The Impact of Computer Engineering

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Abstract

The purpose of this paper is to inform the average user about what is in the field, what computer engineers do, as well as the powerful research and impact of the field. My research project included: Talking with Vivek Ramesh from Slidenerd, talking to Slobodan Olujic (a masters IT student), having a conversation with my uncle, as well as attending the Auger BlockChain Technology lecture, and getting an output build by running SQL server simulators in Visual Studio 2012, using UML language, which was done in the EC 560. I gained a great deal of knowledge from the people in which I interviewed. I learned that one does not have to know the programming languages, but one will also be required to learn more, especially when working in the areas of hardware, software, and databases. Softwares one needs to be familiar with include Visual Studio and sometimes open source technologies. I was informed on the overall power of different subjects in the field, such as utilizing UML language, Blockchain Technology, Javascript, Python, and the power of Linux. My study resulted in knowing the importance of utilizing Cyber Security protocols, communication, as well as innovation to impact the world through a vast array of tools and resources.

The Impact of Computer Engineering

Computer Engineering requires one to know a vast array of programming languages as well as utilizing different technologies in order to design hardware or manage databases. Computer Engineering and related fields have an impact on technological advancements, as well as making the world an easier place to live. It can often be identified as the cross between information technology and electrical engineering. The following are my insights on how I learned more about my field and the research conducted in it. By the end of this paper, I hope the reader has a beginner's expertise on the implications of this widely known field.

Engineering Impact

The impact of engineering in the CSE related field, varies on the type of technology or research one is doing. One of the most important impacts is managing Computer Infrastructures, databases, and networks, as well as Cyber Security. A vastly known topics in the CSE and IT world is the invasion of privacy or how one shall stay secure. Everyday citizens can be hackers for moral justices. Governments can use Cyber WarFare. Browsing cookies are being tracked. Identity theft is growing. Business protocols and firewalls get violated on a daily basis. These are the types of topics Computer Engineers (as well as IT Majors), are worried about. Engineers can have topics ranging from Google tracking personal data, to Anonymous (a hacktivist group) hacking ISIS, to even the Sony hack. The other impact of CSE is software. Businesses want websites, apps, and databases to be built, coded, and secured properly. This is why one can have many different possible career routes, from an Information Systems engineer to a Software Developer. Some of the most popular hacks include IP spoofing, Phishing, Website Cloning, and even the Inspect Element prank. More brutal attacks can range from attacking a whole

infrastructure to creating a Trojan Virus, to even releasing massive Malware. These can lower a

business's stocks, be used in war, or destroy an entire computer. The impact of Computer

Engineers is not just to monitor data: it is to protect data, as well as be prepared to fight back.

This is why the US has things such as the Infragard, the SIS, or Data Breach Divisions. This is

also why cloud computing and Cisco technologies have become increasingly popular.

      I talked to Slobodan Olujic, a graduate student at the Griffith institute of Technology. He

says that managing security is always a key aspect in the web development world as well. Being

a part of an open source software conference, or an IT student, he cannot emphasize enough how

big of a sector Cyber Security is. Getting hacked can be absolutely brutal to a business, and

companies can lose business when their users' data is released. Usually when someone releases

personal data, they either sell it in the Black Market, blackmail users, or leak data online. This is

why Cyber Security experts are looking at monitoring these types of things and influencing law

enforcement to do the same. In Cyber Security, one can never trust anybody (not even the

government), which is why we have outsiders like Edward Snowden (a former FBI cyber

security employee). The whole standard of maintaining security is easier said than done. Hackers

can be brutal when infecting a database and can even cause monetary damages and sometimes

lawsuits. Engineers and whitehatters need to do what they can to prevent breaches like this from

happening.

      Another person I talked to included Vivek Ramesh from Slidenerd. Mr. Ramesh created

Slidenerd as an STEM initiative to teach others programming. He did this along with some of his

colleagues from the Xavier Institute of Technology. Mr. Ramesh identified the importance of

programming as well as software development in the Computer Engineering and Computer

Science fields. This includes engineers needing to learn a vast array of programming languages such as Python, C++, Javascript, Java, and many others. Java and Javascript are especially important to Android development and web design. Programmers have this, as well as Apple's very own Swift and X-Code for IOS. Development does not just include coding, but it also includes Material Design. Ruby on Rails is another popular coding program. Being a developer has its upsides, but sometimes working for clients can limit creativity. Because programming is especially important, companies took many STEM initiatives to schools. This is why student developer licenses or the Raspberry Pi Foundation (a STEM program with Raspberry Pi Computers) exists. Once an engineer knows how to program, everything else will flow naturally. Every business these days requires a website or App, and this is why Computer Science, as well as web development, are vastly growing fields.

        Other people I have talked to include both my uncles Ameer Ghobrial and Michael Nickola. Since Mr.Nickola works more towards the management side, I will focus on Mr.Ghobrial's interview instead. However, they both emphasized the importance of hard work and perseverance. My uncle Ameer, which is a Senior level Engineer, have emphasized the importance of using UML language when setting up projects. He mainly does this through a diagram format to visualize databases as well as Information Systems. An important aspect of his research included works in Artificial Intelligence (even in the automotive industry) as well as physics simulations. Programs some Software Engineers may use include MatLab, Visual Studio, Microsoft SQL server, Emulators, and ISE design tools. It has also become increasingly important to monitor how well you can utilize these tools to work together in a team. Software Engineers are required to assess the quality of their simulations and code as well as the usability.

Many of them try utilizing the least lines of code to get the desired outcome. This helps impact

how the software is developed efficiently as well as how well is a database integrated.

Next I want to inform you about my experience in Auger's BlockChain

Technology/Marketing event. Now Blockchain technology is kind of like Bitcoin powered

investments. One of the biggest controversies in Computer Engineering, is having a disrupted

currency or CryptoCurrency that can eventually replace the dollar. Many people are wondering

of the security of this type of technology, or the implications of the dangerous technologies this

can lead to. It can lead to eventually changing the economy, a US crash, Transhumanism, and a

vast array of disasters that can not benefit others. The technology being Open Source, nobody

knows much about the creator or who is regulating the technology's use. Lots of problems come

with using Bitcoin, such as illegal mining of coins, selling coins in the black market, and the

possibilities of manipulating the value of Bitcoins. Lots of people would argue that Bitcoin hacks

or vulnerabilities are people's computers and not the vendors, but it has happened in large scale.

The question may be, why may your money hackable? The same can be asked about PayPal, but

at least PayPal has some sort of service line, and doesn't rely on the power of an Open Source

API as its main asset. Many people can look it however, as a cheap alternative to paypal, due to

the fact that the interest rates are lower.

Conclusion

Many of the topics I learned have informed me that the biggest issue in Computer

Engineering is security and ethics. This also seems like one of the largest issues in all fields of

Engineering as well. Engineers can impact society in a positive way or a negative. Every

company nowadays would need a developer. Ever government would need to secure private

information or protocols. Every industry would need a Robotics or Industrial Systems engineer. Every Businessman wants to invest in something trendy such as "The Internet of Things" or Cloud Computing. The ways in which technologies such as Quantum Computing and Supercomputing can benefit us in ways the world never imagined. Computer Engineering have many implications that can benefit society. The overall purpose and goals is to create technology that makes life easier, or more sustainable. What I learned from experimenting or setting up a lab was that Computer Engineers do have to follow certain protocols. They need to learn how to use UML communication and visualizations. They need to know how to set up servers or run Simulations. They need to know how to program, how to analyze algorithms, setting up and shortening codes. They need to know things ranging from DiceWare, Hex Code, Binary, and even Hexadecimal if they want to work with Crypto Keys or password protection. Overall the more you learn as a Computer Engineer, the better your work will be at your workplace.

References

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Interview].

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