ON ETHICS, MORALS, AND INFORMATION SECURITY

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EDITOR'S NOTE

We all know this one quite well. Hackers have always been imagined as antisocial, nefarious individuals in hoodies who will stop at nothing to steal data, damage privacy, and hurt the interests of Internet users. Over the years, ethical hacking has been able to somewhat break this stereotype and make people notice the multitude of personas representing hackers. In fact, ethical hacking is now one of the most promising professions, and businesses and governments today rely on the incredible hacking talent from around the world.

However, not every economy respects ethical hackers. Some countries attempt to tap their potential while some fail to understand and recognize how they are making the world a safer place. Our cover story discusses how the treatment of ethical hackers varies in a myriad of ways from country to country.

Our Buzz section is dedicated to Alan Turing, the greatest ethical hacker who has ever lived. The article salutes the under appreciated hero of World War II and revered academic who was way ahead of his time. Move to the Under the Spotlight section, where we interview Mike Spain, Founder and Chair, Cyber Neurodiversity Group, who discusses how neurodiverse individuals can be the perfect answer to the skill gap problem in information security.

Tell us what you think of this issue. If you have any suggestions, comments, or queries, please reach us at editorial@cisomag.com.

Jay Bavisi
Editor-in-Chief

An ode to the greatest ethical hacker who ever lived

Augustin Kurian

I like solving problems, Commander. And Enigma is the most difficult problem in the world," said Alan Turing to Commander Denniston. Commander Denniston was of the opinion that breaking Enigma was impossible. He told him, "Enigma isn't difficult, it's impossible. The Americans, the Russians, the French, the Germans, everyone thinks Enigma is unbreakable," to which Turing replied, "Good. Let me try and we'll know for sure, won't we?

Even with the Hollywood treatment and the accompanying inaccuracies, the movie 'The Imitation Game' based on the life of Alan Turing did a good job of depicting the life of one of the greatest unsung heroes of World War II and how he broke the Enigma. The above scene between Alan Turing and Commander Denniston was one such discussion where we as the audience were shown how undeterred Turing was while he was tasked with one of the most difficult jobs in the world.

Turing was more than met the eye, with a scruffy appearance and stammering speech, he was on the autistic spectrum. In fact, it is said that Turing's mother wrote to him every once in a while to remind him to buy at least one suit a year. It's said that he walked around Bletchley Park, where he conducted most of his codebreaking, with his trousers held up with string in lieu of belts, pajamas under his coat instead of shirts, and sometimes wearing a government-issued gas mask. It was there where he cracked Enigma by creating 'The Bombe.' That moment marked the beginning of his revolutionary ethical hacking.

This Enigma machine is generously on loan to The Alan Turing Institute from GCHQ. It is an M4 model, manufactured in 1944 and used exclusively for the encryption of communications between the U-boat division of the German Navy and its Naval bases.

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Enigma Machine

Enigma machines were used by the German Armed Forces during the Second World War to send and receive secure messages.

In order to send a coded message, cipher operators would choose which enigma wheels to insert into the machine, set the outer wheel rings, and position the plugs on the front of the machine according to a daily changing chart. In addition, each message would have a unique key chosen by the operator.

As well as the 456,976 possible starting positions for any set of four wheels, this Enigma machine offers further variations in settings which means that there are 4,134 million possible ways in which it could be set up.

Alan Turing and his fellow code-breakers at Bletchley Park famously devised an electro-mechanical device called the 'Bombe' to speed up the process of finding the key to each day's Enigma messages.

From August 1940 onwards, Bombe machines were used to find keys which allowed thousands of Enigma messages to be decrypted every month.

Alan Turing's pioneering work in mathematics, statistics, engineering and computing are considered to have laid the foundations for modern-day advances in data science and artificial intelligence.

The Alan Turing Institute was created in 2015 in honour of his legacy.

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Augustin Kurian

In the early noughties, the demand for IT professionals spiked in India. Becoming a software engineer and migrating to the United States was a goal for many. However, the recession in 2008 reduced the demand for human resources in the U.S., and many IT companies in India were not hiring because of low demand in its key market. With fewer enticing packages available, a breed of entrepreneurs emerged – especially in the tech space – laying the foundation for India's startup culture. Space also opened up for information security, particularly ethical hacking, to become a sought-after career.

Eventually, India surpassed several other countries and started producing more ethical hackers than anywhere else in the world, which led to India becoming the number one bug bounty collector globally. Despite this boom, the old cycle emerged where working for a foreign country seemed to be a wiser choice. Other countries in the developing world have under-utilized pools of ethical hackers. A recent report on AFP pointed how Indian ethical hackers are rewarded everywhere but not in their country of origin. "It was a familiar tale for India's army of "ethical hackers," who earn millions protecting foreign corporations and global tech giants from cyber-attacks but are largely ignored at home, their skills and altruism misunderstood or distrusted," the report points out.

The report highlighted several young ethical hackers in India who have earned tens and thousands

> **It was a familiar tale for India's army of "ethical hackers", who earn millions protecting foreign corporations and global tech giants from cyber-attacks but are largely ignored at home, their skills and altruism misunderstood or distrusted**

of dollars in bug bounties for the quick-responding technology tycoons like Facebook. When notified about a technical glitch, large, typically foreign companies respond positively and quickly. Similar encounters with Indian companies are ignored most of the time, or are met with the legal team of the company saying "What are you doing hacking our site?"

This lackluster attitude must explain why the country with the most ethical hackers was ranked 23rd in the last Global Cybersecurity Index. What's even more staggering is the fact that the country's immediate neighbor China is an example of the exact opposite situation.

China is the country with the most Internet users in the world. In 2014, the number stood at 640 million. But there is a dark side to all this surfing. China accounts for 41 percent of global cybercrime, which was thrice that of countries like the United States. Hacking continues to be one of the most lucrative business opportunities for information technology professionals in the region.

Unlike India, where contributions of hackers are not appreciated, China employs the creme-de-la-creme to work for the government for secret missions. A former prominent Chinese hacker interviewed by the *New York Times* admitted: "I have personally provided services to the People's Liberation Army, the Ministry of Public Security and the Ministry of State Security. If you are a government employee, there could be secret projects or secret missions."