

Sample Pages

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Emerging Technologies for Profit

A Guide to Earning Money

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[Introduction](#)

[The need to focus on Emerging Technologies](#)

[Some random thoughts about Emerging Technologies](#)

[Ways to generate income from Emerging Technologies](#)

[Stay Ahead in Tech: Tips for Future-Proofing](#)

[My Tips for doing online business](#)

[Imagining the Future](#)

[My experiences of Earning Money Online](#)

[Earn from Emerging Technologies](#)

[Use Digital marketing effectively](#)

[Risks of Conducting Business with Emerging Technologies](#)

[Key Emerging Technologies](#)

[Artificial Intelligence \(AI\)](#)

[3D Printing](#)

[Brain-computer interface](#)

[Nanomedicine](#)

[Nanosensors](#)

[Self-Healing materials](#)

[Quantum dot](#)

[Carbon nanotubes](#)

[Metamaterials](#)

Microfluidics

Magnetic nanoparticles

High-temperature superconductivity

Lab-on-a-chip

Graphene

Conductive polymers

Bioplastic

Aerogel
Vertical farming
Cultured meat
Artificial general intelligence (AGI)
Flexible electronics
Li-Fi
Machine vision
Memristor
Neuromorphic computing
Quantum computing
Spintronics
Speech recognition
Twistronics
Three-dimensional integrated circuit
Virtual reality (VR) / Augmented Reality (AR)
Holography
Optical transistor
Artificial photosynthesis
Fusion power
Gravity battery
Smart grid
Space-based solar power
Artificial uterus
Neuroprosthetics
Self-driving car
Maglev train
Blockchain
Robotics
CRISPR Gene editing
Climate Tech
Perovskite solar cells
Internet of Things (IoT)
Best Subreddits for Staying Up-to-Date on Emerging Technologies
Best practices for utilizing Emerging Technologies
Businesses that successfully utilize Emerging Technologies for revenue generation
Resources to learn about Emerging Technologies
Emerging Medical Technologies
Monetizing the Machine: Your AI Sidekick for Online Riches
Free Tools, Big Dreams: Launching Your Online Business with Zero Budget
Building a Tech Empire: From Startup to Success in the Emerging Tech Landscape
Cutting Through the Hype: Separating Fact from Fiction in the Emerging Tech Buzz

Interesting Innovations

Harnessing the AI Revolution: How to Level Up Your Online Business

How Blockchain Can Be Your Small Business Growth Hack

Business Motivational Quotes for Aspiring Entrepreneurs

How Small Businesses Can Thrive with Emerging Technologies

Exploring the Untapped Potential of Nanotechnology

How emerging technologies are transforming the construction industry

Leveraging Emerging Technologies for Web Developers

How Innovative Technologies are Transforming the Teaching Landscape

Leverage the 3D printing revolution to earn money on a budget

How Telemedicine is Transforming Patient Care

Dive into the Booming World of Wearables

How Emerging Tools are Empowering Growers

A Toolkit of Emerging Tech for Writers

Conclusion

Introduction

This is [Rajamanickam Antonimuthu](#). In this eBook, I will discuss the significance of understanding emerging technologies and the numerous opportunities they offer. I also share my personal experiences of making money online, specifically through managing a YouTube channel.

The need to focus on Emerging Technologies

I used to wonder why I was able to earn money from [my YouTube channel](#) with ease, compared to my other endeavors such as software development and website creation. I came to understand that the reason was related to my difficulties in building and retaining a strong software development team. Companies with established software development businesses could easily attract our skilled developers by offering higher salaries. However, when these companies first started, they didn't face such challenges as they were at the **beginning** of the software development era and thus, it was easier for them to succeed. Similarly, I received the benefits of starting a YouTube channel in the early days of the YouTube era, i.e., in 2009 itself..

With the advancement of computing power, increased network bandwidth, and widespread availability of mobile phones, people now prefer to consume content through videos rather than reading. This fast-paced growth of video production and

consumption will change the entire business system.

For instance, people used to attend training centers to learn a new language or computer programming. Now, they can easily learn through tutorial videos on YouTube, causing a decline in training center businesses. To stay relevant, these businesses need to adapt and plan to offer their services through video platforms like YouTube. While YouTube offers a great opportunity for earning money, it is also highly competitive. Many people have already started their own YouTube channels on various topics, making it difficult to gain views. Additionally, YouTube is implementing new restrictions to enable monetization for new channels.

My experience highlights the importance of entering new business opportunities **early on**, as it is easier to make money. My story echoes the universal truth: the early bird gets the worm, especially when it comes to emerging technologies. My YouTube success hinged on being there at the dawn of video dominance. So, where are the next gold rushes? Look beyond YouTube—to the horizon where 3D printers churn out customized gadgets, robots dance in factories, and drones deliver your groceries. Buckle up for graphene revolutionizing materials, nanotech manipulating atoms, and AI assistants predicting your every move. Gene editing will rewrite the script of life, and desalination plants will quench our thirst. Buckle up for virtual worlds so real you'll need a vacation from reality, and wearables that track your every breath (and maybe even your thoughts). New batteries will power our world without wires, and driverless cars will take the wheel while we nap. Solar power will bathe us in clean energy, and quantum computers will crack the universe's secrets. And finally, imagine a future where your brain talks directly to your computer—no keyboard needed.

These are not science fiction fantasies; they're the building blocks of tomorrow. The time to learn, invest, and adapt is now. Don't be the software developer left behind by the YouTube boom. Be the visionary riding the wave of the next big thing. The future is calling, are you listening?

Some random thoughts about Emerging Technologies

Note: This chapter includes numerous links to YouTube videos. I initially hesitated to incorporate so many links, but ultimately decided to add them because they offer substantial value through their connection to research papers published in reputable journals..

While venturing into emerging technologies offers numerous benefits, it's crucial to remember not all will reach mainstream adoption. Therefore, navigating the world of upcoming technologies requires cautious investment of time and resources. While staying informed about emerging trends is vital, pouring all your money and dedicating all your time to a single technology can be risky..

Though research are happening on various emerging technologies, there is

no guarantee for bringing them all into our everyday life in the near future. Some can be successful, some research may take more time, and some may never enter into our life. Just because a technology has been successfully researched doesn't mean it will be part of our daily life. Other related technologies also have to be successful for it to be useful. For example, AI algorithms were created many years ago, but they weren't useful at the time because we didn't have enough computing power. It wasn't until computing power grew that we started seeing AI being used in various fields.

Now we can see a lot of **AI applications**, e.g, [discovering](#) Drug, [counting](#) elephants, [generating](#) 3D holograms in real-time, [detecting](#) powdery mildew easily, [analyzing](#) satellite images, [thought-to-speech system](#), [improving](#) the prediction of stroke recovery, [fighting](#) disinformation, [teaching](#) robots to make appropriate reactive human facial expressions, [Diagnose](#) Skin Conditions, [Driverless](#) Ride-Hailing Services, [pinpoint](#) Local Pollution Hotspots, [explore](#) the biomolecular world, [Telehealth](#), [speed up](#) drug development, [improving](#) vaccine delivery, and many other things. You can check them [here](#).

Though we already started getting the benefits of AI, still various AI-related research are going on. For example, researchers are trying hard to develop **Generic AI** which can be used in any field. Personally, I witnessed the power of AI while running my YouTube channel. Previously I used to spend a lot of time and effort for creating subtitles/captions for my videos. Now, it can be done very easily without spending any time or effort. It is possible because of the AI which is improved a lot to understand anyone's voice and transcribe it automatically.

OpenAI's AI Tool [ChatGPT](#) can be used for writing articles, having discussions, writing stories, writing software code, writing tweets or promo texts for any social media, and even writing scripts for videos. Google also providing Bard to write article and software code.

People are afraid that AI will [grab the job opportunities](#) of them. Though it may not happen overnight, surely AI will affect the job market heavily in the long run. That's why Governments are working on [Universal Basic Income](#) schemes.

The wonder material [Graphene](#) is having a lot of potential to change our life entirely in the near future as it is having many unbelievable properties. Graphene is much **harder** than either steel or diamond of the same dimensions. It is the thinnest material possible as well as being transparent. It is completely impermeable. Even helium atoms can't pass through it.

Though we are seeing many kinds of applications (e.g [protection of artworks](#), [Bacteria-killing Shirts](#), [Ultra-high-density hard drives](#), [carbon capture](#), [reducing](#) paper industry energy costs, [Graphene Microchip](#), [heat pipes](#), [memory resistors](#), anti-bacterial graphene [face masks](#), [smart textiles](#), [light sail](#), [Paint](#), Sieve [turning Seawater](#) into Drinking water, Thinnest [Light Bulb](#)) using Graphene, it is not yet commercialized in large scale.

Though we can simply create Graphene from Graphite found in pencils, by simply using sticking tape in the Lab in small amounts, it is still a challenge to produce pure graphene at a large scale. Researchers are working on producing graphene from [plastics](#) and [tires](#). Some companies have started commercializing the Graphene applications like [Fire pit](#) and [concrete slab](#).

Apart from large-scale production challenges, widespread Graphene usage is facing another issue also. People are afraid that Graphene will affect our health. For example, a few months back Canada [banned](#) Graphene Face Masks by citing Health risks as the reason.

Because of the huge developments happening in Artificial Intelligence and Material Science fields, many new inventions related to Robots and Drones are achieved. See them [here](#). Most researchers are working on developing **soft robots** based on the inspiration from insects and animals, even they work on creating [Living Robots](#).

I am noticing that scientists are trying to blur the difference between humans and robots by giving Humans the power of robots and by giving Human features to the Robots. Scientists built a [Bionic Eye](#) with better vision than humans. And, they are creating [bionic "heart"](#), [bionic skin](#), [Ocumetics Bionic Lens](#), [Prosthetic Foot](#), and [Inflatable robotic hand](#).

Brain-Computer Interfaces (BCI) are further helping to reduce the gap between Human and Robots. BCI allows Fast, Accurate [Typing](#) by people with Paralysis, and it enables paralyzed man [to walk](#). It could [control a Wheelchair](#), Vehicle, or Computer.

3D printing and Bioprinting technologies are making heavy impact on various fields including construction and medical. Researchers are working on to 3D print [Concrete Houses](#), [Human Corneas](#), [Food](#), [Stethoscope](#), [Bricks](#), [Ears](#), [heart valve models](#), [Glass](#), [Hair](#), [concrete bridge](#), [Blood vessels](#), [Smart Gel](#), and [mini-liver](#). Researchers are working on [4D printing](#) also.

Scientists are working on creating [materials](#) for neuromorphic computers which can operate similarly to Brains. And, they work on various things (e.g [Silq](#), [simulator](#), [thermometer](#), [ML Algorithm](#)) for Quantum Computers.

Gene-Editing Tools like CRISPR are playing important role in medical field. They could [alleviate Depression](#), [reverse retinitis pigmentosa](#), [cure Cancer](#), [create Low-Fat Pigs](#), [lower Cholesterol](#), and [enhance brain](#).

The combined power of AI, Nanotechnology, Quantum Computers, 3D printing, blockchain, and Gene-editing can help us to improve our life in the coming days. But we need to note that we are facing many threats like [climate change](#) in the coming days. World's lakes [losing](#) oxygen rapidly as the planet warms. The Sahara Desert is [Expanding](#). So, researches for fighting climate change may get more importance in

the coming days. [Carbon capture](#) related researches already started.

Ways to generate income from Emerging Technologies

Understanding emerging technologies offers two key benefits: increased personal convenience and enhanced professional opportunities.

There are several ways to earn money from [emerging technologies](#), depending on your interests and skills. Here are a few ideas:

Investing: One way to earn money from emerging technologies is by investing in companies that are developing and commercializing these technologies. This could include investing in publicly traded tech companies or venture capital funds that specialize in early-stage startups. While emerging technologies can offer significant rewards, they also come with considerable risks. To navigate this landscape, diversify your investments and approach them with caution.

Consulting: If you have expertise in a specific area of emerging technologies, such as AI, blockchain, or cybersecurity, you could offer your services as a consultant to businesses and organizations that are looking to integrate these technologies into their operations.

Developing Apps or Software: If you have programming or software development skills, you could create your own apps or software that leverage emerging technologies, such as AR or IoT, and sell them to consumers or businesses.

Teaching or Training: As emerging technologies continue to reshape industries and job roles, there is increasing demand for professionals who have the skills and knowledge to work with these technologies. You could leverage your expertise to teach or train others, either through online courses or in-person workshops.

Writing or Speaking: If you have a talent for writing or public speaking, you could create content that educates others about emerging technologies, such as writing articles or blog posts, or speaking at industry conferences and events.

Creating and Selling Digital Products: If you have skills in graphic design, digital marketing, or content creation, you could create and sell digital products related to emerging technologies. This could include e-books, online courses, digital marketing materials, or templates for creating websites or mobile apps.

Developing Hardware Products: Emerging technologies often require specialized hardware components, and there is increasing demand for engineers and designers who can create and manufacture these components. If you have a background in hardware engineering or product design, you could develop and sell hardware products that leverage emerging technologies, such as smart home devices or wearable tech.

Offering Technical Support: As more businesses and consumers adopt emerging

technologies, there is increasing demand for technical support services to help users troubleshoot issues and optimize their usage. If you have technical expertise in a specific area of emerging technologies, such as cloud computing or blockchain, you could offer your services as a technical support specialist.

Providing Data Analytics Services: Emerging technologies generate vast amounts of data, and there is increasing demand for professionals who can collect, analyze, and interpret this data to help businesses make informed decisions. If you have a background in data science or analytics, you could offer your services as a data analyst or consultant.

Developing Intellectual Property: As emerging technologies continue to evolve and mature, there is increasing demand for patents, trademarks, and other forms of intellectual property protection. If you have expertise in a specific area of emerging technologies, you could develop and patent new innovations, or help businesses and individuals navigate the intellectual property landscape.

Developing and Selling Digital Assets: As the use of emerging technologies expands, there is growing demand for digital assets such as cryptocurrency, non-fungible tokens (NFTs), and other blockchain-based assets. If you have experience in this area, you could develop and sell digital assets or offer services related to managing or investing in these assets.

Providing Security and Privacy Services: As more businesses and individuals use emerging technologies, there is increasing concern about security and privacy risks. If you have expertise in cybersecurity or privacy, you could offer your services to businesses and individuals to help them protect their digital assets and personal information.

Creating and Selling Educational Content: Emerging technologies are constantly evolving, and there is growing demand for educational content that helps people stay up-to-date with the latest trends and developments. If you have expertise in a specific area of emerging technologies, you could create and sell educational content such as online courses, e-books, or video tutorials.

Offering Design Services: As emerging technologies become more integrated into our daily lives, there is increasing demand for designers who can create interfaces and experiences that are user-friendly and visually appealing. If you have experience in design, you could offer your services to businesses and individuals looking to create products or experiences that leverage emerging technologies.

Providing Technical Writing Services: As emerging technologies become more complex and specialized, there is growing demand for technical writers who can create documentation and user manuals that are clear, concise, and easy to understand. If you have experience in technical writing, you could offer your services to businesses and individuals in need of documentation for their emerging technology products.

Offering Social Media Management Services: Social media platforms are an

important way for businesses to reach customers and promote their products, and there is growing demand for social media managers who can create and execute effective social media strategies. If you have experience in social media marketing and management, you could offer your services to businesses looking to promote their emerging technology products.

Providing Virtual Reality (VR) or Augmented Reality (AR) Services: VR and AR are rapidly growing fields that are being used in a variety of industries, including gaming, education, and healthcare. If you have experience in VR or AR development, you could offer your services to businesses and organizations looking to create immersive experiences for their customers or users.

Developing Chatbots or Virtual Assistants: Chatbots and virtual assistants are becoming increasingly popular in industries such as customer service and e-commerce, and there is growing demand for developers who can create and deploy these tools. If you have experience in natural language processing or chatbot development, you could create and sell chatbots or offer your services to businesses looking to develop their own chatbots or virtual assistants.

Offering Blockchain Development Services: Blockchain technology is being used in a variety of industries, including finance, healthcare, and supply chain management. If you have experience in blockchain development, you could offer your services to businesses looking to develop blockchain-based products or services.

Providing AI or Machine Learning Services: AI and machine learning are being used in a variety of applications, including natural language processing, image recognition, and predictive analytics. If you have experience in AI or machine learning development, you could offer your services to businesses and organizations looking to develop AI-powered products or services.

Of course, these are just a few examples, and there are many other ways to earn money from emerging technologies depending on your background and interests. It's important to stay up-to-date with the latest trends and developments in this rapidly evolving field, and to identify opportunities to leverage your skills and expertise to create value for others.

Stay Ahead in Tech: Tips for Future-Proofing

It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is most adaptable to change. - Darwin / Megginson

To keep up with the fast-paced world of technology, it's important to stay informed, learn new skills, embrace digital tools, and continually improve. By doing so, you'll be well-prepared for the future and ready to face any new technologies that come your way.

Here are some tips to help you **prepare for the future of technology**:

- 1 **Stay informed:** Read articles, follow experts, and attend events related to technology to keep up with the latest developments.
- 2 **Learn new skills:** Stay current with new technologies and trends by learning new skills and expanding your knowledge.
- 3 **Network with peers:** Attend industry events and meetups to connect with other professionals in your field.
- 4 **Adopt a growth mindset:** Be open to new ideas and be willing to adapt and change as technology evolves.
- 5 **Embrace digital tools:** Use technology to improve your work and increase your productivity.
- 6 **Collaborate with others:** Work with others in your industry to share knowledge and find solutions to challenges.
- 7 **Stay curious:** Ask questions, seek feedback, and challenge yourself to think critically about technology and its impact on society.
- 8 **Focus on continuous improvement:** Regularly assess your skills and knowledge, and make a plan to improve in areas where you need to grow.

By staying informed, learning new skills, and embracing new technologies, you can be well-prepared for the future of technology.

Here are some technology fields that are likely to play a significant role in career improvement in the coming days:

- Artificial Intelligence (AI) and Machine Learning (ML). Artificial Intelligence will become more advanced and will play a bigger role in our lives, from automating tasks to powering decision-making processes.
- Cloud Computing and Data Management
- Cybersecurity
- Internet of Things (IoT)
- Virtual and Augmented Reality. Virtual and Augmented Reality will become more immersive and will transform the way we work, play, and communicate.
- 5G Technology. The widespread adoption of 5G networks and the Internet of Things (IoT) will bring about faster, more reliable connectivity and a more connected world.
- Robotics and Automation
- Blockchain
- Natural Language Processing (NLP)
- Digital Marketing and Analytics

By acquiring skills in these technologies, professionals can remain competitive and enhance their career opportunities in the future. However, it's also important to continually evaluate new developments and stay adaptable to changes in the

technology landscape.

Emerging technologies such as artificial intelligence, blockchain, cloud computing, and the Internet of Things, offer a wide range of business opportunities for entrepreneurs and companies. Some potential business opportunities in emerging technologies include:

- **AI-powered products and services:** Developing and selling AI-powered products and services such as virtual assistants, chatbots, or predictive analytics tools can be a lucrative business opportunity.
- **Blockchain applications:** Building blockchain-based solutions for various industries, such as finance, healthcare, or supply chain management, can open up new business opportunities.
- **Cloud computing services:** Providing cloud computing services, such as infrastructure as a service, platform as a service, or software as a service, can be a profitable business model.
- **IoT-based products and services:** Developing and selling Internet of Things (IoT) products and services such as smart home devices, wearable technology, or industrial IoT solutions can be a promising business opportunity.
- **Cybersecurity solutions:** With the increasing number of cyber threats, there is a growing demand for cybersecurity solutions. Entrepreneurs can start a business in this field by offering security services such as network security, threat detection, or data protection.

These are just a few examples of the many business opportunities that exist in the emerging technologies. With the right combination of skills, resources, and market knowledge, entrepreneurs and companies can take advantage of these opportunities and succeed in the fast-paced world of technology.

Jobs and businesses that are heavily reliant on manual or repetitive tasks, as well as those that can be easily automated, are at risk of becoming obsolete in the near future. This includes jobs in industries such as manufacturing, data entry, and telemarketing. On the other hand, jobs and businesses that require creative thinking, emotional intelligence, and critical problem-solving skills are less likely to become obsolete. These include careers in fields such as education, healthcare, and technology. However, with the rapid pace of technological advancement, it is important for workers and entrepreneurs to continuously acquire new skills and adapt to changing market demands.

In conclusion, it's imperative to be aware of emerging technologies to keep your job and business relevant in the ever-evolving job market. With automation and new technologies changing the job market rapidly, it's important to continuously acquire new skills and adapt to the changing market demands. By staying informed and embracing new technologies, you can increase your chances of staying competitive in the job market and securing a promising future for your career or business. Don't let technological advancements leave you behind; be proactive and stay ahead of the

curve.

My Tips for doing online business

Find below my general suggestions for people interested in starting online businesses. These suggestions are applicable for any kind of business including businesses related to emerging technologies.

- Make sure that your Product/service actually helps to solve people's problems. It should be either entertaining or educational.
- Don't spend much in the initial stage. Do the scaling only after testing the market with a simple version of your product. This particularly important for any products involving emerging technologies.
- Don't try to copy successful businesses. Instead, build your business based on your own skills, and market situations at the time of starting your business. Starting a business related to emerging technologies will be easy and the success rate will be high. So, always learn about emerging technologies and make sure that you are not misguided by any false promises as no one can predict the future of emerging technologies.
- Don't be greedy. If you are greedy, mostly you will be cheated by scammers.
- You need to understand the fact that succeeding in online business is not easy. You need to put in a lot of effort and withstand a lot of failures. You need a lot of courage to withstand failures and re-start with the same enthusiasm after fixing what made you fail.
- You should understand that starting an online business is very easy. For example, a complete e-commerce site can be set up in a few hours without spending much. But things like doing proper testing, promotion/marketing, customer support, and maintenance of the site require a lot of effort and spending.
- Give more importance to hiring a great Team. If you couldn't find great Team members, it is better not to hire anyone instead of hiring some average or low-performing candidate.

Let me share some details about how to start an online business. I am writing it in a very general way. Doing actual business will vary based on various factors, like your skill set, competition, resources, regulations, compliances, etc.

Once you decide to start an online business, you need to decide your product or service. Select your product/service based on your own interest and skill. If you are interested in music, you can sell your own albums or just run a youtube channel from which you can earn money from ads, sponsors, merch, membership, affiliates, etc.

Having your own website will be an advantage for doing online business, though you can do online business through other social media websites or by using free blogging sites. Owning a website won't cost much. You need to register a domain with domain providers like Godaddy and you need to have a hosting to keep files of your website. Generally, Godaddy itself will sell hosting services. But I heard that generally domain providers are not good at hosting. So, it is better to have a hosting service from a company that is good at hosting. I use HostGator for many years without any issues. We can easily point the domain from the domain provider to our website at the hosting provider by doing a simple DNS entry.

We need to be very careful in choosing the domain name. It should reflect our brand name, and it should be easy to remember, it shouldn't create any confusion, and it should not violate anyone's trademark.

Another important thing is the pricing of the domain name. Though the domain names won't cost much, you need to remember that we should renew them every year. Most domain providers provide huge discounts initially, but we need to pay higher prices without discounts when renewing them. So, keep this in mind when deciding to have your own website. If you are on a tight budget, you may simply start using free blogging services. In this case, you need not pay for domain and hosting, everything will be free. Actually, [my main blog](#) is hosted with Blogger which is free and allowed me to link my own domain.

While choosing a hosting service, they may offer various plans. Choose the plan which is more suitable for your requirements. It is better to start with a low-price plan, then we can move on to higher plans based on the necessity.

Once after buying a domain name and hosting, you can start developing your website for doing online business. One important thing is, you need to be very clear about your target audiences. It is very important from various perspectives. Even for choosing a hosting service, your target audience is important. If your target audiences are in the US and you host your website in India, the website will be loading slowly for your US audiences even though it loads quickly in India. In case, you are planning to target a global audience, it is better to use CDN services like Cloudflare which is having free

options also. Apart from helping to load your site quickly throughout the world, the CDNs will provide a lot of security features and performance improvement services.

We need to be very tough in keeping our websites free from hacking attacks and spammers, otherwise, our entire efforts in doing business will be spoiled.

For developing a website, I would recommend WordPress which is free, open-source, and supported by almost all of the hosting services. It is very very easy to set up a WordPress site. Maintenance and customization are also easy. We can expand the functionality of the site by adding the required plugins. A lot of free plugins are available. For example, we can set up a complete e-commerce website within a few minutes with a lot of useful features without spending any money. We have to set the plugins for handling cache to reduce the server load and improve page serving speed, set up security-related plugins, set up plugins to add analytics code, etc. But we shouldn't add unnecessary plugins.

Starting a website is easy, but bringing potential customers to the website is the real challenge. We need to do digital marketing effectively and do lead capture and follow-ups properly.

And, we need to make sure that our website is loading quickly. It should appear correctly on various devices like Desktop computers, Tablets, Mobile phones, etc. There are various free tools available to check the page loading performance and checking mobile-friendliness.

Once you are ready with your products and your website developed to sell your products, you can not expect sales immediately even though you bring your potential customers to your sites through campaigns. Because no one is going to buy from a random person. You need to have social proof or you have to establish your brand name. You can achieve it in various ways. For example, if you are selling your ebook, you first start selling through Amazon. Once after getting significant reviews and ratings you can start selling through your own website. Similarly, if you are planning to work on freelancing projects, you can first work through freelance websites till establishing a good reputation. After that, you can sell your freelancing service through your website itself.

One important approach for getting a reputation/branding is writing a lot of good quality and useful articles on your blog. Write articles related to your products and share them through various social media sites consistently, especially write about your personal experiences related to your products, how you are developing your products, and the

story behind choosing those products. Encourage people to subscribe to your free newsletter and send your articles through the newsletter. Once people are familiar with you, you can start telling them about your services or product sales through the newsletter. i-e you need to follow the proper funneling, starting from content marketing. And lead capturing is also important. People who are going through your product details may not buy it immediately. They may take some time to analyze your product and compare the price/quality/shipping/payment methods with your competitors. You have to do the lead-capturing properly to follow up with them later by offering discounts to make the sales. Lead-capturing can be done by various methods. For example, if you are selling computers, you get the email id for sending free ebooks about various computers, their maintenance, links to download the best free software for the computers, and best practices of using computers and troubleshooting them.

Once you are ready with your products and website built with key things, like good performance, easy navigation, proper lead-capturing system, and customer support system, you can start promoting through various ways, like, SEO, Social media promotion, PPC campaigns, email campaigns, affiliate marketing, running PPC campaigns, etc.

Doing SEO and running PPC campaigns is very important. I used to talk about these things in detail [in my YouTube Live](#) sessions. In the case of SEO, we need to focus on both on-page optimization and off-page optimization. Traffic from Search engines like Google is highly targeted traffic, so the sales conversion rate will be good. It is free and continuous traffic. But these days, it is difficult to rank high on search engines because of heavy competition. So, we need to consider spending money on doing PPC campaigns also. And, by doing our business related to emerging technologies, we will be able to rank well for our keywords because of the low competition in the emerging technologies. That's why we need to do business related to emerging technologies.

Imagining the Future

Predicting our future world has become increasingly challenging due to the rapid evolution of new technologies. Just a few decades ago, we could not have imagined the extent to which our lives would be influenced by the **internet** and related technologies today. Many experts believe that the fourth industrial revolution will introduce even more transformative technologies that will greatly impact our lives in the coming years. Therefore, it has become very difficult to envision what our future world will look like.

Let's consider some possible scenarios. The rapid advancements in computing power, artificial intelligence, quantum computing, IoT, and material science are expected to

drive widespread automation across various fields. This could enhance productivity and safety while also affecting job opportunities for humans. Initially, this may seem like a negative development, but in reality, people can receive financial support through **Universal Basic Income** schemes without having to work. Several countries have already conducted pilot studies on the implementation of Universal Basic Income, and the results have been encouraging. Contrary to popular belief, this approach has motivated people to pursue their interests rather than becoming lazy due to the availability of money without work. This ultimately leads to an improvement in overall productivity.

Developments of nanodevices will improve the medical field by improving drug delivery, imaging, monitoring, etc. Tiny cameras can be swallowed as pills to diagnose diseases. Once CRISPR Gene editing comes into the mainstream, the entire medical field will see a major change. We will be able to cure a lot of diseases easily, apart from creating designer babies. And, people started talking about [artificial womb](#) which can help to avoid pregnancy burdens. The advancements in developing Bionic devices are blurring the differences between humans and machines. Overall the medical field is trying to improve our health and increase our lifetime. But it will create an issue also. i-e It will create a society filled with many aged people. It creates the need for social robots for helping the elderly.

While we see improvements in our lifestyle and health, our Earth is facing climate change problems. Many scientists are saying that it will become a huge issue if we do not take the required actions as soon as possible. So, many research groups have already started developing carbon capture technologies. And drinking water issues are also becoming a big problem in many places. That's why scientists are exploring various desalination techniques to get drinking water from seawater.

Looking back at history, we can know the fact that our lives may be affected by technological changes in some way. But the core part of our lives is mostly independent of technology. We can always find happiness and peace in our lives by focusing on good things like love, courage, gratitude, and integrity while avoiding negative things like jealousy and greediness. This fundamental fact is not changing irrespective of time and technologies. Anyway, it is always good to keep an eye on emerging technologies to improve our careers in the coming days.

My experiences of Earning Money Online

Because of the widespread usage of the internet, traditional business models are getting changed entirely. These days we have a lot of opportunities for earning money online. I won't say that earning money online becomes easy, but the opportunities for earning money online are increasing, and we get a lot of information and guidance for earning money online.

As I sit down to write this, the world might not hold me up as a paragon of success (though, deep down, my own story sings a different tune). I get it. Most seek out the triumphant narratives, the gilded tales of those who have scaled the summit. But in our insatiable hunger for "how-to" guides, we often overlook a crucial factor: [survivorship bias](#).

What is survivorship bias? It's the tendency to only see the successes, the ones who made it, neglecting the countless others who poured in equal, if not greater, effort but haven't yet reached their peak. It's like peering at a mountain range through a narrow lens, only seeing the triumphant peaks, oblivious to the valleys of struggle and the climbers still scaling their own paths.

Learning purely from the "made it" crowd can be limiting. Their stories, while inspiring, often gloss over the nitty-gritty, the stumbles, the near misses. It's the unsung heroes, the ones who persevere despite delayed gratification, who offer a richer tapestry of lessons. They share not just the triumphant "what" but also the crucial "how" – the detours, the pivots, the resilience forged in the face of setbacks.

That's why, despite not yet wielding the financial gold medal, I choose to share my journey in this chapter. It's not about proving anything to the world, but about offering a different perspective, a glimpse into the less-charted territories of the success landscape. My story might not be a shiny trophy on the shelf, but it's a weathered map, marked with both triumphs and tribulations, offering valuable insights for fellow travelers.

Moreover, my experiences highlight the need for doing any business related to emerging technologies.

So, buckle up, dear reader, for a ride beyond the usual success stories. We're venturing into the realm of the "almost there," the "still striving," the ones who refuse to let setbacks dim their inner fire. And who knows, maybe, just maybe, in the echoes of my own challenges and triumphs, you'll find the missing piece of your own unique path to success.

Before giving more details, I want to clarify a few things.

I am going to write this chapter based on my personal experiences. I haven't done any research to come up with this. I am just writing it based on my own experiences and my own thoughts. So, it need not be applicable to everyone. In the case of online earnings, you may come across a lot of scams and misinformation. So, you need to be very careful about doing online works.

My Name is Rajamanickam Antonimuthu. I have completed my Engineering Degree in 1998 in India and had worked for various IT companies including IT wings of big investment banks such as BNY and CitiGroup in various roles (mostly in software test automation) till 2008.

Then I wanted to start doing my own Business. I explored various business options. Since I had good work experiences in Software Development and Software Testing, I decided to do freelance work related to Software Development or Testing.

Since I am living in a Developing Country, doing freelance work for a local market is not profitable. So, I started looking for online work. I thought doing freelance work online for the clients living in 'Developed Countries' can help me to earn significant money. I spent significant time at Browsing Centers (Net Cafe) for using the internet to search for online work. It was not easy to get online work at that time period. I was ready to do any kind of online work including Data Entry work. But I found difficulty in finding online work. I thought having an internet connection at my home can help me to spend more time searching for online work. But it was not easy to get an internet connection at that time. Somehow I managed to get an internet connection at my home, and started spending more time searching on the internet to find online work. Initially, I was not looking for any money, and I was ready to do any kind of task without any payment just to start my online career. But still, I was not able to get any online work for many weeks.

I put a lot of effort for finding freelance websites, as there were only a few freelance websites available at that time. And I started spending a lot of time for searching work on those freelance websites. After some weeks of continuous efforts, finally I got my first task from a freelance website called "RentACoder" which was later renamed to "vWorker" and then merged with "Freelancer". Interestingly, my first task was completely irrelevant to my skill set. It was related to video-editing which I was not familiar at that time. It was not an actual video-editing task, but a question related to video-editing. Somehow I managed to complete the task (i-e answering the question) by referring to many websites and doing a lot of Trail and Error actions, and I got a good rating and review comment. I felt very happy about it and decided to continue this approach.

Interestingly I was able to complete this first task within an Hour though I had to spend a lot of hours to get this project. Initially, I used to bid for a lot of projects. Then I realized that placing a lot of bids is not going to help even if my bids are very low. Instead of putting my efforts into bidding on a lot of projects, I started bidding on a few highly relevant projects and put my efforts into analyzing those projects deeply. I started asking a lot of relevant questions after going through the requirements, and even I started telling my suggestions for the success of the projects even before winning the bids. This

approach helped me to win more bids and I put a lot of hard work to deliver the projects as per the requirements of the customers. I did the corrections without any hesitation. All these things helped me to get good ratings and bonus money.

I started getting exclusive projects so that I can win the bid without any competition. I focused more on PHP/MySQL projects.

As I was getting more projects easily, I started a Company "QualityPoint Technologies" and started hiring Team members to help me complete the projects. Because of the quality of our work and competitive bidding, we used to get many projects and we were able to complete more than 120 projects within a few years.

Though I had a lot of Good Ratings and Reviews for my RentACoder profile, my account got suspended for a dispute with a customer. By that time, I had a list of good customers who were willing to give me the projects directly. So the RentACoder account suspension didn't affect my business. Instead, it helped me to avoid their fees and I got the freedom to have direct communication with the clients without any restrictions. The only thing was I couldn't see the Reviews and Ratings given by the clients as my account got suspended. Interestingly, all these Reviews started appearing on my profile at Freelancer which acquired RentACoder. It made me think that no one can stop the rewards of our Hard work. Anyway, I didn't want to use any freelancing websites as I got enough projects from my existing customers. More interestingly, my blog post about the RentACoder account suspension got a lot of traffic, and I earned some money by adding an affiliate link to another freelance website.

In case you decide to use freelancing websites for your online earnings, first spend significant time for finding a freelancing site which is most suitable to you. Then understand their rules properly by going through the discussions on related forums. Once you are familiar with their rules, features, and best practices, spend significant time for properly setting up your profile or any other details like skill set, hourly rate, etc. As I specified earlier, try to understand the requirements of the project properly and come up with your questions when bidding for the project. As a beginner, you may have to bid low to get projects. But don't bid too low. Always have clear communication with your customer. Don't hesitate to point out any issues in their requirements. When you face any difficulty in completing the project at the specified time period, immediately communicate with your customer, don't give them surprises. It is better to get the payment on Hourly basis in the long run. Most of the customers may not agree to pay Hourly as they plan to spend a specific amount of money for a specific project. So, they prefer to pay based on the project rather than Hourly. But it is important to gain their trust to convince them for the Hourly payment. The main reason is, we tend to give our suggestions only when we are paid hourly. Our suggestions are very important for the

success of the project. We will be getting more projects only when our customers are successful. It is better to focus on specific area of work. For example, if you are a coder, focus on any one specific script (e.g PHP). In the long run, you will be coming up with a lot of function libraries which you can reuse in many of the projects. It will help you to save time and get more projects easily.

Let me continue my story. Though I could get projects easily, I couldn't earn money as the employees used to leave our Company for a better salary from Corporate Companies once they got experience from our company. All my energy, time, and money spent on hiring the Team members and for training them were not helping me to earn money. So, I decided to change our business model. I focused more on developing and promoting our own products such as Timesheet Software. This business model is somewhat better than the previous one, because the high employee attrition rate didn't affect this model much. In the case of Freelance projects, we used to get different kinds of projects. So, it required good work experience in various kinds of projects. But in case of timesheet project, I can easily train any new team member.

But this model is also not giving much profit as the advertising cost is high.

In short, getting projects becomes easy for me. Individually I could earn from the projects. But it was not profitable when I tried to do it by hiring Team members. i-e I was not able to scale this business model.

In the meantime, I have noticed that Google AdSense is giving significant earnings from my blog which I started to share my software development experiences initially. So, I had decided to choose Google AdSense earnings as the primary source of income. And therefore, I have started many websites for showing AdSense ads.

I even sold many websites through websites-market-places such as Flippa and Digitalpoint Forum by showing the AdSense revenue as the proof for the value of the website. These things made me think that Google AdSense is the best and easy way of earning online. Anyway, flipping of websites didn't help much as I faced difficulty while selling many websites.

Sometimes the Fees for selling the website are more than the website sales price itself. And, the instability in our Team causes high development and promotion costs. Unnecessarily I was spending money for renewing many domains, and for the hosting servers. So, finally I decided to drop lots of websites by letting them expire themselves instead of wasting my time and money for trying to sell them through Flippa or any other websites-market place.

The unstable Team causes a lot of issues. For example, I have done a lot of hard work to bring the Automatic Resume Posting tool which had lots of potential to earn money easily. But, because of the instability in our Team, I couldn't make money from that amazing thing.

And therefore, I stopped hiring any new Team members to avoid further losses driven by unstable team.

Currently, I don't have any full-time team member. But I strongly believe in Team work. And, I had a lot of good experiences when we were working as a Team. So, I have plans to build a Strong Team in the near future once I finalize my current business plans.

I learned the lesson that unstable Team won't allow the Entrepreneur to earn money from any kind of initiative even if all the other things are supporting the Entrepreneur.

I am exploring various ways about making the unstable Team into a stable team.

In the meantime, I had decided to find some other ways for earning money without depending on Team members much. i-e I was looking for some kind of passive income opportunity.

I had tried various ways for earning passive income including, website flipping, Affiliate Programs, publishing Books, Android Apps, etc. But I feel YouTube is the best among all the tried ways.

I had spent lots of Time, Money, and Energy for trying all other things. But they haven't given any significant benefits. Surprisingly, I started earning significant money from my YouTube videos without spending any money for doing it.

And, I did some analysis about future trends, and found that YouTube is the one among the 3 important online businesses, while Mobile Apps and Social Media are the other two things. I thought running YouTube Channel is comparatively easy among these 3 things. So, I decided to focus more on YouTube.

Apart from earning money by showing Google AdSense Ads, you can earn money from YouTube Videos through many other different ways also. For example, YouTube allows you to sell Merchandise by adding the link to the products using YouTube Cards in your videos. YouTube is having list of Merchandise partners.

I had tried to sell the products like T-Shirts from Spreadshirt which is one of the YouTube Merchandise partners. It was not successful for me. Because my channel

audiences are from many different Countries and I upload videos on different topics. So it didn't work for me.

For example audiences from India may not purchase these T-shirts as they can easily get these T-shirt at a very low price from their local shops. But it may work well for the YouTubers who focus on specific audience. Their success possibility will be very high if they found merchandise best suitable for their audience.

I came to know that YouTube's other Merch Partner Teespring is helping to earn money. So, now I have decided to explore it. I designed some T-Shirts and linked the Teespring account with my Youtube Account so that the T-Shirts will be automatically displayed under each of my youtube videos.

We can set our own price for our Merch products and we can promote it by giving Discount code also. I had tried this option for a few months. I had spent significant time and effort to create T-Shirt designs. I am not good at design. So, I tried creating simple designs with various Quotes and trending topic slogans. All these efforts were not much useful. I got a few sales only. So, I disabled this feature.

Before telling about YouTube further, let me first share my other earning experiences.

In my blog, I shared my software testing experiences in many blog posts. Those posts were viewed by a lot of people. So, I decided to combine all those posts and created as an eBook. I sold it from my website. It was selling well. So, I published it as a Kindle book on Amazon and then published a paperback version through Createspace. I earned significant money from the sales of this Book. But this book is bit outdated now. So, it is not selling now.

After seeing the success of this Book, I had published a few other books, but they were not successful. I spent significant money for running paid campaigns for promoting the Books. I tried Google Ads, Facebook Ads, Reddit ads, GoodReads Give-Away, LinkedIn Ads, Book Deals sites, and Amazon AMS ads. But they were not much helpful. But I am still exploring the option of book publishing as a way of earning money to handle the risk in case I face any unexpected issues with my YouTube earnings.

As explained earlier, I closed most of my websites started with the aim of earning money from Google AdSense. But I didn't want to close one site named TheQuotes.Net as I like this name much and I am partnered with my friend for running this website. As part of promoting this website, I had decided to develop an android App, and I came to know that I can earn money by showing admob ads. So, I learned to use Android Studio to develop simple Apps. Though the Quotes app got a lot of good ratings, my earnings

from this App is not much. But still, I published a few other Android Apps as a way of promoting my other products.

I am putting significant efforts for doing Amazon affiliate marketing. As of now, I am not seeing any significant growth there. But, I am continuing my efforts for doing it. Because YouTube disabled monetization for my YouTube Channel two times by saying duplicate content as reason. So, as a backup revenue stream, I am continuing Affiliate marketing though I am not earning from it as of now.

Let me share my YouTube experience now. I had created my YouTube Channel "QualityPointTech" in the year 2009. Initially, I was not taking YouTube as a serious business option. At that time I was concentrating on doing software/web development business. Apart from doing software development, I was running a blog for sharing my knowledge and experience of doing Software Testing and Web development. And, I came to know about the fact that many people are earning money by showing Google AdSense ads in their blogs.

So, I thought of trying that option, and therefore I applied for Google AdSense. But my request got rejected many times. Finally, after many attempts, Google granted me Google AdSense, and I started showing Google AdSense ads in my blog. It took a few months to earn my first Google AdSense Cheque. During those days, Google used to send the AdSense payment as a Cheque once after our earning exceeds \$100.

Within a few months, I started getting Google's Payment Cheque every month regularly. I realized the earning potential of my blog which was started just to showcase my software testing and development skills to get freelance projects. So, I decided to spend significant time in promoting the blog. For promoting our blog, I created my YouTube Channel. i-e That time I considered YouTube as one of the link submitting websites which can help to improve the search rank of my blog in Google Search.

A few months later, I received an email from YouTube saying that I have the opportunity to earn money from YouTube videos by linking my Google AdSense account with my YouTube account. And, I added Google AdSense ads to my YouTube Videos. But I haven't focused much on creating YouTube videos. I just used it for promoting my blog and our Timesheet product. One day, one of my Videos about Google Doodle got significant views and thereby I earned significant money.

This incident had taught me about the fact of how YouTube Videos are behaving differently comparing with blogs. I came to know that YouTube Videos are getting more views for Trending Topics i-e topics that are searched by many users suddenly. Thereafter I switched my focus from doing web development to creating YouTube

videos. I made this decision due to other reason also i-e Problems faced in Web development business due to the unstable Team as I explained earlier.

I continued uploading videos about Trending Topics regularly, and earning money from those videos. But I felt that it is not going to be a stable business model for long time. Because I strongly believe that any business which is not solving people's problems is not going to survive for long time. So, I explored various other things which can really solve People's problems or help them in some ways.

For example, I thought about adding Tutorial videos which can help people to learn software development and software testing. But, I have noticed that a lot of other Channels were already providing Tutorial Videos. And, I found that there were very few Channels only available for giving latest Science and Technology News. So, I have decided to use our YouTube channel for giving Science and Technology News.

Comparing to the Trending Topics Videos, the Technology News Videos are getting very less number of Views only. But I am spending a lot of Time and Effort for uploading Technology News Videos regularly. Because I came to know that many Scientists and Inventors are inventing many useful things, and they are publishing their findings in many Journals. But the benefits of their inventions are reaching the end-users after a very long time only. The reason for this unwanted delay is, the latest science and technology news is not reaching the Entrepreneurs who can bring it further to the end-users. I believe our YouTube Channel can fill this Gap. So, I will continue to upload Science/Technology News Videos even if they are not earning much.

Whenever I go through the YouTube Earning related questions in Quora, I see two types of Questions. One is, people asking about earning huge money from YouTube, that too quickly and easily. They are seeing YouTube as a magic money-making machine. I can clearly say that YouTube is NOT suitable for that kind of people. It may be true that many people are earning Millions of Dollars from YouTube just by uploading few videos that are just showing themselves playing Computer Games. But this is not going to work for everyone.

The another type of Quora Questions about YouTube is, people asking about earning money from YouTube by utilizing their specific skills, like, Music, Dance, Teaching, etc. YouTube will be best suitable for them, not only for earning Money, but for their Career improvements also.

For example, assume that you are a Musician. You can start your YouTube Channel easily and immediately without spending any Money. You have to upload your Music Videos to your Channel frequently. Many people will start watching your video. If people are watching your music videos long time, YouTube will start suggesting your video to

many people. Because Watch Time of the Video is an important factor for YouTube to find whether a video is interesting or not. So, obviously your channel will get more views, and you will start earning money.

Apart from earning money you will get feedback and suggestions from your audience through the comments. Apart from making ad revenue, you can earn by selling your albums to your established audiences. And, note that just uploading video is not enough, you need to give meaningful and attractive Title, add relevant Tags and most importantly you should promote your Videos. i-e You need to share your video link with your friends and on social media like Facebook, Twitter, etc. And you may earn additional money by teaching Music to the people who are interested to learn from you. And, you need to report to YouTube if you find any other YouTube channel stealing your videos.

If you are not interested to spend time in promotion activities and preventing video stealing, you can join an MCN (Multi-Channel Network) so that they can take care of those things on behalf of you. But you should remember that not all the MCNs are good, some of them may be worst and fraud. I never used any MCN. So, do your research before joining any MCN.

The very first question from the people who are willing to make earnings from YouTube is like "How much money I will get for Thousand Views?" You need to understand that view count is not the appropriate measure for calculating revenue. Your YouTube earning will depend on various other factors also.

Based on my understanding, I feel my YouTube Earnings depend on below parameters. There may be many other parameters which I may not be knowing yet.

Video Topic. Normally technology videos earn more than entertainment videos.

Country of the viewers. If your audience are from U.S, U.K and Canada, you can earn more.

Length of the Video. Based on my observation, long videos tend to earn more money than short videos. (Note that long video means the duration of the part actually watched by the viewers)

Traffic Source. You can earn money more if the viewers are coming from Google search, instead of from any social media site.

Note that we can use our YouTube Channel for doing Live Streaming also. You can do it from your mobile devices too using YouTube App.

In Desktop you can use any broadcasting software like **OBS** for broadcasting Live programs to your YouTube Channel. And, YouTube is providing features like “Super Chat” which will allow you to earn money by highlighting user chat comments while broadcasting your live video.

I learn lots of things from the feedback/comments given by my channel viewers. Many people told me that my voice/accent is not understandable for them. So, I am spending significant time in adding subtitle / CC for almost every video I upload. YouTube is providing a Tool for making the subtitle adding task easy. If you give the entire transcript of the video, it will automatically create the subtitle for your Video. Adding subtitle will help to increase the watch time of the video and therefore it will help to get more views.

And YouTube is providing an automatic translation option also. But I haven't used it much and therefore I can not tell about the impact of using automatic translation.

I did the mistake of not buying a good quality microphone. This mistake affected my channel growth heavily. I realized my mistake after a few years only, and bought a good quality Mic and Stand for holding the Mic.

So, make sure that you are using Good Quality Mic and Camera or any other tool required for creating your videos.

For improving Voice quality, I started using the audio tools like Audacity. I use it for doing noise removal and for removing silence.

I spent significant time creating custom Thumbnail image for my videos. Actually, YouTube will allow you to choose one of its 3 automatic thumbnail suggestions. But it will be better to create our own thumbnail image and upload it as a custom thumbnail.

For promoting our YouTube Videos, I follow many different ways. I share my videos on social media sites and I will specify my YouTube Video in my answers in any Q&A Website or Forums. I joined with many relevant Facebook Groups.

And, I have released a Mobile App in Google Play Store for viewing our YouTube Channel. I am embedding most of my videos in my news website RtoZ.org so that people can easily navigate my YouTube Channel Videos based on Tags and Categories.

I used to spend significant time in going through YouTube Analytics which gives lots of information about our Videos, like Ad Rate, Watch time, Demographics, Traffic sources, details about Likes, Shares, Comments, Playlists etc. And, it provides Real Time stats also. We can get lots of clue from these Analytics Stats to improve our Channel. So, it is very important to go through YouTube Analytics regularly.

We need to be very careful while promoting our videos. We should promote our videos in genuine ways at relevant places only. If you promote your video to irrelevant audience, then the watch time of your video will be reduced. Good watch time is an important factor for earning from YouTube videos.

Another important thing you need to be very careful about is, Copyright Rules. Never violate anyone's Copyright and Privacy. Try to be familiar with YouTube's Terms & Conditions, Policies, Copyright rules and Community guidelines. You will get copyright strikes for violating anyone else's copyright. And you will get Strikes for violating the Community Guidelines also.

Note that your Strike will not go even if you delete the Video. Your YouTube account will be terminated if you get three strikes. You can not create any new account. So, be very careful about copyrights and community guidelines.

And never try to click the ads in your own videos. It may lead to your AdSense account termination.

Sometimes we may receive false copyright notices due to incorrect functioning of YouTube's ContentID matching system. So, you need to dispute those false claims, otherwise the ad revenue from your video will be paid to copyright claimer.

At sometimes, YouTube will allow you to remove the copyrighted song from your video instead of deleting the entire video. And, I have noticed that we will not be able to edit some details of a video if that video exceeds significant views.

Sometimes, I used to think about why I could earn from YouTube easily comparing with my other initiatives like Software Development and Web Sites. In fact I am NOT good at video creation. I realized that it is related to the fact about why I couldn't build strong software Development Team even when I was working very hard to achieve that mission. The Answer is simple. I couldn't compete with the already established software development companies in terms of retaining skilled developers.

Those companies easily attract our team members by offering higher salaries. But when they started their business a few decades back, they didn't face these problems. Because they were at the beginning of software development era. For them, it was easy to succeed in Software Development Business. I understand that I am experiencing the same thing with YouTube. i-e Succeeding in any Emerging Industry/Market is easy comparing to competing with already saturated industry. I believe Video is Emerging now. When Printers were invented, there was a business opportunity for putting all the knowledge and experience of humans in Books format.

Once Computers were invented, there was a demand for converting the Books into Digital format by doing Data Entry tasks. Then there was a demand for Web Developers for putting those digital data into websites so that people can access them from anywhere. Now people are preferring to consume those content simply by watching as video instead of reading the content by themselves.

The fast growth of computing power, increased network bandwidth and accessibility of Mobile Phones made their wish possible. And, this kind of fast growth of Video production and consumption is going to change the entire business systems.

For example, previously people used to join any Training Center for learning any new language or computer programming language. Now they can easily learn any new language by watching Tutorial videos on YouTube. So, the Training Center business will be going down, they need to slightly change their business model. They need to plan for doing their business through video platforms like YouTube.

It is true that YouTube is having a huge opportunity to earn money. But that doesn't mean that it is without competition.

Already a lot of people had started YouTube Channels on numerous Topics. Getting views to our YouTube channel is very difficult. Sometime back, I got a chance to meet many YouTube Video Creators at an Event arranged by YouTube. In the meeting, most of new video creators were saying that they found it very hard to earn money from their YouTube channels.

And, YouTube is also adding many new restrictions for enabling monetization for new channels. So, if you are planning to earn money from YouTube, you need to do it soon.

From my experience story, anyone can easily understand that entering earlier into any kind new business opportunities is the easy way of making money.

So, it is important to be familiar with the updates of Emerging Technologies such as 3D Printing, Robotics, Drones, Graphene, Nano Technology, Artificial Intelligence (AI)/Machine Learning, Gene Editing, Desalination Techniques, Virtual Reality, Wearables, New kinds of Batteries, Driver-less Cars, Solar Power Improvements, Quantum Computing, Brain-computer interface, etc.

I have uploaded a lot of Emerging Technologies-related videos to [my YouTube channel](#), and daily I am spending a lot of time and effort to find the latest Science and Technology News from various sources including Universities, such as MIT, Stanford, Harvard and UC. And, I used to check various Science and Technology related groups in various social media websites to find latest updates of Emerging technologies so that I can

upload a news video about them. I would like to make my YouTube channel as a bridge connecting the Scientists and Business People.

While YouTube presents exciting opportunities, it also carries inherent risks. I, for instance, encountered issues like demonetization and AdSense account suspension, despite diligently adhering to their terms and conditions.

As explained in [my video](#), I believe Emerging Technologies will change our Life and Businesses entirely very soon.

So, if you are interested to know the latest technology news, subscribe to my YouTube channel.

As of now, I am not an expert in any kind of emerging technology. But I believe I can connect the relevant people/business/projects/problems as I am spending many years uploading news videos related to emerging technologies. I thought about creating some kind of web platform to connect the Science and Business worlds. But I postponed this plan as I expect it will be a challenge to bring users to that platform initially. So, currently I am planning to promote my YouTube channel to get more subscribers. Once after getting huge number of subscribers, I believe it will be easy to get users to that connection platform. So, I am running Google Ads to promote the channel.

As I am working on full time for video creation and promotion, I felt that just depending on YouTube alone will be risky as it may do demonetization at any time without any warning or proper explanation as it did two times previously. So, I explored various alternatives for YouTube. Finally I found the Blockchain-based Video platform **Odysee** which is trying to be the “YouTube of [Web3.0](#)”.

I came to know that we can earn money from video views on our **Odysee** channel. Especially, I was told that we can do it without spending much time/effort. We need to just sync our YouTube channel with Odysee channel. It made me to choose Odysee. But Odysee Earnings will be in its own Crypto coin LBRY Credit (LBC) only.

As I am not familiar with Crypto currency usage, I had to go through various articles/videos to learn about Crypto currencies. I came to know that Odysee’s Library credit “LBC” is not famous right now. So, only a few Crypto Exchanges are supporting it. But, those Exchanges are not supporting withdrawal into my local bank account. So, I had to find out two Crypto Exchanges. One Exchange for depositing LBC from Odysee and convert it into famous crypto coins like Bitcoin (BTC). The second Exchange is for depositing the famous coin (e.g BTC) from the first crypto Exchange, and for converting it into my local currency for withdrawing it into by bank account. After doing a lot of

analysis, I sorted out two exchanges, and did the accounts setup. I will try the LBC withdrawal from Odysee once after earning significant LBC Credits.

Apart from Odysee, I am exploring other blockchain based social networks like Dtube, steemit, hive, etc. As of now, these blockchain platforms are NOT effective.

Though I am not earning much online, I thought sharing my experiences may be helpful for someone willing to start earning online. If you are really willing to focus on your work and maintain integrity, surely you can start earning money online. Don't be greedy, otherwise you will be getting cheated by scams. If you are good at your specific skills or have any good products with competitive price, you can easily get paying customers by putting some efforts for creating your profile, showcasing your skills or product details, doing social media promotion, and running some effective ad campaigns.

Earn from Emerging Technologies

While it may seem easier to make money or conduct business by utilizing [emerging technologies](#), it's important to acknowledge that there are potential risks and challenges involved. Although there may be less competition and ample opportunities, the potential for failure is high due to the untested nature of new technologies. Additionally, potential customers may be hesitant to adopt these emerging technologies, and the technology itself may fail due to a lack of resources or the emergence of superior alternatives. So, always start simple, don't invest much. Instead, grow your business step by step without spending more money.

Initially you may just start with **info products** as I am doing, like running youTube channel, selling ebook and publishing blogs for giving details about your favorite technology. By doing so, you earn some money and you can use it as a base for your further business initiative. Because, for doing any kind of business, we need to have a content marketing strategy. For example, if you are interested in Graphene, you can start a blog for telling about graphene, you can run a YouTube channel for explaining graphene and for giving latest news about graphene, and you can write an ebook about graphene to sell it through various ways, like Amazon, Smashwords, etc. Even you can sell them through your blog also using paypal. Later on once you decide to develop any graphene application or graphene production, you can find it easy to sell them once after you develop a huge user base interested in graphene.

I am telling Graphene as an example. You can explore about various opportunities available with different kinds of Emerging technologies. In case of AI, you can start with blog, YouTube and ebook approach, then later on, you can earn money by teaching AI to the people who are interested to learn it, and you can earn money from by developing AI applications also.

Apart from earning money directly from emerging technologies, we can improve our earnings from current work by utilizing emerging technologies effectively. For example, people can reduce their work load heavily by utilizing AI tools properly. For example, chatGPT can help in various ways.

In recent years, numerous businesses, both large and small, have adopted Digital Transformation as a fundamental principle. The Covid19 pandemic has further accelerated this trend for many organizations. The driving forces behind these digital initiatives are the competitive pressures, increasing customer expectations, and the potential for revenue growth. The integration of emerging technologies like Cloud Computing, Machine Learning, Artificial Intelligence, Internet of Things (IoT), and Blockchain has been instrumental in facilitating these digital transformations. So, take necessary steps to keep up yourself according to the digital growth and try to use it effectively for your business growth.

Just explore various emerging technologies like AI, 3D Printing, Brain–computer interface, Nanomedicine, Nanosensors, Self-Healing materials, Quantum dot, carbon nanotubes, Metamaterials, Microfluidics, Magnetic nanoparticles, High-temperature superconductivity, Lab-on-a-chip, Graphene, Conductive polymers, Bioplastic, Aerogel, Vertical farming, Cultured meat, Artificial general intelligence, Flexible electronics, Li-Fi, Machine vision, Memristor, Neuromorphic computing, Quantum computing, Spintronics, Speech recognition, Twistronics, Three-dimensional integrated circuit, virtual reality, Holography, Optical transistor, Screenless display, Artificial photosynthesis, Fusion power, Gravity battery, Lithium–air battery, Lithium–sulfur battery, Nanowire battery, Smart grid, Space-based solar power, Wireless energy transfer, Superalloy, Artificial uterus, Neuroprosthetics, Flying car, Magnetic levitation, Self-driving car, Space elevator, Hoverbike, Maglev train, Blockchain, etc

While exploring these technologies, make sure that you are reading or watching the content that are based on science research, not based on fiction. You may watch my YouTube channel where I am uploading a lot of [tech news videos](#) based on research papers. Once after getting some basic idea of these things, just pick one or two things that are more relevant to your field, career, business, passion, etc. Then put all your efforts to learn more about your chosen technologies. Actively participate in various social media and forum discussions about them, and you may attend any events related to your chosen technologies. It is better to write your learnings as blog posts or upload as videos. It will be helping you to learn better, and you will get opportunity to find like-minded people for possible collaborations, and even you can earn money by showing ads. While doing these things, you will be in a position to develop your product or choose the most suitable product in the market. Then start working on selling your

own product or affiliate product to earn money from it. You need to be very much focused now. You may face many difficulties and setbacks. Instead of thinking about changing the product/field/technology frequently, you need to be very strong in selling your product by exploring various opportunities, especially you need to make use of the digital marketing properly. Build up a strong following in all social media sites. Use paid promotions effectively. Continuously optimize your campaigns till you reach positive ROI. Do the proper lead capturing and follow up.

Use Digital marketing effectively

To use [digital marketing](#) effectively for your online business, consider the following steps:

Define your target audience: Understand who your target audience is and what they're looking for. I would say that many businesses fail as they are not doing their business activities by keeping their target audiences in mind. For example, I set my target audience for my YouTube channel as english-understandable people who are interested in technology. If I start uploading videos in non-english language, will affect my channel heavily. So, we need to define our target audience properly and we align our activities based on them.

Develop a comprehensive digital marketing strategy: Identify the different channels that you will use to reach your audience, such as social media, email, search engines, and content marketing.

Optimize your website: Ensure that your website is optimized for search engines, is mobile-friendly, and has a clear call-to-action.

Produce valuable content: Create content that is informative, engaging, and relevant to your audience.

Leverage social media: Use social media platforms to connect with your audience, build brand awareness, and drive traffic to your website.

Use paid advertising: Consider using paid advertising to increase your reach and target specific audiences. Personally I like Google Ads PPC campaigns. We need to choose proper keywords, max CPC, etc properly. And, we should continuously tweak our campaigns.

Analyze your results: Use data analytics to track your performance and adjust your strategy accordingly.

By following these steps, you can effectively leverage digital marketing to grow your online business.

Risks of Conducting Business with Emerging Technologies

Emerging technologies have the potential to revolutionize the way we do business, but they also carry some risks that should be considered before investing resources in them. Here are some of the main risks associated with doing business with emerging technologies:

Uncertainty: Emerging technologies are by definition new and untested, which means there is a great deal of uncertainty about how they will perform in the real world. It can be difficult to predict how a new technology will impact your business, or whether it will be successful at all.

Investment risk: Investing in emerging technologies can be risky, as it often involves a significant amount of capital investment upfront. There is no guarantee that the technology will be successful, or that it will provide a return on investment.

Security risk: Many emerging technologies, such as artificial intelligence, the Internet of Things (IoT), and blockchain, involve the collection and sharing of sensitive data. This creates security risks, as there is a potential for data breaches and cyber attacks.

Regulatory risk: Emerging technologies often operate in a legal grey area, as regulations have not yet caught up with the pace of technological change. This can create uncertainty and risk for businesses, as they may not know how to comply with regulations or how regulatory changes may impact their operations.

Scalability risk: Some emerging technologies may work well on a small scale, but may not be able to scale up to meet the needs of larger businesses. This can be a problem if a company invests in a technology that cannot keep up with its growth.

Ethical risk: Emerging technologies can raise ethical concerns, such as the impact of automation on jobs, the use of artificial intelligence in decision-making, or the potential for bias in algorithms. Businesses need to consider these ethical issues when investing in new technologies.

Overall, while emerging technologies offer exciting new opportunities for businesses, it is important to carefully consider the risks before investing in them. Companies should conduct thorough research and due diligence to ensure they are making informed decisions, and should be prepared to adapt their strategies as the technology evolves.

Key Emerging Technologies

Find below some key emerging technologies. There is no significance in the order, I am just listing them in random order.

Artificial Intelligence (AI)

AI refers to the ability of machines or computers to perform tasks that typically require human intelligence, such as visual perception, speech recognition, decision-making, and language translation.

AI is achieved through the development of algorithms and computer programs that enable machines to learn from data and make decisions based on that data. These algorithms are designed to simulate cognitive functions such as learning, reasoning, and problem-solving, and can be used in a wide variety of applications, including healthcare, finance, manufacturing, transportation, and entertainment.

There are different types of AI, including rule-based systems, machine learning, and deep learning. Rule-based systems use a set of predefined rules to make decisions or take actions, while machine learning algorithms can learn from data without being explicitly programmed. Deep learning is a type of machine learning that uses artificial neural networks to learn from large amounts of data, and it has been particularly successful in applications such as image recognition and natural language processing.

AI has the potential to transform many industries and improve people's lives in various ways, but it also raises ethical and social issues, such as the potential loss of jobs to automation, privacy concerns, and biases in algorithms. As AI technology continues to evolve and advance, it is important to consider these implications and develop responsible and ethical approaches to its development and use.

I have uploaded more than 250 videos related to AI innovations on my YouTube Channel. You can watch them [here](#).

AI is currently being used in a wide range of applications and industries. Here are some examples:

Healthcare: AI is being used to improve patient outcomes by analyzing medical images, identifying disease patterns, and developing personalized treatment plans. For example, AI can analyze medical scans to help detect cancer earlier, or analyze patient data to identify individuals who are at higher risk of developing certain diseases.

Finance: AI is being used to detect fraudulent transactions, manage portfolios, and develop trading strategies. For example, AI can analyze financial data to identify

patterns and trends that humans might miss, and use that information to make more informed investment decisions.

Manufacturing: AI is being used to improve efficiency and productivity in factories by automating processes, predicting equipment failures, and optimizing supply chains. For example, AI can analyze data from sensors on machines to predict when maintenance is needed, or use predictive modeling to optimize the production line.

Retail: AI is being used to personalize shopping experiences, recommend products, and optimize pricing strategies. For example, AI can analyze customer data to make personalized recommendations, or use predictive modeling to determine the optimal price for a product based on demand.

Transportation: AI is being used to improve safety and efficiency in transportation systems, including self-driving cars and drones. For example, AI can analyze sensor data to help cars navigate and avoid accidents, or optimize delivery routes for drones.

These are just a few examples of the many ways that AI is currently being used. As the technology continues to evolve, it is likely that we will see even more widespread adoption and integration of AI in various industries and applications.

Apart from these current uses of AI, the potential uses of **AI in the future** are vast and exciting. Here are some possible scenarios:

Autonomous Systems: AI will enable autonomous systems, such as self-driving cars, drones, and robots, to become more prevalent and sophisticated. This will lead to safer and more efficient transportation and manufacturing, and enable new applications in fields such as construction, exploration, and emergency response.

Healthcare: AI has the potential to revolutionize healthcare by enabling personalized medicine, faster drug discovery, and remote patient monitoring. AI algorithms could analyze large amounts of data from medical records, imaging, and genomic sequencing to identify patterns and predict disease outcomes.

Education: AI could transform education by enabling personalized learning experiences for students, identifying gaps in learning, and providing real-time feedback to teachers. AI could also facilitate more effective training and professional development for educators.

Entertainment: AI will enable new forms of entertainment, such as virtual reality and augmented reality experiences, that are personalized to individual users. AI could also be used to create more realistic and engaging video games and films.

Environment: AI will enable more accurate and efficient monitoring and management of natural resources and ecosystems. AI could analyze satellite imagery to predict natural disasters, or monitor water quality and air pollution in real-time.

Watch videos about AI Research and Innovations [here](#).

3D Printing

3D printing, also known as additive manufacturing, is a process of creating three-dimensional objects from a digital file by layering materials on top of each other. The process typically involves creating a digital 3D model of the object using computer-aided design (CAD) software, then using a 3D printer to create the physical object.

The 3D printing process can use a variety of materials, including plastics, metals, ceramics, and even living cells. The type of material used depends on the desired properties of the final object, such as strength, flexibility, or conductivity.

3D printing has many potential applications, including:

Prototyping: 3D printing is often used to create prototypes of new products, allowing designers to test and refine their designs before going into mass production.

Manufacturing: 3D printing can be used for small-scale manufacturing of customized products, such as dental implants or hearing aids. It can also be used for on-demand production of replacement parts, reducing the need for large inventories of spare parts.

Education: 3D printing can be used in educational settings to teach students about design and engineering, and to create physical models of complex concepts that are difficult to visualize.

Healthcare: 3D printing can be used to create customized medical implants and prosthetics, tailored to the specific needs of individual patients. It can also be used to create models of patient anatomy for surgical planning.

Art and Design: 3D printing has opened up new possibilities for artists and designers, enabling the creation of complex and intricate sculptures, jewelry, and other objects that would be difficult or impossible to create using traditional manufacturing techniques.

Overall, 3D printing has the potential to revolutionize many industries and enable new applications that were previously impossible. As the technology continues to evolve and become more accessible, it is likely that we will see even more innovative uses of 3D printing in the future.

Watch Videos from [this playlist](#) list to know about research and innovations related to 3D printing.

Brain-computer interface

A brain-computer interface (BCI), also known as a brain-machine interface (BMI), is a technology that enables communication between the brain and a computer or other external device. The goal of a BCI is to allow individuals to control devices or communicate without the need for traditional input methods such as a keyboard or mouse.

BCIs work by detecting and interpreting brain activity, usually through the use of electroencephalography (EEG) sensors placed on the scalp or directly on the brain. The brain signals are then processed and translated into commands that can be used to control external devices, such as prosthetic limbs or computers.

BCIs have many potential applications, including:

Medical Rehabilitation: BCIs can be used to help individuals with disabilities, such as spinal cord injuries or amputations, to control prosthetic limbs and regain mobility.

Communication: BCIs can be used to enable individuals with communication disabilities, such as ALS or cerebral palsy, to communicate using a computer or other external device.

Gaming and Entertainment: BCIs can be used to create more immersive gaming experiences, allowing players to control games using their thoughts or emotions.

Education and Research: BCIs can be used in educational and research settings to study brain function and to teach students about neuroscience and technology.

Military and Security: BCIs have potential applications in military and security settings, such as enabling soldiers to control equipment without using their hands.

While BCIs have many potential benefits, there are also many ethical and practical considerations that must be addressed, such as ensuring the privacy and security of brain data and addressing the potential risks of brain stimulation. Despite these challenges, BCIs are a rapidly developing field with the potential to revolutionize the way we interact with technology and each other.

Watch below some BCI-related innovations and research.

[Researchers take step toward next-generation brain-computer interface system | Neurograins](#)

[Brain-Computer Interface allows Fast, Accurate Typing by people with Paralysis](#)

[Brain-computer interface turning thoughts into action appears safe in Clinical trials | BrainGate](#)

[This 'Brain-to-Text' system can turn your Thoughts into Text](#)

[New tool activates deep brain neurons by combining ultrasound, genetics | Sonothermogenetics](#)

[New sensor grids record human brain signals in record-breaking resolution](#)

[Wearable Brain-Machine Interface Could Control a Wheelchair, Vehicle or Computer](#)

[Brain-Computer Interface enables paralyzed man to walk](#)

[Wirelessly Rechargeable Soft Brain Implant Controls Brain Cells](#)

[Brain-implanted chips convert paralyzed man's thoughts into words | Mindwriting](#)

["Neuroprosthesis" Restores Words to Man with Paralysis](#)

[Using a Walking Avatar to Treat Gait Disabilities](#)

[Controlling Robots with Brainwaves and Hand Gestures](#)

[Third Arm for Multitasking. Your Brain will control Third Arm too](#)

[Brain-Powered Wheelchair Shows Real-World Promise](#)

Nanomedicine

Nanomedicine is a field of medicine that involves the use of nanotechnology, which is the engineering of materials and devices on a nanometer scale, to diagnose, treat, and prevent disease. The application of nanotechnology to medicine has the potential to revolutionize healthcare by enabling targeted and personalized therapies, improving drug delivery, and providing new diagnostic tools.

Nanomedicine involves the use of nanoparticles, which are particles that are between 1 and 100 nanometers in size. These particles can be engineered to have specific properties, such as the ability to target specific cells or tissues in the body, or to release

drugs in a controlled manner. Nanoparticles can be made from a variety of materials, including metals, polymers, and lipids.

Nanomedicine has many potential applications, including:

Cancer Therapy: Nanoparticles can be designed to specifically target cancer cells, delivering drugs directly to the tumor while minimizing damage to healthy tissue.

Diagnostics: Nanoparticles can be used as diagnostic tools, such as in imaging techniques that use nanoparticles to highlight specific tissues or organs.

Drug Delivery: Nanoparticles can be used to improve drug delivery, allowing drugs to be delivered directly to the site of action in a controlled and sustained manner.

Regenerative Medicine: Nanoparticles can be used to stimulate tissue regeneration, such as by delivering growth factors or other signaling molecules to damaged tissues.

Vaccines: Nanoparticles can be used to improve the efficacy of vaccines, by delivering antigens directly to immune cells and stimulating a stronger immune response.

Despite the many potential benefits of nanomedicine, there are also potential risks and challenges associated with the use of nanoparticles, such as toxicity and the potential for unintended effects on the body. As such, ongoing research is necessary to ensure the safety and effectiveness of nanomedicine therapies.

Watch below some news videos related to nanomedicine.

[Engineers develop nanoparticles that cross the blood-brain barrier to treat glioblastoma](#)

[Novel nanotech improves cystic fibrosis antibiotic by 100,000-fold](#)

[EPFL's New Remote-Controlled Microrobots for Medical Operations](#)

[Nanotherapy offers new hope for the treatment of Type 1 diabetes](#)

[Studied for Clean Energy, Carbon Nanotubes find new potential in Anticancer Drug Delivery](#)

[Bacteria-based biohybrid microrobots on a mission to one day battle cancer](#)

[Laser printing with nanoparticles holds promise for medical research](#)

Nanosensors

Nanosensors are small-scale devices that can detect and respond to changes in their environment at the nanoscale level. They are used in a wide range of applications, including medicine, environmental monitoring, and electronics.

The most common types of nanosensors include those that rely on changes in electrical properties, optical properties, and chemical properties. For example, some nanosensors can detect changes in electrical conductivity when they are exposed to certain chemicals, while others can measure changes in light absorption or fluorescence.

One major advantage of nanosensors is their small size, which allows them to be used in very small spaces or even inside living cells. This has led to their use in medical applications such as detecting cancer cells or monitoring glucose levels in diabetic patients.

Another advantage of nanosensors is their high sensitivity, which allows them to detect very small changes in their environment. This makes them useful for monitoring environmental pollutants, detecting pathogens in food, and even detecting explosives.

Overall, nanosensors have the potential to revolutionize many industries and improve our ability to detect and respond to changes in our environment. However, there are also concerns about the potential impact of nanosensors on human health and the environment, and more research is needed to fully understand their capabilities and limitations.

Find below some videos about nanosensors.

[Nanosensor can alert a smartphone when plants are stressed](#)

[Nano-sensor detects pesticides on fruit in minutes](#)

[Plant-based sensor to monitor arsenic levels in soil | Plant Nanobionic Sensors](#)

[MIT engineers boost signals from fluorescent sensors for cancer diagnosis or monitoring](#)

Self-Healing materials

Self-healing materials are a class of materials that have the ability to repair damage or defects that occur over time, without the need for human intervention. These materials can be made from a variety of substances, including polymers, metals, ceramics, and composites.

There are several ways in which self-healing materials can function. Some materials have the ability to repair themselves through chemical reactions when they come into contact with a particular stimulus, such as heat or light. Others contain microcapsules filled with healing agents that are released when the material is damaged. Still, others use networks of fibers or polymers that can re-form after being broken.

The potential applications of self-healing materials are vast and varied. For example, in the automotive industry, self-healing materials could be used to repair scratches and dents on car bodies, reducing the need for costly repairs. In the construction industry, self-healing concrete could be used to repair cracks and other damage to buildings, increasing their lifespan and reducing maintenance costs.

In addition to their practical applications, self-healing materials also have the potential to reduce waste and improve sustainability by extending the lifespan of products and reducing the need for replacement materials.

While self-healing materials are a promising technology, there are still challenges to overcome before they can be widely adopted. For example, the cost and complexity of producing these materials are currently high, and there is a need for further research to optimize their properties and performance.

[Self-healing materials for robotics made from 'jelly' and salt](#)

[Self-healing composites extend a product's lifespan](#)

[Soft robot detects damage and heals itself](#)

Quantum dot

Quantum dots are tiny particles made up of semiconductor materials that are only a few nanometers in size. They have unique electronic and optical properties that make them useful in a wide range of applications, including electronics, biomedicine, and energy.

The size of a quantum dot is so small that it causes quantum confinement of electrons, which gives them unique optical and electrical properties. Specifically, quantum dots exhibit fluorescence, meaning they can absorb and emit light at specific wavelengths, which can be tuned by changing the size of the particle. This property makes quantum dots useful in applications such as medical imaging and LED displays.

Quantum dots are also being explored for use in quantum computing, a type of computing that uses quantum mechanics to perform calculations. Because of their small size and unique electronic properties, quantum dots can be used as qubits, the basic units of quantum computing. Quantum dots are being developed as qubits that can be

controlled and manipulated using electric and magnetic fields, making them a promising technology for quantum computing.

However, there are also concerns about the potential health and environmental impacts of quantum dots, as they contain heavy metals such as cadmium and lead. Research is ongoing to understand these potential risks and to develop safer forms of quantum dots.

Overall, quantum dots are a promising area of research with many potential applications. However, more research is needed to optimize their properties, improve their safety, and develop new applications.

[Quantum-Dot Spectrometer that can fit inside a Smartphone Camera](#)

[Use of perovskite will be a key feature of future electronic appliances | Perovskite Quantum Dots](#)

[Storing medical information below the skin's surface](#)

[Three dimensional foldable quantum dot light emitting diodes | 3D foldable QLEDs](#)

[Researchers Develop Faster, Precise Silica Coating Process for Quantum Dot Nanorods](#)

Carbon nanotubes

Carbon nanotubes are cylindrical structures made up of carbon atoms arranged in a hexagonal lattice. They have unique electronic, mechanical, and thermal properties that make them useful in a wide range of applications, including electronics, materials science, and biomedicine.

Carbon nanotubes are incredibly strong and stiff, with a tensile strength many times that of steel. They are also highly conductive, which makes them useful in electronics and energy storage. Additionally, their small size and high aspect ratio make them useful as reinforcements in composite materials.

In biomedicine, carbon nanotubes are being explored for use in drug delivery and tissue engineering due to their ability to penetrate cell membranes and their biocompatibility. However, there are also concerns about the potential toxicity of carbon nanotubes, and research is ongoing to understand and mitigate these risks.

Carbon nanotubes have also shown promise in applications such as nanoelectronics, where they are being explored as potential components in smaller, faster, and more efficient devices. Additionally, carbon nanotubes have potential applications in energy

storage, where their high surface area and conductivity make them useful in supercapacitors and batteries.

Despite their promising properties, there are still challenges to overcome in the development and application of carbon nanotubes. These include improving the scalability and cost-effectiveness of production methods and addressing concerns about their potential toxicity and environmental impact. Nonetheless, carbon nanotubes remain a highly active area of research and development.

[Smarter Textiles using Carbon nanotubes](#)

[Carbon nanotube film produces airplane with no need for huge ovens or autoclaves](#)

[Carbon nanotubes could help electronics withstand outer space's harsh conditions](#)

[Carbon Nanotubes help to recycle waste heat by converting into Light](#)

[Carbon Nanotube for "unconventional" Computing](#)

Metamaterials

Metamaterials are artificially engineered materials that have properties not found in natural materials. They are made up of specially designed structures that manipulate electromagnetic waves, sound waves, and other types of waves in ways that are not possible with natural materials.

One of the most common types of metamaterials is known as a negative index material, which has a negative refractive index. This means that it can bend light in the opposite direction of conventional materials. Negative index materials have the potential to create lenses that can focus light to a resolution much smaller than the wavelength of the light, which could have implications for high-resolution imaging and communication technologies.

Metamaterials can also be designed to exhibit other unusual properties, such as perfect absorption, cloaking, and superlensing. Perfect absorption metamaterials can absorb nearly all of the electromagnetic radiation that falls upon them, while cloaking metamaterials can redirect light or other waves around an object, making it invisible. Superlensing metamaterials can go beyond the diffraction limit and provide subwavelength resolution.

Metamaterials have a wide range of potential applications, including in optics, telecommunications, sensing, and energy. For example, metamaterials could be used to improve the performance of solar cells by manipulating the way light is absorbed and

transmitted within the material. They could also be used to create more efficient sensors by enhancing the sensitivity and selectivity of the sensing material.

Despite their potential, metamaterials are still a relatively new area of research, and there are many challenges to overcome before they can be widely used in practical applications. These challenges include improving the scalability and cost-effectiveness of production methods and developing a better understanding of the potential environmental and health impacts of these materials. Nonetheless, the unique properties of metamaterials make them a promising area of research with many potential applications.

End of Sample Pages

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