



EMANATION



MECHANICAL DEPARTMENT NEWSLETTER



Creating a legacy, as we have said in these pages, KSIT-Emanation is on a roll. Engineers turn ideas into reality; they question, explore, invent, discover, and create. Our increasing recognition is evident by the enormous success of our staff and students' effort in contributing their rich service in several structures. KSIT-Emanation is expressing in its own way the hidden talent of our young minds. The contents of this newsletter definitely highlights the exciting activities of staff and students in all domains of engineering. I personally thank everyone for their effort in bringing out the fourth volume of **EMANATION** which contains useful information and also looking forward to hear from all readers, who would like to share with us.

Dr. T. V. Govindaraju
Principal / Director

CO-ORDINATORS

Prof. B.V. Srinivasmurthy

Prof. Umashankar M

COMMITTEE

- Sachin B.G.
- Tejaswini Nagesh
- Smriti Sreedhar
- Shreyas H.S
- Vinayak Sharma
- Apoorva Vij
- Anirudh V
- Abhijith Magal
- Kaushal V Patil
- Kushal M Kothar
- Akarsh N
- Dinakar D P
- Lingesshwar S
- Akshay D S
- Ankush



THE DIVINE PROPORTION

Leonardo Da Vinci has long been associated with the golden ratio. This association was reinforced in popular culture in 2003 by Dan Brown's best selling book "The Da-Vinci Code." The plot has pivotal clues involving the golden ratio and Fibonacci series. In 2006, the public awareness of the association grew when the book was turned into a movie starring veteran actor Tom Hanks. Da Vinci's association with the golden ratio, known in his time as the Divine proportion, runs much longer and deeper.

>>Page 4

REPORTS:

- Enigma >>Page 10
- Ananya 2K15 >>Page 11
- Baja >>Page 10



PHYSICS OF CRICKET

Cricket is a subtle game requiring a great amount of patience as well as skill. Physics is one of the oldest academic disciplines while cricket is one of the most watched games. Physics of cricket elaborates on the elements of physics that plays a major role in cricket.

>>Page 7

THE FASTEST INDIAN



The fully fared Pulsar 200 is here and it will not be called the 200SS as it was speculated before. Read more about the 'Fastest Pulsar yet'.

>>Page 8



CRASH AND BURN!

Are you afraid of plane crashes? Most people are, and it's not so hard to understand why. The Transportation Security Administration screens over 1.8 million passengers every day, and each traveller places his or her trust in that system: it simply has to work. What's more, flying carries inherent, built-in risks. Planes are machines, and machines sometimes malfunction. Flight attendants and pilots may even fly several times per week, and although the airlines take as many precautions as possible, at these speeds and altitudes, mistakes can have serious consequences. Anyone who reads the paper or watches the news can tell you that plane accidents do sometimes happen.

>>Page 3



We thank the management of Kammavari Sangham :

Sri Y. Ramachandra Naidu

Hon. President

Sri K Venkatesh Naidu

Hon. Secretary

Sri D Rukmangada

Treasurer

For their constant support and encouragement.



Thought from the Editors:-

Greetings and a warm welcome to our fourth edition of 'EMANATION'

'Emanation' began as a dream back in March 2014 and since then each edition has emerged as a new dimension at the college level through publishing various articles, photos and information. We have tried our best to include content that would appeal to all sections of people and we will continue to do the same.

This edition, unlike the previous editions, is categorized into the following sections.

Each section consists of articles, information and photos related to the topic. Apart from this, we have provided an insight into the recent happenings at KSIT, events, seminars and there is a special feature on this year's college fest, **ANANYA 2015**. We also have an interesting article on 'Physics in Cricket' which highlights the aspects of science involved in various cricketing strategies. In view of the recent 'German Wings' plane crash, we have included an article which talks about air crashes that have happened in the past. The editorial team of 'Emanation' has been working constantly gathering news and content to make this edition equally good, as compared to our three previous editions.

While there is an aim to provide updating information that invokes and inspires, a quality that is central to 'Emanation', it is just not about the words, it is the imagery and space in between that enhances the exchange, where content can be felt as well as understood.

As a team, we would also like to acknowledge the contribution of everyone who made these issues possible. We hope you have a nice time reading the same.

-Team Emanation

AERO-INDIA2015

Aero India is an air show and aviation exhibition held in Yelahanka Air Force Station Bengaluru, India. Organized by Defence Exhibition Organization, Ministry of Defence. It is second largest air show in the world after Paris Air Show.

The tenth edition of Aero India was held from 18th to 22nd February 2015. The main attraction of this year was the **Make In India** campaign by Prime Minister Narendra Modi who inaugurated the show. He mentioned that it is easier for public, private and foreign investors to manufacture defense equipment in India after the reform of the defense procurement policies and procedure. He also mentioned the simplification of offset procedures and mentioned the need to have strategic partnerships rather than buyer seller relationships. The Small and Medium scale industries are also meant to benefit from being part of global supply chain by providing cost effective engineering solutions to global players. There is a requirement of one million skilled workers in the Aerospace industry in India in the next 10 years. This can create large number of jobs. Prime Minister Modi said that "A strong Indian defence industry will not only make India more secure. It will also make India more prosperous".

A total of 72 aircraft were part of the air show. The main attraction of the event was the fly past and demonstration by HAL Tejas, HAL Light Combat Helicopter, Sarang display team and air display teams from Sweden, UK, Czech Republic and Open sky jump by US Special forces. A total of 11 foreign military aircraft on display, out of which a majority of them from the United states including two F-15C Eagles, two F-16C Fighting Falcons, one Boeing KC-135 tanker, 1 C-17 Globemaster III and a P-8A Poseidon maritime surveillance aircraft.

Aero India has already carved a niche for itself globally as a premier aerospace exhibition, with nine successful editions



organized between 1996 and 2013. Aero India 2015 provided a significant platform in bolstering business. It is favorably poised an exponential growth over previous edition. A rapidly growing economy, defence preparedness challenges and opening up of defence production to private sector, have given a major fillip to the defence industry in India. It has also become a hub center for defence business in the asia region.

Main attraction of the Aero-India 2015 being the release of MAKE IN INDIA brought about significant developments in the field of automobiles, automobile components, defence manufacturing and electrical machinery. With the investment policies of foreign direct investment and national manufacturing opening up opportunities to Indian companies rather than the foreign incoming companies make in India initiative has created massive openings for Indian market. The need to raise the global competitiveness of the Indian manufacturing sector is imperative for the country's long term-growth. The National Manufacturing Policy is by far the most comprehensive and significant policy initiative taken by the Government. The policy is the first of its kind for the manufacturing sector as it addresses areas of regulation, infrastructure, skill development, technology, availability of finance, exit mechanism and other pertinent factors related to the growth of the sector.

PLANE CRASHES

29 March 2015, Air Canada A320-200; C-FTJP; flight AC624; near Halifax, Canada: The aircraft was on a scheduled domestic flight from Toronto to Halifax, Canada. At the time the aircraft entered the Halifax area, visibility was limited due to both darkness and snowfall, and the aircraft entered a holding pattern before attempting a landing. During final approach, the aircraft touched down about 300 meters short of the runway, apparently hitting a combination of power lines and a localizer array before sliding onto the runway. The aircraft slid down the runway about 1000 meters, coming to rest just off the left side of the runway. Damage to the aircraft included collapsed main and nose landing gear, both engines severely damaged, with the left engine sheared off and damage to the wings, stabilizers, and underside of the fuselage. While there was a fuel leak, there was no post-crash fire. There were no severe injuries among the five crew members and 133 passengers.

24 March 2015; Germanwings A320-200; D-AIPX; flight 4U9525; near Barcelonnette, France: The aircraft was on a scheduled international flight from Barcelona, Spain to Düsseldorf, Germany. About a half hour after take-off, while at a cruising altitude of 38,000 feet, the aircraft began losing altitude, and crashed about ten minutes later. The investigative authorities suspect that the first officer deliberately crashed the aircraft. All six crew members and 144 passengers were killed.

Before you panic or give in to your fear of flying, it's best to try to gain a little perspective. According to the National Safety Council, the odds of dying in an aviation accident in the U.S. (over a lifetime) are about 1 in 7,178, while the odds of dying in a car crash are 1 in 98. According to a report by OAG Aviation and PlaneCrashInfo.com, the odds of being killed during a single airline flight on one of the top 78 major world airlines is one in 4.7 million. In other words, the odds are in your favour. If you've ever wondered why plane accidents happen, here are the top five reasons.



The Most Common Reasons for Plane Accidents

1. Pilot Error:

Pilots must navigate through dangerous weather, respond to mechanical issues and execute a safe take-off and landing. Some plane accidents are caused when pilots misread equipment, misjudge weather conditions or fail to recognize mechanical errors until it's too late. Some pilot errors can even be the result of mental problems. A flight to Tokyo crashed in 1987 because a pilot who was known to have serious psychological problems put the plane's engines into reverse during mid-flight.

2. Mechanical Error:

The second most common cause of plane crashes is mechanical error. Some mechanical errors occur because of a flaw in the plane's design. For example, in 1974 a Turkish Airlines flight to

France crashed because of a design flaw in the latch of the cargo door. A West African Airways flight to Nigeria crashed in 1955 because a flawed wing design led to metal fatigue cracks and wing failure.

Sometimes, mechanical failure occurs when outside circumstances damage the plane. Birds have caused at least seven plane crashes to date.

3. Weather:

Although flights are often grounded when weather conditions are deemed hazardous, storms, heavy winds and even fog can sneak up on pilots and air traffic controllers. Lightning strikes can be especially dangerous. When lightning hits a plane, it can disable it in many ways. Aviation accidents have happened because lightning caused electrical failure, because it ignited fuel tanks and pipes, and even because the flash itself caused temporary blindness.

In 2010, an Indonesian plane carrying 103 passengers crashed when inclement weather conditions caused the pilot to overshoot the runway. The plane skidded into a pool of water at the end of the runway and crashed into a nearby hillside. The impact of the crash caused the jet to break in half.

4. Sabotage:

Plane crashes that are caused by sabotage draw the most media attention. Some sabotaged flights crash because of hijackers, and of course the most notable examples are the three flights that were hijacked on September 11th. But despite increasingly strict TSA regulations, some passengers still manage to smuggle bombs or firearms onto planes. When they're successful, a single passenger can bring down a jet, killing hundreds of people.

1.61803398875

The Golden Mean, Phi, the Divine Section, The Golden Cut, The Golden Proportion, The Divine Proportion, and tau(t).

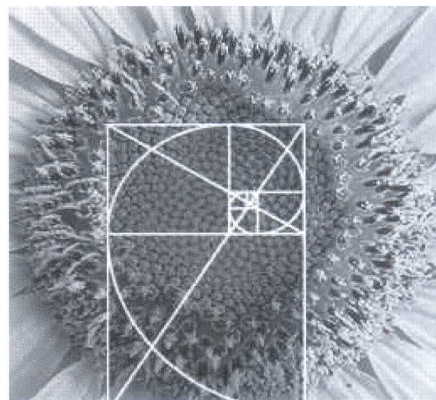
In mathematics, two quantities are in the golden ratio if their ratio is the same as the ratio of their sum to the larger of the two quantities. Expressed algebraically, for quantities a and b with $a > b > 0$,

$$\frac{a+b}{a} = \phi,$$

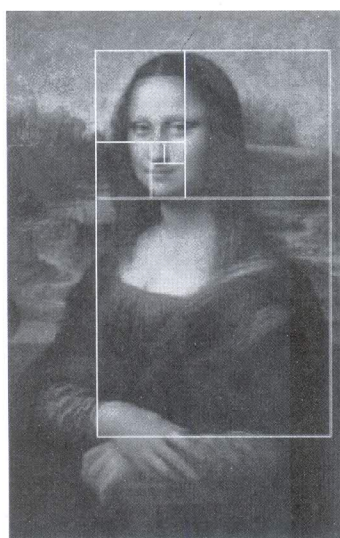
where the Greek letter phi (ϕ or ϕ) represents the ratio. Its value is:

$$\phi = \frac{1 + \sqrt{5}}{2} = 1.6180339887 \dots$$

golden



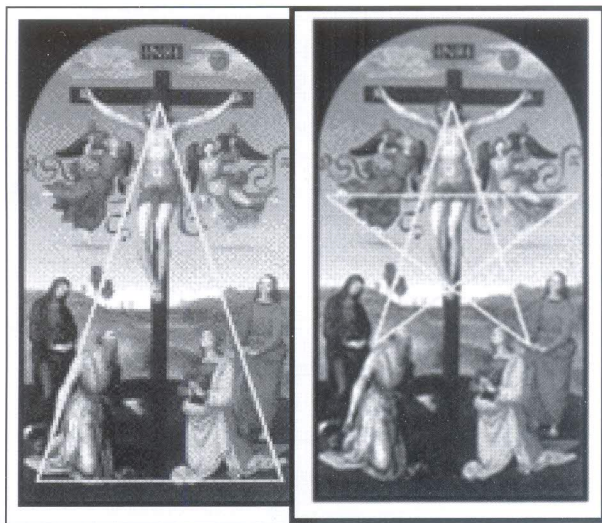
MONA-LISA BY LEONARDO DA VINCI



This picture includes lots of Golden Rectangles. In above figure, we can draw a rectangle whose base extends from the woman's right wrist to her left elbow and extend the rectangle vertically until it reaches the very top of her head. Then we will have a golden rectangle. Also, if we draw squares inside this Golden Rectangle, we will discover that the edges of these new squares come to all the important focal points of the woman:

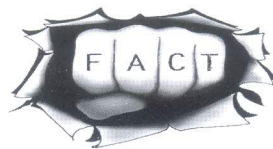
Her chin, eye, nose, and the upturned corner of her mysterious mouth.

It is believed that Leonardo, as a mathematician tried to incorporate mathematics into art. This painting seems to be made purposefully line up with the golden rectangle.



CRUCIFIXION BY RAPHAEL

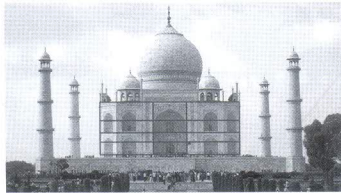
His picture is a well-known example, in which we can find a Golden Triangle and also Pentagram. In this picture, a golden triangle can be used to locate one of its underlying pentagrams.



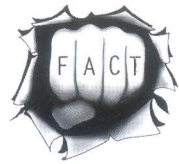
- ♦ The name of the painting, Mona Lisa was the result of a spelling error! The original name of the painting was Monna Lisa. Monna in Italian is a short form of Madonna, meaning 'My Lady'.
- ♦ The painting has an imperfection. In 1956, a man named Ugo Ungaza threw a stone at the painting. This resulted in a small patch of damaged paint next to her left elbow.
- ♦ Leonardo Da Vinci took 12 years to paint Mona Lisa's lips.
- ♦ Leonardo Da Vinci used to buy caged birds and set them free.

THE DIVINE PROPORTION

Some of the greatest mathematical minds of all ages, from Pythagoras and Euclid in ancient Greece, through the medieval Italian mathematician Leonardo of Pisa and the Renaissance astronomer Johannes Kepler, to present-day scientific figures such as Oxford physicist Roger Penrose, have spent endless hours over this simple ratio and its properties. But the fascination with the Golden Ratio is not confined just to mathematicians. Biologists, artists, musicians, historians, architects, psychologists, and even mystics have pondered and debated the basis of its ubiquity and appeal. In fact, it is probably fair to say that the Golden Ratio has inspired thinkers of all disciplines like no other number in the history of mathematics.

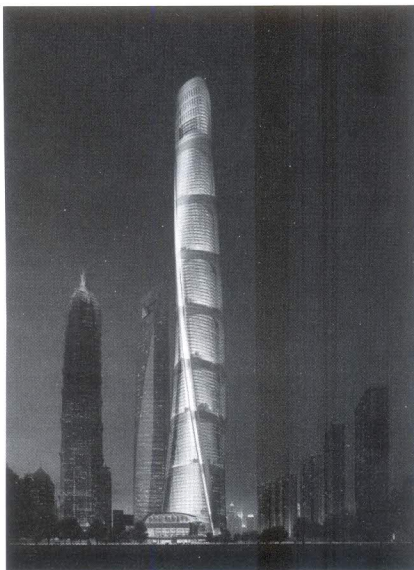


Divine Taj



- ♦ There are 10 Million bricks in the Empire State Building.
- ♦ The base of the Great Pyramid in Egypt is large enough to cover ten football fields.

Shanghai Tower



In the olden days, architects used to develop building concepts, and then mechanical engineers and structural engineers would get involved. Now, from day one we are identifying specific performance objectives and collaborating with our partners to ensure we are getting it right."

The Shanghai Tower is the tallest of a group of three adjacent supertall buildings in Pudong, the other two being the Jin Mao Tower and the Shanghai World Financial Center. The building stands approximately 632 metres (2,073 ft) high and has 128 stories, with a total floor area of 380,000 m² (4,090,000 sq ft). Its tiered construction, designed for high energy efficiency and sustainability.

Engineers had to steel the building against not just wind but also an active seismic zone and soft clay based soil that makes it tough to build pretty much anything using an intelligent 3D model created through Building Information Modelling (BIM), the engineers tested several different earthquake scenarios against the soil conditions. Then they compared the data with China's seismic code. The structural skeleton has a set of statistics that an engineer can love: A 20 feet deep foundation, with 2500 friction piles buried 263 feet in the ground, a mega frame, super columns, outrigger trusses, and double belt trusses and so on.

By modelling various options and conducting wind tunnel tests, the design team discovered that a 120° twist and 55% taper combination reduced wind loads by 24% and material costs by \$58million. This tower has been compared to a vertical city where there are parking shops, restaurants, lobbies, conference centres, offices, a hotel and an outdoor observation deck at the top - the highest of its kind in the world. The sustainability feature includes the best practices of the day: Rainwater collection, green roofs, wind turbines, water efficient fixtures, lighting control, geothermal heating and cooling and an intelligent skin which twists at an angle of 120°.

The Shanghai Tower represents a new way of defining and creating cities. By incorporating best practices in sustainability and high-performance design, by weaving the building into the urban fabric of Shanghai and drawing community life into the building, Shanghai Tower redefines the role of tall buildings in contemporary cities and raises the bar for the next generation of super-high-rises.

Location	Lujiazui, Pudong, Shanghai
Height	632 m (2,073 ft)
Engineer	Thornton Tomasetti Cosentini Associates
Tip	632 m (2,073 ft)
Top floor	556.7 m (1,826 ft)
Architect	Marshall Strabala and Jun Xia
Cost	US\$2.4 billion

AN INTERVIEW WITH THE ALUMNUS

Mr Krishna Kishore



**“Focus on real knowledge
not just bookish knowledge”**

Mr Krishna Kishore worked at Honeywell from 2003 to 2007. After working for 5 years he started Drone Aerospace.

Drone Aerospace is an aerospace related company for unmanned aerospace system. Their flagship product is the autopilot system. Fully integrated systems which has all the sensors like accelerometer, gyros, magnetic sensor, pressure sensor (barometric and pitot) and APS one unit is enough to fly a fixed wing as well as multi rotor aircrafts, used by ISRO-airbus, VTOL, Ground vehicle.

Q. It is a common discussion among us students that whether what we study in our curriculum is applied in real life problems?

A. Frankly speaking they are applied, but in a subtle way. You never realize that you have actually applied the concepts that you've learnt. The problem really comes in the way it is taught. Basically you can't recognise applications the way it is being taught. That's where I think the real problem with education comes. Application definitely is there, but depends on the type of job.

Q. What motivated you to become an entrepreneur?

A. When I finished college I wanted to be an entrepreneur at that moment itself but things didn't work out and that's how I took up a job. Things worked out five years later and that's how I started and that was a good thing because you need experience. For anybody who is trying to be an entrepreneur, I would definitely recommend you go to service for sometimes because that's when you learn the way things work.

Q. Recently we've seen mechanical engineering graduates being placed in IT companies.

A. Definitely. One of the two things that happens is either complacency happens and they get used to the money and type of job they are doing and then they don't want to take the risk. Or if the passion still stays for a long time then definitely they move on and do something else. But somewhere

the passion has to become stronger than the fear of doing something new.

Q. To become an entrepreneur, one needs to have an initial capital investment, how did you go about it?

A. That's the part I was talking about working for 5 years. I have spoken to at least 20 VCs in the five years when I was at Honeywell trying to get this thing rolling. But nothing really worked out and the terms didn't work out. I was naturally scared when the VCs said that I have to return 200% in the next year. Engineering doesn't pay off so easily. It takes time. We were 3 partners in the companies and we made our own investments.

Q. How would you describe the transition from being a student to an entrepreneur?

A. It is seamless. You will never realize it. Life moves on. 10 years later when you look back you realize there is a huge amount of change. It is like growing up, it is gradual. You will learn along the way.

Q. What were your achievements in your college days?

A. I was a guitarist in the KSIT college band Bhoomi. I took part in a lot of science activities as well. Back then through Honeywell we had a joint project. In the first half of my engineering I was more into cultural and into technical in the second half.

Q. Tell us about your journey from KSIT to Honeywell

A. Honeywell and KSIT had a strong relationship back then. When I finished my engineering my final year report

was on Ornithopters, a bat-like aircraft. My report got noticed by certain people in the community of micro aerial vehicle. Dr. Abdul Kalam was the president at that time and one of his associates got this article and took it to Dr. Kalam and finally my report was signed by him. That got published in the newspaper and people in Honeywell were pursuing activities similar to what I had done. And that is how Honeywell happened.

Q. What do you enjoy the most?

A. I enjoy my time at work. I love my work and love spending time with my family.

Q. Your message to KSIT-ians

A. While you are in college enjoy as much as you can no matter what other troubles you have in life! (laughs) But at the same time focus on real knowledge not just bookish knowledge. Please go on internships, open source projects and work on them. Do things other than college activities.

Drone
AEROSPACE SYSTEMS

For more details visit:

<http://www.droneaerospace.com>

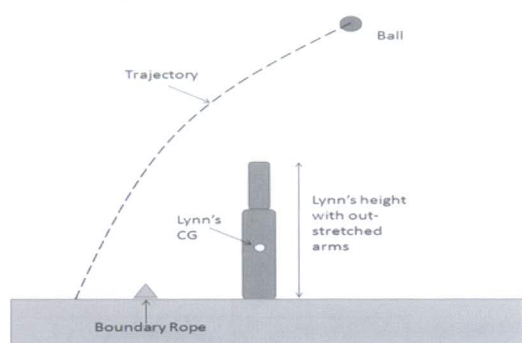
PHYSICS OF CRICKET

...Why didn't Chris Lynn fall on the boundary rope while making the best catch in cricketing history?

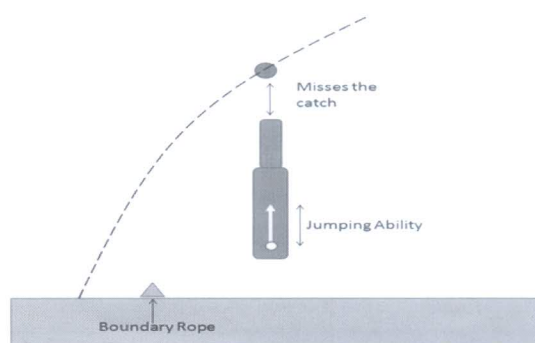


In this picture, it is clearly seen that his shadow right below has crossed the rope and his neck should have landed on the rope. But he ends up landing about 7-9 inches inside the rope and was sliding his neck away from the rope. How is this possible? Which force is responsible for his change of trajectory mid-air?

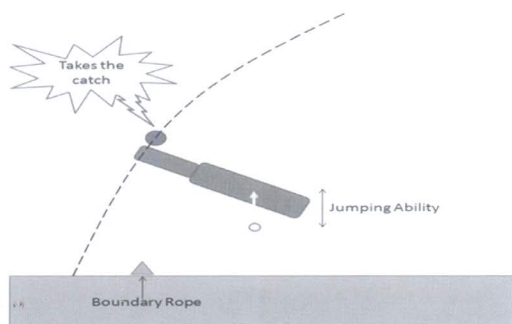
Let's start with a slight detour - There is a very famous (& I think very cool) physics fact about pole vault. When a pole vaulter jumps a high bar, her Center of Gravity (CG) need not go as high as the bar she needs to clear. In other words, at the top of the jump the pole vaulter needs to go over the bar and not her CG. To achieve this, pole vaulter arches her back forwards or backwards to be in a situation where the body is clear of that Newton's laws only dictate the trajectories of the CG and not the entire body.



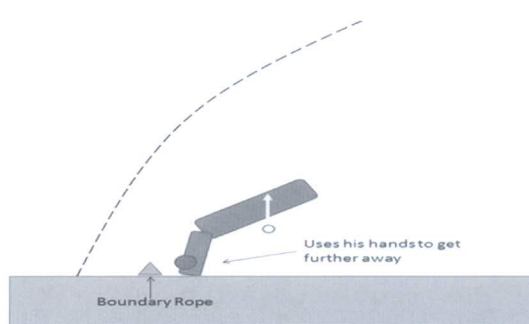
Lynn's miraculous falling back within the boundary rope is something similar. After the little stumble he has just before he makes his jump, he has his eyes on the ball. Assess the trajectory of the ball, and it looks something like this .



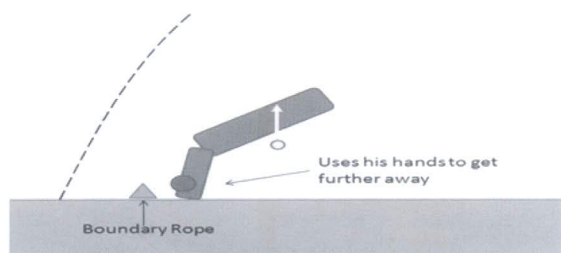
Now Lynn considers jumping straight up and try get the ball. Is there a chance he can make it? His jumping ability is limited and there is only a limit to which he can raise his CG. He would not have caught the ball



However, if he jumped and turned back at the same time things could look very different even if his jumping ability is considered to be the same. As this diagram illustrate



He does exactly that makes the catch and after which since his CG is still very much inside the boundary region he can easily use his body to bring his hands inside the boundary rope. Eventually using his hands to safely land well within the boundary.



He does exactly that makes the catch and after which since his CG is still very much inside the boundary region he can easily use his flexible and agile body to bring his hands inside the boundary rope. Eventually using his hands to safely land well within the boundary.

"An expert is a person who has made all the mistakes that can be made in a very narrow field."



EIGHT LEGGED WONDERS

Tarantulas comprise a group of often hairy and very large arachnids belonging to the Theraphosidae family of spiders. Tarantulas may run faster in hot temperatures, but they also have decreased coordination. Spiders have developed a unique way to move around: Rather than relying mainly on muscles to move, they use a fluid called hemolymph, which is their blood. When hemolymph flows into their tube like legs, the limbs extend and their flexor muscles bend the legs at the joint, causing that fluid to flow back out.

Temperature can change the thickness, or viscosity, of hemolymph. The researchers studied eight adult Texas brown tarantulas. They tested the spiders' speed and agility at four different temperatures: 59, 75, 88 and 104 degrees Fahrenheit. When the spiders were placed in temperatures that were higher or lower than that range, they tended to turn around and get into an attack stance.

Spiders have two joints along each leg, and the one closest to the body typically extends first when they're walking or running. To calculate each spider's coordination, the team painted a white dot on each of the joints on a foreleg and hind leg, and compared the angle of the two joints on each leg. Then they filmed the spiders scuttling down a runway.

At lower temperatures, the spiders moved more slowly, likely because the hemolymph was more viscous than at higher temperatures. Still, lower temperatures had a perk: The tarantulas had more coordination when the thermometer read 59 or 75 F.

But at the higher temperatures, and the faster running speed, the two joints were less coupled. The two joints on each leg were a lot less well controlled at the higher temperatures.

It would be difficult to catch the tarantula's unsteadiness with the naked eye. They move fast, and the researchers had to slow down the video in order to calculate the angle of each leg. Regardless, the spiders' instability at high temperatures may explain why some tarantulas emerge at dusk, when the weather is cooler. The finding extends beyond the world of spiders, and may help engineers who study hydraulic robots "Hydraulic extension has its limitations," she said. "And the limitations happen at the faster speeds, rather than the higher fluid viscosities."

THE FASTEST INDIAN



The RS 200 will have the same 199.5cc triple spark plug engine which makes 23.5PS/18.3Nm in the 200NS. It is quite unlikely but Bajaj may have extracted a little more power from this engine. However, it is more probable that the 'fastest Pulsar' tag simply comes from the fact that the added aerodynamics will give the bike a higher top speed. It will be mated to a 6-speed manual transmission. Expect it to return close to 58kmpl fuel efficiency according to Bajaj's internal test claims.

While the cycle parts remain the same except for the aforementioned faring, other features include twin projector headlamps with LED DRLs like in the KTM RC series, LED tail lamps as well as a side slung exhaust. While the carbureted variant has been photographed often on tests, we do know that there is a fuel injected version on sale in some international markets, it is unclear if this version will come to India. Expect Bajaj to price the Pulsar RS 200 at a premium of about Rs 25,000 over the 200NS.



You can squeeze 8 motorbikes in the same parking space as a car.

Specifications Summary

Fuel Type: Petrol

Mileage-City (kmpl) 30.20

Mileage-Highway (kmpl) 40.30

Fuel Tank Capacity (litres) 12.00

Transmission Type Manual

Engine Displacement (cc) 200

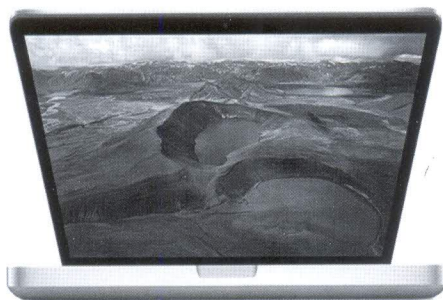
Maximum Power (PS) 23.52

Performance Data:

Acceleration: 0-60kmph: 4.33 seconds

0-400m: 18.14 seconds

Top Speed: 119.03 kmph



THE NEW MAC BOOK PRO

A groundbreaking Retina display. A new force-sensing trackpad. All-flash architecture. Powerful dual-core and quad-core Intel processors. Together, these features take the notebook to a new level of performance. When you pack so many pixels into a display — over four million on the 13-inch model and over five million on the 15-inch model — the results are positively stunning. The

pixel density is so high, your eyes can't discern individual pixels. Images take on a new level of realism. A spectacular 2560x1600 resolution on the 13-inch MacBook Pro and an equally impressive 2880x1800 resolution on the 15-inch MacBook Pro let you see more of your high-resolution images with pixel-for-pixel accuracy. Thin and light, MacBook Pro is designed to go anywhere — including places with less-than-stellar lighting. A built-in sensor detects changes in ambient light and adjusts the keyboard and display brightness automatically. So you're never left in the dark.

The 15-inch MacBook Pro with Retina display has the power to do even more amazing things. Fourth-generation quad-

core Intel Core i7 processors let you make quick work of even the most complex tasks in professional apps like Final Cut Pro X, thanks to speeds up to 2.8GHz, 6MB of shared L3 cache and Turbo Boost speeds up to 4.0GHz. And every model comes as standard with 16GB of super-fast memory. All of which means the 15-inch MacBook Pro is ready to take on whatever you can dream up, wherever your travels take you. For even more impressive graphics performance, choose the 15 inch model that combines the power of Iris Pro Graphics with the NVIDIA GeForce GT 750M. Thanks to 2GB of GDDR5 memory, you see many more frames per second in 3D games and get greater speed and responsiveness for all your video projects.

THE *Scorpène* CLASS SUB MARINE

The *Scorpène*-class submarines are a class of diesel-electric attack submarines jointly developed by the French DCN and the Spanish company Navantia and now by DCNS. It features diesel propulsion and an additional air-independent propulsion (AIP). In 2005, the Indian Navy ordered six *Scorpène*-class; all the Indian boats will be built in India, at Mazagon Dock and elsewhere, and the last two are to be fitted with an Indian AIP module. For the follow-on requirement of six submarines, DCNS plans to offer a larger version of the submarine to the Indian Navy.

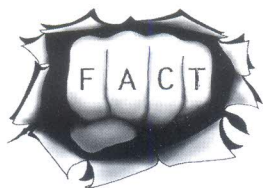
The *Scorpène*-class of ships has four subtypes: the CM-2000 conventional diesel-electric version, the AM-2000 AIP derivative, the downsized CA-2000 coastal submarine, and the enlarged S-BR for the Brazilian Navy without AIP

The diesel-electric powered Scorpene submarine to be called INS Kalvari after commissioning will undergo extensive sea trials before it is cleared to formally join the Indian Navy.

India is building six Scorpene submarines with the help of French firm DCNS at MDL. Though the first Scorpene submarine was scheduled to be handed over in 2012, the revised dates are now September 2016.



INS KALVARI



- ◆ When India became a republic on 26th January, 1950 the Royal prefix was dropped and the name Indian navy was officially adopted. The prefix on her ships was changed to INDIAN NAVAL SHIP (INS).
- ◆ India is the only country in the world to operate sub marine launch supersonic cruise missiles.
- ◆ The Ezhimala naval academy in Kerala is the largest of its kind in Asia.
- ◆ Indian navy ranks fifth in the world in terms of fire power and personnel

Redline Racing : BAJA SAEINDIA 2015

It was a great privilege and honour to be a part of the SAE BAJA team from K.S Institute of Technology. I was one among the 25 member team who dreamt big and achieved what we had set off for. We, as a team took up the initiative to design, develop and fabricate an off road buggy, for one and only task to win the SAE BAJA event. This buggy was completely designed, developed, fabricated and tested using in house facilities provide by the institution. We were constantly supported by our faculty advisors Prof Sreesudha N and Prof Nagaprasad K.S .

BAJA SAEINDIA 2015 was a huge event that attracted participants from all over the country, there were 320 teams in total that participated in this event. BAJA in India is a two part competition, the first part is called the 'Virtual Round' and then the 'Main Event'. In the virtual round the panel of judges, after a short talk with four of the team members, decide if the team is capable of fabricating the buggy. The selected teams are allowed to fabricate the buggy based on their design. We were one among the 120 teams selected to fabricate and compete in the main event. We were one among the 4 teams selected from Bangalore and the only new team to qualify from Bangalore.

Then came the design part, we had no prior knowledge about BAJA or about fabricating a car. We decided to go ahead and design the roll cage of the buggy first. Well, that back fired later and we had to start designing from the wheels and move up to the roll cage. We designed 13 roll cage models in total, to end up with a presentable and safe design. Then came the suspension design posed as a huge challenge as the roll cage was already designed, but the suspension had to be designed first. So we had to do reverse engineering to design the suspension system.

The main event was held in Pithampur, Indore. The main event consists of three rounds, first the static events followed by the dynamic events and finally the main endurance race. The static event consists of design report, cost report and sales presentation. The dynamic events consist of hill climb, acceleration, manoeuvrability and suspension test. Before the teams can take part in these events they have to clear the safety inspection. In the safety inspection, buggies are first weighed, the engine is checked, the vehicle is technically inspected. This is followed by the figure of 8 test and braking test.

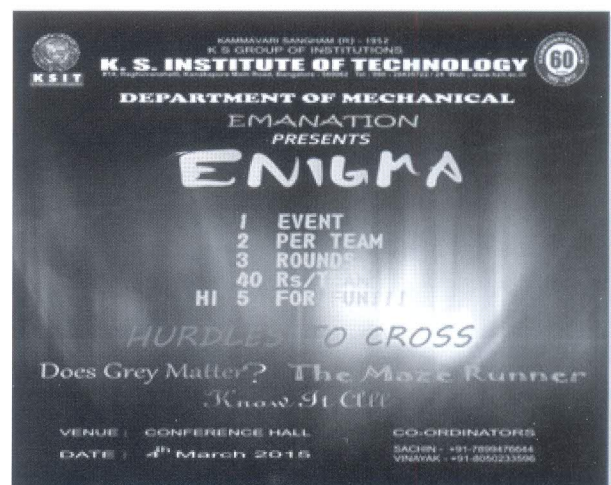


'Redline Racing' team won the second place in the 'Cost Report' and team 'Emanation' congratulates them.

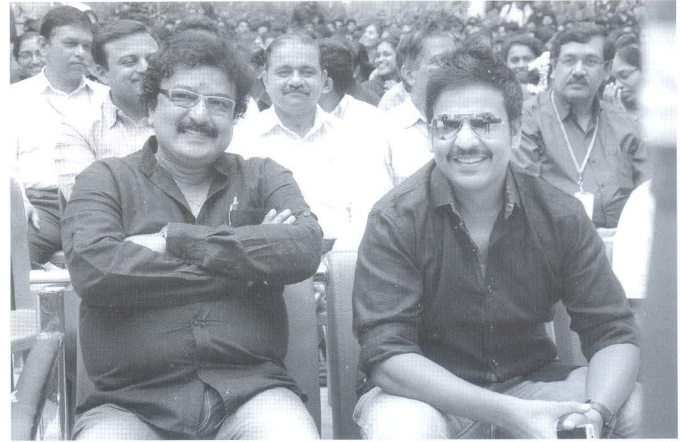
ENIGMA

BY EMANATION

On 4th March 2015, Team EMANATION hosted yet another event called "ENIGMA" after being encouraged by the overwhelming response for our previous events. ENIGMA was the third sequel for Team Emanation after "The Emanation Quiz" and "AZIONARE". ENIGMA was able to reach out to students across all branches, attracting more than 250 entries. This was a team event of two participants per team and ENIGMA had whopping 500 students participating. The event consisted of 3 rounds, each round challenging the students in a unique way. Our first round was "**Does Grey Matter?**" a general quiz in which the participants had to answer 20 mind-boggling questions in a span of 25 minutes. 22 teams having cleared the first round made it to the second round, "**THE MAZE RUNNER**" which was a mapped treasure hunt in which the participants had to use their wits and a little bit of basic math knowledge in order to find the treasure. Six teams made it to the final round which was called "**KNOW IT ALL**". This round was a time based round with 4 sub-rounds: "**Chronology**", "**WhatsApp emojis**", "**Tangrams**" and "**Minute to win it**". The final round received a good response and was highly entertaining. Finally having surpassed all the rounds it was Nikhil and Suryakanth of 4th semester of Computer science department who won the first place and Vivek and Vinayak of 4th semester of Computer Science department won the second place. Overall "ENIGMA" turned out to be a great hit among the students and Team Emanation is grateful to all the students and teachers of K.S Institute of Technology for making "ENIGMA" a successful event.



ANANYA 2K15 — THE KSIT CELEBRATION



Ananya 2015, the cultural festival of K.S. Institute of Technology which was held on 28th March 2015, has left behind lots of joy and memories for KSITians. Be it the vibrant events, practice sessions, getting together with friends, festive atmosphere, everything filled in new energy into college life. This extravaganza got everyone on their toes, since the curtains of this event were raised after a break of 2 years. For many students, it was the first fest since their admission to the college. Students involved themselves in activities and worked rigorously and happily to make this event big. For a week KSIT became the most happening place for students. There were many events like Pot Pourri, Solo Dance, Solo Singing, Choreography, Antyakshari, Rangoli, Mehendi, Nail Art, Face

Painting, Photography, Short Movie Making, Gaming, Quiz, Gulli cricket, Pro-Kabbadi, Mad-Ads etc. and final rounds of few of these events were flagged off on the day of main event. It was a platform for all kinds of talents. The guests of ANANYA 2015 were **Shri. Akul Balaji**, producer-actor, sandalwood film industry and **Shri. Ravi Kiran**, director-producer-actor of the Kannada small screen. Both the personalities excelled in their fields and they added glamour to the event. Mechanical Department bagged many prizes for their outstanding performance in many events. The event was signed off by the flamboyant rivalry between the branches; The inter-department events showcasing the best stuff they have got. To summarize, **ANANYA 2015 RISE.REJENUVATE.SURGE** was true

SMART WINDOW

Weather could power the next generation of smart windows. Researchers have created glass that tints by harvesting energy from wind and precipitation. The approach offers an alternative to other smart windows powered by batteries, solar panels, and even standard power outlets.

Smart glass, which changes its properties to block out light or heat, has been around for decades. Common examples include glare-fighting rearview car mirrors and windows that change color for energy savings and privacy. But many are expensive, and people are still looking for eco-friendly ways to power the windows. Batteries and plug-in outlets aren't ostensibly "green," whereas embedded solar panels can cloud or obscure segments of the glass.

The new glass uses nanosized generators powered by triboelectrics—the static electricity produced by friction when two materials touch. When activated, the generators, which rest in two layers atop a single pane of glass, create an electric current that tints the clear window a dark shade of blue.

The outermost layer of generators harvests static energy from rain. When a raindrop falls from a cloud, the contact between the water and the air creates a positive charge within the droplet. When the droplet strikes the glass, which is coated with nanoscopic pyramids made from a negatively charged silicone material called polydimethylsiloxane, it creates an electric current.

The second layer of nanogenerators lies just beneath the first and harvests energy from the wind. This layer consists of two sheets of charged, see-through plastic that are separated by nanoscopic spring coils. As wind pushes against the window, the springs compress and create an electric current as the charged plates of plastic approach each other.

