

The Impact of Computer Engineering

Oakland University

Andrew Nassif

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Introduction

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. The following are my insights on how I learned more about my field and the research conducted in it.

Abstract

Computer Engineering requires you to know a vast array of programming languages, as well as utilizing different technologies in order to design hardware, or manage databases. It can often be identified as the cross between Information Technology and Electrical Engineering. What I learned is that you don't have to only know C and C++, but you will also be required to learn more, especially working into the Hardware, Software, and Database side. Softwares you need to be familiar with include Visual Studio, and sometimes Open Source technologies. All in all I learned a great deal of knowledge from the people in which I talked to. I learned that Computer Engineering and related fields, have an impact on technological advancements, as well as making the world an easier place to live. I learned the overall power of different subjects in the fields such as utilizing UML language, Blockchain Technology, Javascript, Python, and the power of Linux. Some of these, I may present in throughout this paper. The purpose to 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. By the end of this paper, I hope you have 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 you are 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 we shall stay secure. Everyday citizens can be hackers for moral justices. Governments can use Cyber Warfare. All of our browsing cookies are being tracked. Identity theft is growing. Business protocols and firewalls get violated on a daily basis. These are the type of topics Computer Engineers (as well as IT Majors), are worried about. We can have topics ranging from Google tracking your data, to Anonymous hacking ISIS, to even the Sony hack. The other aspect is software. Business want websites, apps, and databases to be built, coded, and secured properly. This is why you 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 isn't just to monitor data, it is to protect data, as well as be prepared to fight back. This is why we have 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 can't emphasize enough how big of a sector Cyber Security is. Getting hacked can be absolutely brutal to a business and companies can lose tons of business when their user's data is released. Usually when someone releases personal data, they either sell it in the Black Market, BlackMail them, or leak it 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, you can never trust anyone (not even your own government), which is why we have outsiders like Edward Snowden. The whole standard of keeping yourself secure is easier said than done. Hackers can be brutal when infecting a database, and can even cause monetary damages and sometimes lawsuits. We as engineers and whitehatters need to do what we can to prevent breached like this from happening.

Another person I talked to, included Vivek Ramesh from Slidenerd. Mr.Ramesh have created Slidenerd as an STEM initiative to teach others programming. He did this along with some of his buddies from the Xavier Institute of Technology. Mr.Ramesh have identified the importance of programming as well as software development in the Computer Engineering and Computer Science field. This includes engineers needing to learn a vast array of programming languages such as Python, C++, Javascript, Java, and many others. Java and Javascript is especially important to Android Development and Web Design. We have this, while we have Apple's very own Swift and X-Code for IOS. Development doesn't just include coding, but 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. Programming is especially important, that many companies have took STEM initiatives as well as schools to teach programming. This is why we have Student Developer Licenses or the Raspberry Pi Foundation. Once you know how to program, everything will flow naturally. Every business these days require a Website or App, and this is why Computer Science as well as Web Development is a vastly growing field.

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.

Sources:

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