC)
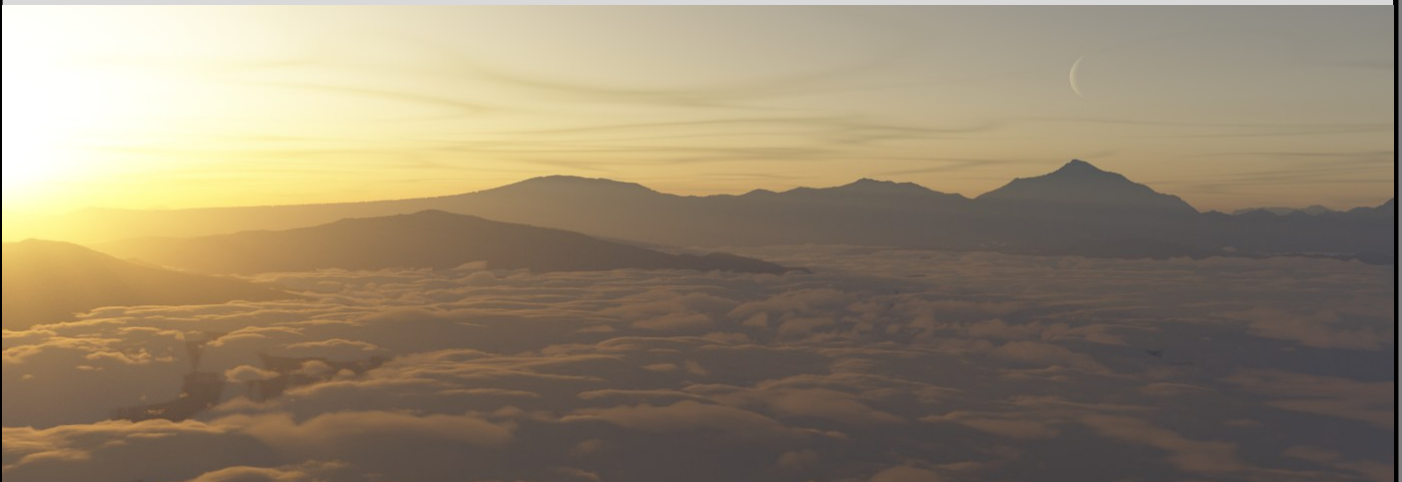
The prize distribution was held a week after, with Dr. Haroon-ur-Rashid as the guest of honor.

Besides the technical grooming of young Engineers of PIEAS, another purpose of the event was to prepare the PIEASian teams for upcoming External Event: *Giki Neo '14* (Jan-Feb 2014)
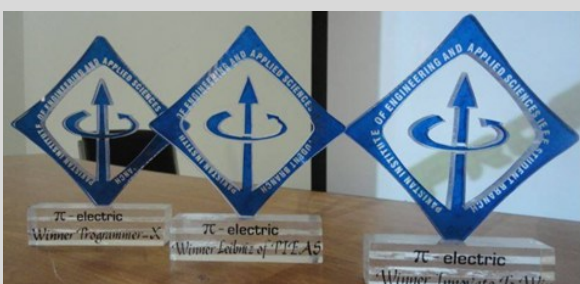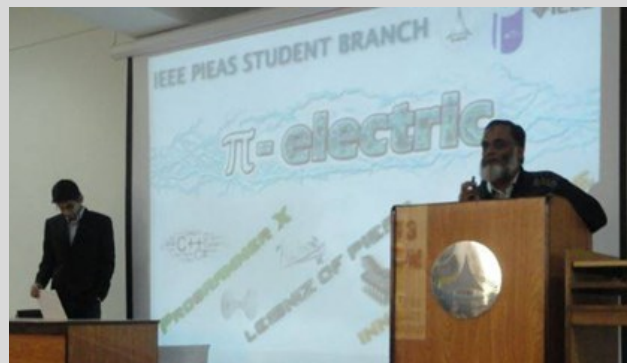
Computer-Generated Imagery (CGI)

Abdul Rafay BsME-12-16

These pictures might confuse you with some photographs or photo-shopped photographs, well they are not. These are all rendered images. That is what we call CGI or computer generated imagery. To understand CGI you have to imagine yourself with a power to create whatever you want. Many a times you imagine some place/building/figure that you want to create or at least to have the looks according to your imagination. But sadly you cannot.

Let's for the sake of imagination take some barren land as an example that you want to see filed with lush green trees. Your creativity tells you that it would look amazingly beautiful that way. Now you can do the planting to make it look the way you imagined it but of course that would take years to do so. Another way is to take a picture of that land and fill it with trees using Photoshop. This might give you satisfactory results but not that level of control and realism that you want with it.
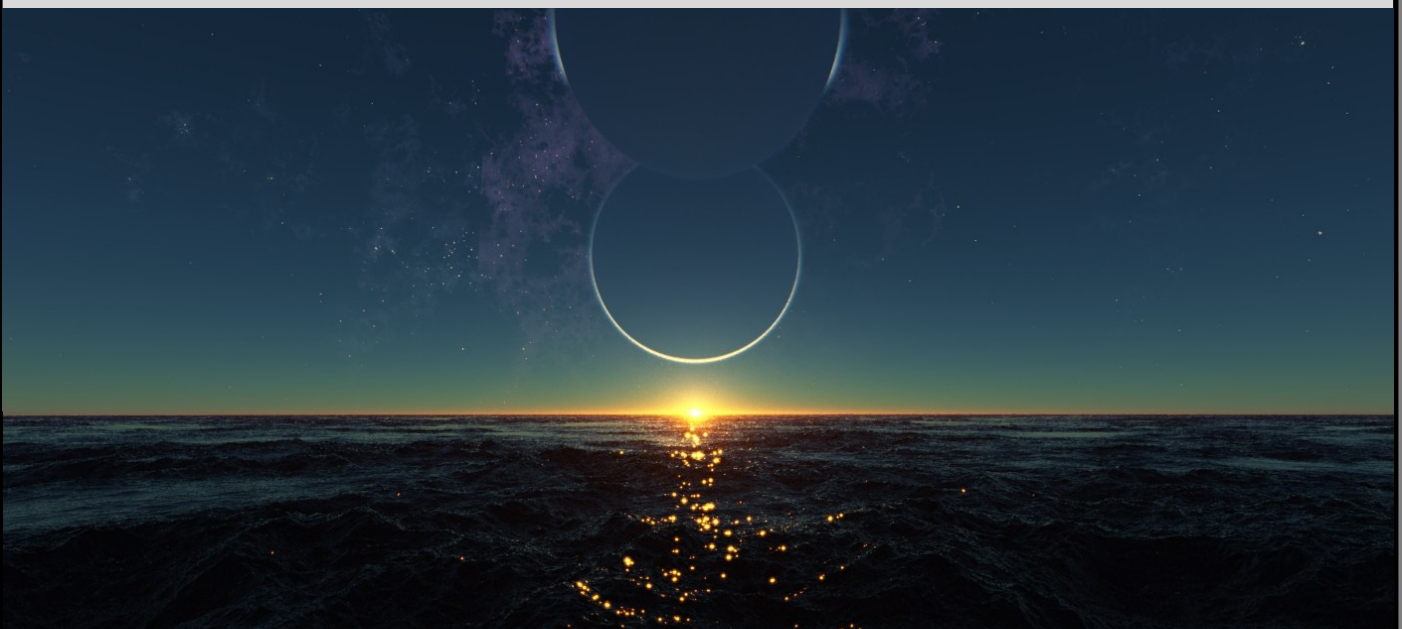
Another choice is to go for CGI. You pick a 3D CGI software. Create a matching 3D landscape in it. Place 3D trees on that landscape just the way you might had them on the real landscape. And then just render it.

You can create your own trees, add tiny detail on them the way you see fit. You can fill sky with clouds, change the position of sun or hide it to create a night scene just like you are doing it in a real world. While this degree of freedom allows you to realize your every imagination, it becomes difficult as well to control. Because now it's you who has to decide, what color your sky is going to have, what will be the color/shape/height of your clouds and how will your vegetation look.

How does the computer do this? It simulates the 3D models, performs some calculations of light and shadows and simulates it like real world. In all of this, you just have to command it how it should operate. Sounds simple. Well it should as long as you don't consider its technical depth. In the background there are bits i.e. zeros and ones. The GUI (graphical user interface of the software you are using) translates these bits into a language which is understandable by humans. This language in our case is of course a 3D landscape (or whatever you have already created in such a 3D modeling/designing software) in which you can freely roam about just like you move your character in a game. The 3D landscape you see prior to the rendering is called real time (or runtime) rendering. They are not very realistic, and does not have very good looks. This is because complete calculations of light optics take a lot of time in giving the accurate results.

Hence when you are finished with adding details to your scene, you go for the final render. At this stage computer runs calculations of light optics and gives you the final result. And here we are with a CGI.

A very general example of this is AutoCAD. The preview you see on the screen is a runtime render. When you go for a final render it gives you a very fine and detailed model of what you had previously built(It might be the case that it looked very ugly before rendering then rendering it might had given you some sense of satisfaction). Which is CGI as well.

To sum it up: CGI is just like taking a photograph, however in this type of photography you build your own world.
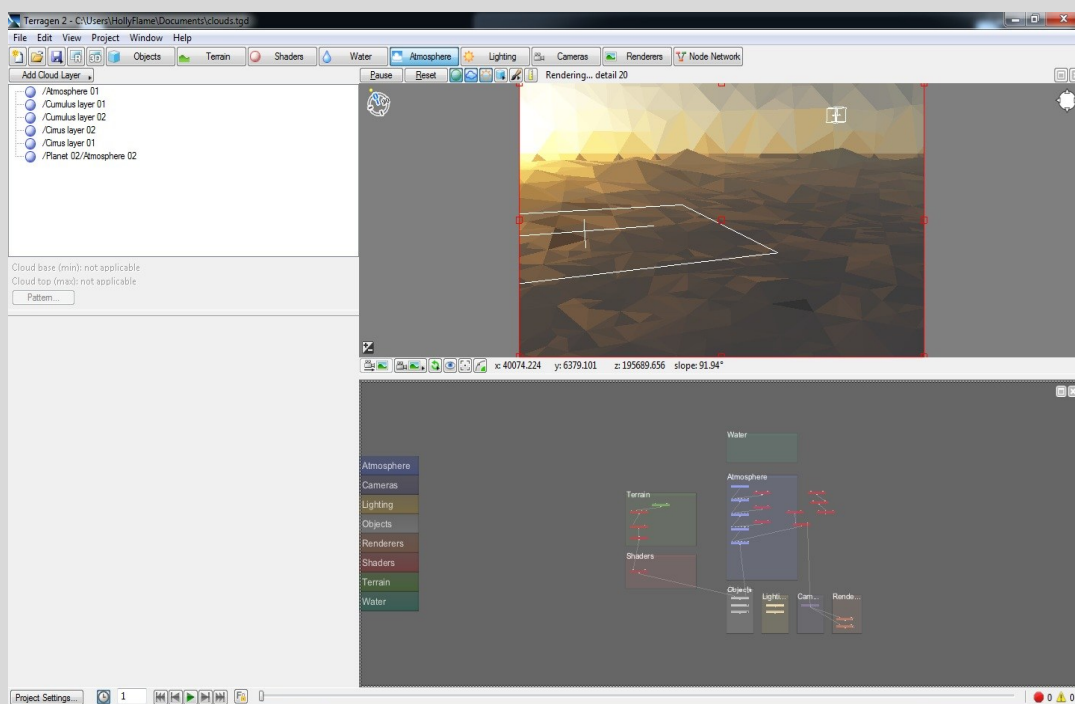

A preview of Terragen 2.0; a 3D designing and rendering software; which I used to render all the 3 images shown on the previous page.

`Author

PIEAS Thematic Society

AAGAHI III

After a brief period of dormancy, PTS is back stronger than ever. This semester was launched off with **AAGAHI III**, PTS's traditional orientation session for the freshmen. Held on 13th September, it was the Society's welcome to the new students, and an intensely motivational and thought-provoking event. PTS saw heavy inductions after **AAGAHI III**, making it the society with the highest membership.
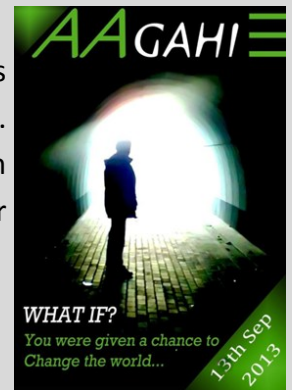
Olympiad de Engineering

PTS's all-round event **Olympiad de Engineering** was held on 6th and 9th October. Its first leg consisted of **Construct-a-thon,** a glider design and bridge-building competition, and **Scavenger Hunt. CaT** saw particularly heavy participation from the sophomores. The teams were given a short presentation on the basics of design and construction. The provided items included plywood, thermo pore sheets, etc. and assorted binding material. Teams were given a time of 2hrs 15mins to complete both glider and bridge. The finished models were evaluated on the basis of teamwork, viva, and flight/weight test.

Winning Team: AROL

Scavenger Hunt

The Scavenger Hunt was by far the most popular event, with 15 participating teams. In Round 1, teams were given a list of tasks to perform, each carrying specific points. After the allotted time, teams' performance was evaluated, and the teams that progressed to the next round were given riddles to solve. A further 5 teams progressed to the next round based on Round 2. In Round 3, teams had to solve riddles which pointed to clues hidden all over PIEAS. Cards had to be collected from the locations, each having fixed points. The final results were compiled based on the points of each round.

Winning Team: BISTANDERS

Battle of Thetas

Battle of Thetas, the second leg of OdE, carried on last year's tradition with a few changes in format. For Round 0, teams were first given a short multiple-choice test, and out of the participating 30 teams, the top 18 were shortlisted for the next round. This year, there were no games. Round 1 was a buzzer round. Sets of 3 teams each were called on stage, and had to answer maximum questions in a collective total of 5 minutes. The top-scoring team from each set was selected for Round 2. In this round, teams were called onstage in sets of 2, and had to pick and answer 5 questions from questions prepared by different teachers. The final 3 teams had to answer 10 questions each, also prepared by teachers. The highest scor-

ing team was declared the winner. Afterwards, prizes were distributed to the winners of BoT, Scavenger Hunt, and Construct-a-thon. Dean Engineering Dr. Javed Hyder was the Chief Guest.

Winners: Syed Ahmed Noor, Hamzah Ayub

Pro-Team

The showpiece event of the semester was **Pro-Team;** a professional guidance workshop, its purpose was to provide much-needed personal and career-oriented counselling for the students of PIEAS. Held on 18th December, **Pro-Team** was very well-received by the student body. Notable amongst the participants were MS fellows, particularly doctors. PTS invited Ms. Maira Nazir (Assistant Manager Operations Department, Al Baraka Bank Pakistan Ltd) and Mr. Irataza Ali Nemati (Manager Corporate Communications, MSG Pharmaceuticals) to speak in the session. The workshop was not a walk-in affair; participants had to register beforehand. **Pro-Team** was divided into two parts; lectures by the guest speakers, and mock interview sessions. The guests spoke about correct professional behavior, personal grooming, communication, body language, confidence, and interview skills. This was an interactive lecture, with students participating in the discussion, as well as present faculty members Dean Engineering Dr. Javed Hyder, Advisor PTS Dr. Masroor Ikram, and Head SADiv Dr. Arif Gilgiti.
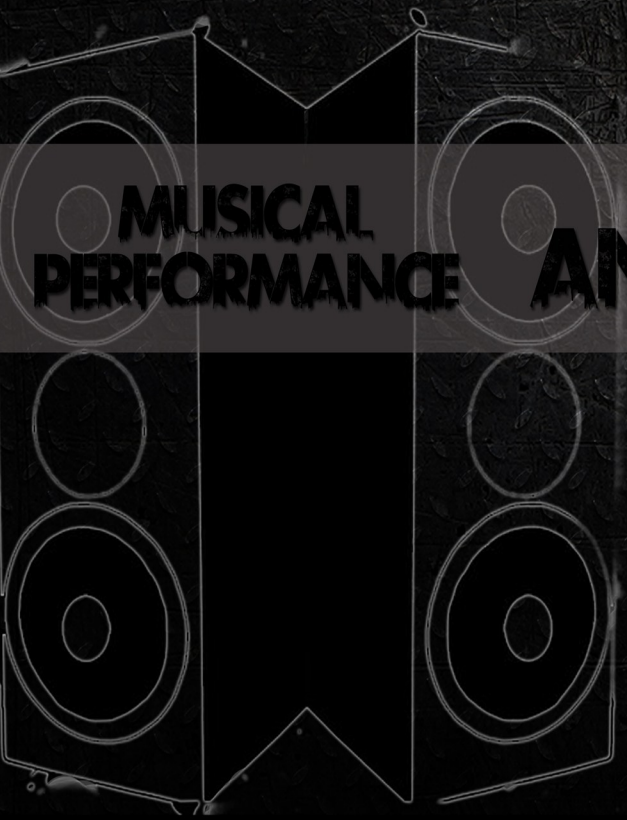
PP₂S.

PIEAS PERFORMING ARTS SOCIETY
presents

THE ANNUAL NIGHT

MUSICAL PERFORMANCE   ANNUAL PLAY   MOVIE NIGHT

27th March, 2014
Venue: PIEAS Auditorium