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Editor's Note

When Mr. Lakdinu approached me to take on the role of editor for the OREPA newsletter, I accepted without hesitation. However, I soon realized that this publication should not only meet the expectations of the Engineering Professionals Association of my alma mater, Royal College, but also exhibit a high level of professionalism. Therefore, I would like to express my profound gratitude to the following individuals for their unwavering support and contribution to the OREPA newsletter.

Firstly, I am humbled and deeply grateful for the esteemed Principal of Royal College, Mr. R. M. M. Rathnayake, for approving our request to use the college's photographs in not one, but two consecutive newsletters. His enthusiastic endorsement has allowed us to showcase the rich heritage and legacy of our alma mater.

Additionally, we would like to extend our sincere appreciation to Mr. Hayshan Kankanamge, an esteemed Old Royalist and a Senior Prefect for the academic year 2020/2021, and Mr. Chandathapa Senaratne for their invaluable contribution in providing us with stunning college photos. The impeccable craftsmanship of the Photographic Society of Royal College in capturing the essence of our alma mater through their lens is highly commendable, and we are deeply grateful for their contribution.

I would also like to acknowledge Mr. Lakdinu de Silva for his guidance throughout this journey and to Mr. Charith Belpage, who worked as a designer for the magazine alongside me.

I am also thankful to the following individuals for providing us with informative articles for this issue: Mr. Hasindu Warnapura from the University of Moratuwa, Mr. Seniru Kenula Epasinghe from the University of Moratuwa, Mr. Kavin Siriwardana from the University of Moratuwa, Mr. Didulanka Gamage from the University of Moratuwa, Mr. Sulith Perera from the University of Moratuwa, and Mr. Savith Karunananayake from the University of Sydney. Their contributions have greatly enriched the content of this newsletter.

In conclusion, I would like to remind us all that "a ship is safe in the harbor, but that's not why they are made for." It is through the willingness to push our limits and sacrifice our valuable time that we can achieve success. I am honored to have worked alongside such passionate and dedicated individuals, and I am proud of the final product that we have created together.

Pasan Gimhana
School of Computing
University of Colombo



OREPA FRAERNITE

Hasindu Warnapura

Batch of 22

Faculty of Engineering - University of Moratuwa

As a preventative measure to control the spread of the covid-19 pandemic, most of the events have been canceled for 2 years all over the world. With the easing of covid-19 restrictions, The OREPA Student Chapter understood the necessity of organizing a get-together to enrich the link between the old royalists who are studying Engineering at various universities. As a result of that, by giving a full stop to the long pause of 2 years, Fraternite was held on the 05th of November 2022 at Kirala Island Resort-Panadura. This is one of the most glamorous events held by the OREPA Student Chapter annually.

The event was held with the maximum support of the OREPA main body. This time, the OREPA main body gave financial support by buying tickets. It was a great contribution to making this event a reality even without any main sponsorship. Three personals from the OREPA main body, Mr. Chandula Samaranayake, Mr. Pamodh Alwis, and Mr. Gayan Indeera participated in the event. The event was held with remarkable success with the participation of over 100 people. This time the event had a participation of students from different universities which has never happened in the history of OREPA.

There was a committee of hard-working individuals behind the success of this event. They made the event an unforgettable one for all the participants. Mr. Danush Wickramasinghe and Mr. Ninuka Leelarathne acted as the Co-chairmen of the event and did an excellent work with managing all the things during the event. Mr. Punsara Mahawela coordinated with the OREPA as the OREPA Coordinator. Mr. Bojitha Liyanage and Mr. Udara Kumarasena played a significant role as the event Co-directors and did a great job by selecting this beautiful venue and managing the budget and other works. Mr. Charith Belpage, Mr. Hasindu Warnapura, and Mr. Anupa Rajapaksha did their job as the Designing and Marketing Coordinators by creating eye-catching flyers and small videos to promote the event through social media.

The event was garnished with a DJ, Games Fireworks, and Boat rides. Everyone who participated had a remarkable island experience throughout the function. All the participants had a next-level experience with boat rides too. Everyone enjoyed the delicious food and drinks. The event was a great opportunity to enrich the involvement of old royalists who are now engineering students with the projects of OREPA and strengthen the connectivity with each other.





MIND GUIDES

"UNTIL YOU VALUE YOUR TIME, YOU WILL NOT DO ANYTHING WITH IT."

M. Scott Peck

Mr. Suneragiri Liyanage is not only an exceptional student but also a role model for young Royalists. His success story demonstrates that with hard work, determination, and perseverance, one can overcome even the toughest challenges and achieve great success.

In his speech, Mr. Suneragiri's words of wisdom and encouragement have undoubtedly left a lasting impact on the young minds of Royal College. His message of stress-free exam preparation is particularly relevant in today's fast-paced and highly competitive world. Many students struggle with anxiety and stress during exams, which can affect their performance and overall well-being. By sharing his strategies for managing stress, Mr. Suneragiri has empowered the students to approach exams with a positive and focused mindset.

Furthermore, Mr. Suneragiri's success story is a source of inspiration for students pursuing careers in science and technology. His academic achievements and his pursuit of a degree in physics at Harvard University are a testament to his passion and dedication to the field. His journey serves as a reminder that with hard work and perseverance, anything is possible.

Chartih Belpage

(Batch of 21)

Faculty of Engineering - University of Moratuwa

The event at Navaraghala was a remarkable success, with more than 500 participants in attendance. The entire science section students, in particular, benefited greatly from Mr. Suneragiri's insightful speech. As an organization, OREPA is proud to have had Mr. Suneragiri as a speaker at this event. We believe that his message will continue to inspire students to strive for excellence in their academic and personal pursuits.

As an organization dedicated to promoting academic excellence and innovation, OREPA commends Mr. Suneragiri for his outstanding contribution to the education community. His commitment to fostering a culture of learning and self-improvement is truly inspiring and sets a powerful example for all students striving to achieve their goals.

We express our sincere appreciation to Mr. Suneragiri Liyanage for his insightful speech and his continued dedication to academic excellence. We wish him all the best in his academic pursuits and look forward to seeing him achieve even greater heights of success in the future.

HACKING

Seniru Kenula Epasinghe

22 Batch

Faculty of IT - University of Moratuwa

I got to know about hacking when I was a kid. Actually, I got to know about it through games. I was playing a game back then and one day I couldn't pass a certain level, so after failing so many times I fed up with it, and I was thinking, "is there any way I can get through this level, without following the traditional method? is there any way that I can get some more resources without collecting them daily?". Plus, at that time even though I didn't have a computer whatsoever, I used my dad's mobile phone for gaming and I used it to google and try searching ways to achieve the above requirements (to pass the level and get more resources in the game), which eventually lead me to hacking .



So even though I had no idea what it was all about, I just installed some apps and rooted the phone to get access to internal files of the device and eventually was able to hack the game. And it was like a miracle to me because it was a totally new thing and I was able to get unlimited resources. So, for the next couple of years, I continued to use different apps and different methods on the internet and I did some of my own combinations also (things that they didn't say we are capable of achieving using those hacking methods and apps) and I was able to hack many of the popular games back then. And eventually, I used these methods for non-gaming apps too. But with time a load of studies increased, so I had much little time to do those and eventually had to give up on doing research and hacking stuff.

After I did ICT for my O/L and A/L only I realized that what I did back then was altering the game source code and sometimes misleading in-game purchases to another host. With time I realized hacking is actually kind of a theft from some point of view, because people nowadays don't only hack games, but use hacking for huge frauds and thefts like bank robbing, spamming, stealing government and confidential information, etc. So hacking is a really controversial topic. Hacking and related concepts have great power and with power comes great responsibility. So, in the wrong hands hacking knowledge is going to be a huge problem and a danger to others. These days most military aspects are also running with technology, and wherever technology comes, follows hacking! So, just like cold wars, the war in technology continues between countries to become top in the hierarchy, and hacking or data stealing plays a hand role in it.

With every disease comes the invention of an antidote. As hacking became a huge problem, comes "Cyber-security" to the rescue. Cyber security basically means protecting, technological aspects, including data, confidential information, patents, and all other digital content from unauthorized, access or theft. Which means protecting them from hackers in other words. So as the competition for protecting these data from hackers rises, several groups of hackers originated. Namely, "White hat hackers", "Black hat hackers", "Gray hat hackers" and some other minor groups.

Black hat - Grey Hat - White Hat





- **Aka 'ethical hackers'**
- **Given legal permission, often for a fee to test an organization's computer security system**
- **Find vulnerabilities that can cause security to be compromised**
- **Conduct Penetration Testing and Vulnerability Assessments**
- **Stereotypical type of hackers**
- **Support criminal acts through their hacking skills**
- **Illegally attack computer systems for personal gains & ransom**
- **Using malware to gain access to sensitive information, steal data & corrupt documents**
- **Do not have malicious intentions**
- **Simply trying to gain something for their own findings**
- **May try to compromise an organization's computer system without permission**
- **Reports back findings and asking to allow them to fix for a fee**

“What are these groups?”, you may think. “White hat hackers” are the good guys, they play a role in protecting the content or digital data, from other malicious or basically “bad” hackers. Most of the cyber security experts are normally white hat hackers. They also have the same knowledge as other hackers. But they use it for the safety and protection of people or communities’ data content. These ethical security hackers identify and fix vulnerabilities. Hacking into systems with the permission of the organizations they hack into, white hat hackers try to uncover system weaknesses in order to fix them and help strengthen a system’s overall security.

“Black hat hackers” are the bad guys or the people who do malicious and unethical things with their hacking knowledge. White hat hackers protect data or systems against these Black hat hackers. They are cybercriminals that illegally crack systems with malicious intent. Seeking to gain unauthorized access to computer systems is the definition of black hat hacking. Once a black hat hacker finds a security vulnerability, they try to exploit it, often by implanting a virus or other type of malware such as a trojan. Ransomware attacks are another favored ploy that black hat hackers use to extort financial gains or breach data systems.

“Gray hat hackers” are some intermediate groups that neither do completely unethical things nor completely ethical things. For example, when gray hat hackers uncover weaknesses such as zero-day vulnerabilities, they report them rather than fully exploiting them. But Gray hat hackers may demand payment in exchange for providing full details of what they uncovered. Also, they also don’t have the prior knowledge or consent of those whose systems they hack. And there are some other minor types of hackers too. “Green hat hackers”, “Blue hat hackers”, and “Red hat hackers” are some of them.

Now you may understand the risk of storing your data, on technological systems and devices. Basically, any device you use from smartwatches, mobile phones, and laptops, to printers are technological system. So, you must follow some important steps to protect your content and reduce the risk as much as possible. A public network is extremely vulnerable and easy to hack. So, if you’re a person that connects to public networks constantly there is a high risk of getting hacker attacks as these networks have really poor security and thousands of people connect to them. So, avoid these networks as much as possible. We know you aren’t a fan of long passwords. Who is? But if you want to protect yourself from hackers, you have to use a very strong password including alphanumeric characters as well as some other special characters (@, #, etc). And avoid using the same password for multiple accounts. Do not share your emails or passwords on social media for any reason. Always back up your data to external hard drives or other data storage, so that you have a copy of your data in an emergency. Always use anti-virus on your devices and keep your systems and devices updated so that new security updates will be available in them.

Hacking is a huge area that has good and bad people in it using that knowledge for ethical as well as unethical purposes. So, it’s your duty to decide which side you are on in case you’re interested in these concepts. Always try to follow the rules and ethics so you will be a law-abiding citizen. And I must admit that those couple of years in which I discovered hacking, was the time when I learned the most about ICT, the INTERNET, and started my passion for ICT!!



LEVEL 3 AUTONOMOUS CARS TO BE COMMERCIALIZED?

Kavin Siriwardana

(Batch of 21)

Faculty of Engineering – University of Moratuwa

Back in the day, driverless or autonomous cars were mere dreams of automobile companies. But they have been dreaming out loud. We see things happening now and some astounding autonomous car projects are in the pipeline. It is not unfair to say that we are on the verge of moving to an era of autonomous vehicles coming to play. It is likely that Level 3 autonomous vehicles will be available on the commercial market for users most probably this year.

WHAT ARE LEVEL 3 AUTONOMOUS CARS?

If you are new to autonomous cars, you might be a little confused about what Level 3 or L3 autonomous cars are. Hence, it is best to brief you about the different levels of driving automation.

L3 VEHICLES HITTING THE MASS MARKET

As the driver can take his or her eyes off the road while driving an L3 autonomous vehicle, the manufacturers are legally responsible for any accident that can occur while the vehicle runs in autonomous mode. Yet, many car manufacturers are hesitant to take the plunge and the shift from L2 to L3 is mostly a legal concern than a technological barrier.

Level 0	No automation; cars are controlled manually.
Level 1	There is one automated system like a cruise control system for Driver Assistance.
Level 2	Partial Automation where the vehicle can perform steering and acceleration leaving the driver to take control at any time.
Level 3	Conditional Automation where the vehicle is capable of performing almost all driving tasks but the driver's authority and control are needed at times.
Level 4	High Automation where the vehicle can perform all driving tasks leaving driver override to be optional.
Level 5	Full Automation where the driver does not have to interact at all at any time and the vehicle can perform all driving tasks on its own.

Up to L3, you really do have to drive the vehicle. But from L3, you can actually let the vehicle drive for you. Therefore, it is a vital milestone in the journey toward excelling in making L5 autonomous vehicles a reality. L3 autonomous vehicles use Artificial Intelligence that empowers their decision-making ability. Nonetheless, you cannot leave the car totally unattended. It is true that you can take your eyes off the road and let the car do the driving for you. The vehicle will alarm you when it needs your assistance and you would have to take over.

MERCEDES BENZ CLAIMS L3 CERTIFICATION IN THE US FOLLOWING APPROVAL IN GERMANY

But this year, Mercedes Benz claimed that it has received L3 certification from the state of Nevada in the US. And they are set to receive L3 certification in all 50 states. This is apparently a huge breakthrough for the autonomous vehicle industry as autonomous cars being commercialized is on the cards now. In 2022, Mercedes Benz got approved by German authorities for L3 autonomous vehicles to operate in Germany. In the Mercedes Benz S-Class and Mercedes EQS, this Drive Pilot feature is available to be purchased. Where L3 autonomous cars are allowed to operate, the driver is not prohibited even from watching a movie or reading a book while the vehicle drives for you. How stupendous!

Mercedes-Benz has not disclosed the price it intends to charge for this feature in the US. Still and all, in Germany, it began selling the feature to customers who purchased the S-Class and EQS in 2022 for \$5,265 and \$7,823, respectively. This is on top of the \$2,559 they must pay for the Mercedes Driving Assistance Package.

HONDA, THE WORLD'S FIRST L3-APPROVED VEHICLE MAKER

Notwithstanding Merc's giant step this year, Honda Legend was officially the world's first vehicle to get the L3 approval. Only 100 vehicles were made and they were also available only on lease. Consequently, Honda may not likely be in the race of hitting the mass market in the near future. Yet, Honda has been showing great potential as a car manufacturer.

THE FUTURE OF AUTONOMOUS VEHICLES

It is no secret that autonomous vehicles will have a staggering influence on human life and transportation. Even at present, many mainstream companies are going great guns in terms of autonomous vehicles. Presumably, before the end of 2023, vehicles with a Level-3-capable system might be available to be purchased for as little as \$50,000.

All in all, needless to say, the future of the autonomous vehicle industry looks pretty bright. What is yet to come seems astonishingly better than you would expect. Who knows, we might be driving an autonomous vehicle, or rather chilling out watching the car drive by itself in another few years. The world now makes headway faster than the wink of an eye. Let us be part of it!

The Sensors of DRIVE PILOT

Conditionally Automated Driving in the S-Class becomes Reality



SEABIN

THE OCEAN CLEANUP TOOL



Didulanka Gamage

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MARINE LITTER

Marine litter, a term used to describe trash floating in the oceans, poses a significant risk to marine ecosystems and wildlife. It is estimated that there are a staggering 5 trillion pieces of plastic littering the oceans, with an annual inflow of 8 million metric tons. This plastic pollution can have devastating consequences for marine life - entangling and suffocating animals, and potentially causing injury or death through ingestion. What's more, plastic absorbs toxins from the water, rendering it even more harmful to marine life. It's clear that marine litter is a pressing issue that must be addressed to protect the health and well-being of our oceans and the creatures that call them home.

Where does all this marine litter originate from? The answer is closer to home than we'd like to admit. Our coastal farms, marinas, and motor vehicles are major contributors to pollution, as litter and waste can be carried by storm water runoff into rivers and streams, eventually ending up in the ocean. Inadequate waste management infrastructure and improper solid waste management in developing countries also contribute to the problem. Tragically, thousands of tons of waste and trash continue to make their way into the oceans each day. It's crucial that we take action to address this issue, not only for the sake of the environment and marine life, but also for our own benefit as humans.

SEABIN

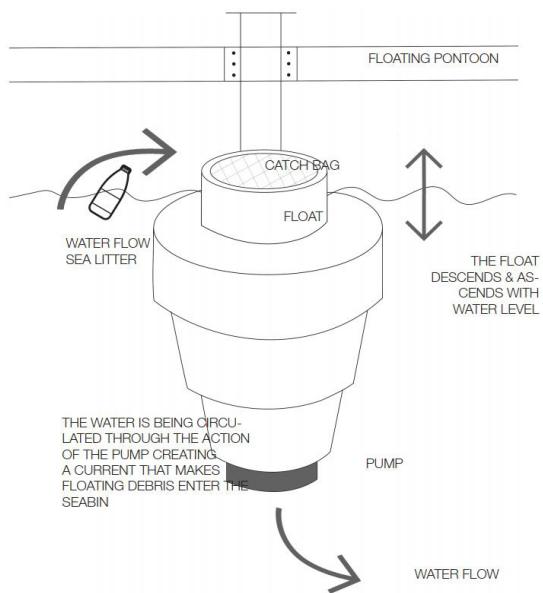
Invented by Australian surfers and boatbuilders Andrew Turton and Pete Ceglinski, the Seabin is a revolutionary device that is working to protect our oceans from the devastating effects of plastic pollution. This floating trash bin is designed to collect and remove floating debris, such as plastic bottles and bags, from the surface of the water in harbors, marinas, and other bodies of water. Since its inception, the Seabin has gained widespread attention and praise for its simple yet effective design and its potential to significantly reduce the amount of litter in our oceans and other bodies of waste.

The Seabin is made from recycled materials and consists of a floating trash bin with a removable and replaceable trash bag, a low-voltage pump, and a self-cleaning feature. The device is designed to be placed in a waterway, where it functions like a skimmer, sucking in water and any floating debris along with it. The water and debris are then filtered through the trash bag, which captures the litter, while the clean water is returned back to the ocean or lake. The Seabin is powered by electricity from a nearby outlet or solar panel, and it is capable of collecting up to 1.5 kilograms (3.3 pounds) of debris per day, depending on the amount of litter in the water.



The Seabin is a revolutionary device that effortlessly tackles the issue of litter and pollutants in the water. Its highly effective design allows it to capture a wide range of debris, including plastic bottles, bags, and other litter, as well as oil, fuel, and other pollutants. Its simplicity and ease of use make it a breeze to maintain - with a removable and replaceable trash bag and a self-cleaning feature that keeps it free of algae and other debris. Plus, with its low maintenance requirements - just the occasional cleaning and replacement of the trash bag - the Seabin is not only a highly effective solution for removing litter from the water, but also a cost-effective one.

The Seabin is a powerful tool in the fight against marine pollution, and its optional oil removal system is a crucial component. Oil is the most dangerous and destructive substance in the ocean and the Seabin's water filter works tirelessly to remove it from the water. By pushing water through an oil-water separator, the Seabin removes all oil and harmful detergents, ensuring that only clean, healthy water is released back into the ocean. The importance of this system cannot be overstated - it is vital that we do all we can to protect the ocean from the devastating effects of oil pollution.



Another advantage of the Seabin is its versatility and adaptability. The device can be installed in any body of water with a depth of at least 1.5 meters (5 feet) and a constant flow of water. Operating 24/7, this innovative device is more efficient and cost-effective than relying on human labor to remove waste. It can be installed on any floating dock with a depth of at least 1.5 meters (5 feet) and a constant flow of water and is perfect for use in a variety of settings, including ports, marinas, yacht clubs, private pontoons, inland waterways, residential lakes, and harbors. The Seabin is also relatively small and lightweight, making it easy to transport and install in different locations. Whether you are working to protect the ocean or simply want to keep your local waters clean and healthy, the Seabin is the perfect choice.

It's a fact that will surely make waves: the Seabin, a device designed to capture and remove floating debris from the water, has never once sucked in or harmed a marine animal during its ten years of testing in Palma de Mallorca, Spain. This impressive record comes straight from the mouths of the Seabin's creators, Andrew Turton and Pete Ceglinski, and is a testament to the safety and effectiveness of this innovative solution to plastic pollution.

Admirably, the creators of Seabin are ready to roll out their innovative device on a global scale, with a successful prototype in hand and a commitment to sustainability and eco-friendliness. The Seabin is made up of 70-100% recycled materials, reflecting the team's desire to maintain a green production process. With mass production underway, the Seabin is poised to make a real difference in the fight against plastic pollution in our oceans and waterways. Its creators hope to see it deployed in locations around the world, working tirelessly to keep our waters clean and healthy for all who depend on them.

While the Seabin is a valuable tool in the fight against plastic pollution, it is important to recognize that it is not a standalone solution. To truly protect our oceans and other bodies of water, we must take a comprehensive approach that includes reducing our use of single-use plastics and properly disposing of waste. The Seabin is best used as a supplement to these efforts, rather than a replacement for them. Additionally, it is worth noting that the Seabin may not be suitable for all types of bodies of water or locations, and it is much vital to carefully consider whether it is the right fit for a particular area.

In conclusion, the Seabin is a game-changing solution for addressing the pressing issue of plastic pollution in our oceans and other bodies of water. Its simplicity and ease of use make it an effortless way to make a significant impact in the fight against plastic pollution and the protection of our marine environments. While the Seabin should not be seen as a substitute for more comprehensive measures to reduce plastic pollution, it is a valuable tool that can greatly reduce the amount of litter in our oceans and other bodies of water. By leveraging the power of technology, we can take meaningful steps towards a cleaner, healthier future for our oceans and all their inhabitants.



FORMULA ONE

“The Fastest Research and Development Lab on the Earth”

When someone hear the term formula one, the first thing comes to his or her mind is driving a car in circles. But there is a lot of behind-the-scenes work going on to make that car drivable. Nowadays, formula one is in the fore front of technology from road cars to consumer electronics, from medical technology to smart cities. Engineers need to adjust some parts to generate the required downforce and choose the best tyre compounds to maximize the speed and grip.

ENERGY EFFICIENCY

Energy efficiency is a key term used all around the world these days. When Nicolaues Otto invented the automobile engine in 1876, it had a thermal efficiency of 17%. That means only 17% of the fuel we provide to the car is converted to useful work. Before 2013 the efficiency of a formula one engine was

about 30%. New engine rules and regulations were introduced in 2014. By

2018, engine manufacturers were able to produce engines with more than 50%

thermal efficiency,

Formula one engine, and power unit.

marking a milestone in automobile industry. They were able to achieve that goal because they used different technologies.

MGU-H

Motor Generator Unit – Heat (known as MGU-H) is used to harvest the kinetic energy in the exhaust gas. From this, teams generate electricity and store in the battery pack to be used later. Another component used in the formula one engine is Moto Generator Unit – Kinetic (known as MGU-K), which harvest the energy in the crank shaft. From the MGU-K teams can recover about 2MJ of energy per lap.



Sulith Perera

(Batch of 21)

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All these energy recovery components and other functions in the car is managed by the power unit (usually known as the PU). PU is like the brain of the formula one car. Over a race distance it performs about 43 trillion calculations. The PU mostly contains electronic devices such as processors etc. The battery used in formula one car weights 20kg and has an efficiency of 95%. During a grand Prix it is fully charged and discharged about 70 times. In the road car industry Mercedes has developed a battery which lasts for more than 1000km, using the technology in formula one. It is said that the waste energy recovered during grand prix is sufficient to power an average family house for 24 hours.



Formula one car testing in wind tunnel.

Another interesting field in which formula one has expanded is use of aerodynamics. Other than the internal combustion engine, aerodynamics plays a vital role in the performance of the formula one car. Teams are given limited wind tunnel runs so that they should make accurate innovations as much as possible. Teams mainly focus on reducing the drag generated by the car so that they can gain high speeds in the straights. Reducing drag is nowadays used in road cars also. When there is less drag, less fuel is needed to move the car. Furthermore, it is said that, when a formula one car travels in maximum speed, it can generate a downforce force equal to its weight. This is too now being used in road cars. For the stability of a car, you need force acting on the ground but when you increase the weight of the car, more fuel is needed to give energy to the car. When using aerodynamics to produce the required force is cost effective because you can design the car light so less fuel is consumed. There is lot of information, which is not discussed in this article, but we can agree that formula one is one of the best technology innovators in the world.

MECHATRONICS

“Bridging the Gap between Mechanical and Electrical Engineering.”

Savith Karunananayake
Faculty of Engineering – University of Sydney

Mechatronics is an interdisciplinary field of engineering that combines mechanical, electrical, and computer engineering to design and develop intelligent systems. It is a relatively new field that has grown in popularity in recent years, due to the increasing demand for smart and autonomous systems.

One of the main advantages of mechatronics is its ability to integrate multiple systems into one cohesive unit. This allows for the creation of systems that are more efficient, reliable, and easier to maintain. For example, a mechatronic system can incorporate sensors, actuators, and control algorithms to create a self-regulating system that can respond to changes in its environment.

CAD & CAM TOOLS

Another key aspect of mechatronics is the use of computer-aided design (CAD) and computer-aided manufacturing (CAM) tools. These tools enable engineers to design and fabricate mechatronic systems more efficiently, reducing the time and cost of the design process. CAD tools enable engineers to create detailed 3D models of the system, which can be used to simulate and test the performance of the system before it is built. CAM tools allow engineers to generate machine code directly from the CAD model, which can be used to fabricate components using automated manufacturing techniques.

Engineer using CAD Software



INDUSTRIES



Unmanned Aerial Vehicle (UAV)

Mechatronics is widely used in various industries, including manufacturing, transportation, and robotics. In manufacturing, mechatronics is used to design and develop automated production lines and robots that can perform tasks with high precision and efficiency. In transportation, mechatronics is used to design and develop intelligent transportation systems, such as autonomous vehicles and intelligent traffic management systems. In robotics, mechatronics is used to design and develop robots that can work alongside humans and perform tasks that would otherwise be dangerous or impossible for humans to do.



Surgical Robot in use in a hospital

CONCLUSION

In conclusion, Mechatronics is an exciting and rapidly-evolving field that combines mechanical, electrical, and computer engineering to design and develop intelligent systems. It has a wide range of applications and has the potential to revolutionize many industries by creating more efficient, reliable, and autonomous systems. With the increasing demand for smart and autonomous systems, the future looks bright for mechatronics and its impact on society.



NEWSLETTER

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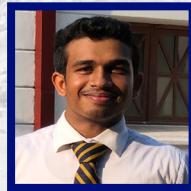
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