Biography and works of john von neumann

John von Neumann

John von Neumann was born in an affluent, extremely assimilated Jewish family within the capital town of Hungary, Budapest on December 28, 1903. He died on February 8, 1957(aged 53) in Walter Reed National Military Medical Center in Washington D. C., US. He lived in Budapest until the mathematician's family fled Béla Kun's short-lived communist regime in 1919 for a brief and comparatively comfy exile split between capital of Austria and the Adriatic Sea resort of Abbazia, currently called Opatija, Croatia. John was a baby prodigy. By the age of eight, he was familiar with differential and integral calculus. Though he attended school at the grade level appropriate to his age, he agreed to hire personal tutors to give him advanced instruction in those areas. At age 15, he began studying advanced calculus under the noted analyst Gábor Szegö. His father discouraged a career in mathematics, fearing there wasn't enough cash in the field. As a compromise, von Neumann at the same time studied chemistry and mathematics. He attained a degree in chemical engineering from the Swiss Federal Institute in Zūrich and a doctor's degree in mathematics from the University of national capital at the age of twenty-two. He has published over one hundred fifty papers in his lifetime: concerning sixty in mathematics, sixty in mathematics, twenty in physics, and the remainder on special subjects or non-mathematical ones. Throughout WWII, Neumann worked on the Manhattan Project with theoretical scientist Edward Teller, scientist Stanislaw Ulam et al, problem-solving key steps thermonuclear nuclear physics involved in atomic reactions and therefore the thermonuclear bomb.

He coined the term “ kiloton” of trinitrotoluene. The equilibrium strategy of mutual assured destruction (MAD) is attributed to Neumann.

Since John von Neumann was an extraordinary mathematician, he largely contributed to computer science by writing algorithms. In 1944, while still operating for the Manhattan Project, Neumann’s interest began to show in electronic computers. One of his vital contributions in this field was the development of a logical design for computers that paid attention to such considerations as data storage and the processing of instructions. This design, known as “ von Neumann architecture”, became the basic concepts of most computers. The von Neumann architecture-also known as the von Neumann model is a computer architecture based on the description by John von Neumann and others in the First Draft of a report on the EDVAC. It describes a design architecture for an electronic digital computer with the following components:

1. A processing unit that contains a control unit and an arithmetic logic.
2. Memory that stores data and instructions.
3. External mass storage.
4. Input and output mechanisms.

As a result of these techniques and several other others, computing and programming became faster, more versatile, and more economical, with the instructions in subroutines performing way more computational work. often used subroutines didn’t have to be reprogrammed for each new problem but could be intact in “ libraries” and read into memory when required. The general-purpose computer memory has become the assembly place in which

elements of a long computation were stored, worked on piecewise, and assembled to form the results. the computer control served as an errand runner for all the overall process. the first generation of modern programmed electronic computers to take advantage of these enhancements appeared in 1947. This group included computers using random access memory (RAM), that is a memory designed to allow almost constant access to any piece of data. John Neumann published a book referred to as " Theory of Games and Economic Behavior" with economic expert Oskar Morgenstern which is considered the groundbreaking text that created the interdisciplinary research field of theory of games. The book is described as " the classic work upon which modern-day game theory is based." John Neumann additionally wrote the world's initial climate modeling software and used it to perform the world's first numerical weather forecasts on the ENIAC computer. They played a leading role in efforts to integrate sea-air exchanges of energy and moisture into the study of climate.

Among a few men who have dramatically affected the course of technology, John Neumann, one in every of the foremost versatile minds within the history of technology, is one in every of them. He is considered the leading architect of the modern electronic computer. While he was in Princeton for the IAS – Institute for Advanced Studies, he oversaw the design and construction of the IAS computer, a prototype of computers as we know them today. He is also the mastermind behind the EDVAC. Most of the ideas for the more powerful ENIAC, EDVAC, came from Neumann. His creation of RAM is the reason why his contributions, I think, are the most important in the history of Computer Science. RAM is one of the most essential hardware

for modern-day computers. The algorithm behind the working of RAM was made by Neumann. The reason why we have fast computers with the ability to do many tasks at once without lag is due to RAM. If this component was not made, we wouldn't have seen this high-speed development of technology. The reason why RAM is important was because it was a memory designed to give almost constant access to any piece of information. Frequently used subroutines did not have to be reprogrammed for each new problem but could be kept intact in " libraries" and read into memory when needed. This made computing and programming faster, more flexible, and more efficient, with the instructions in subroutines performing far more computational work.

I find John von Neumann to be very influencing as he is a great polymath and I have always found polymaths to be very influential. He is perhaps the first computer age polymath. Not only did Neumann come up with the only sensible organization for a modern computer, he pioneered many of the great ideas of AI, game theory and many biological aspects of computing yet he was a mathematician and produced all sorts of important mathematical work from Hilbert spaces and operator theory to continuous geometry. I find almost all his ideas and discoveries influential but the fact he was a single man who came up with all of them must be the reason why I considered him to be such a role model. I think we would've been at least a century behind in technology if it wasn't for John von Neumann's endless contributions. I think he shaped the current level of technology-based world we are living in right now.

Other Influential People

Tim Berners-Lee: Tim has been knighted and received the Turing award for his invention of the World Wide Web. World Wide Web has made the internet accessible to everyone and has made communication and sharing of information around the world much easier. Without it, we would not have seen such a technology-based world we are living in right now.

Al- Jazari: Al-Jazari is considered the father of robotics. He was a great polymath and while everyone is aware of Da Vinci's legacy and genius, very few know that he was inspired by Al-Jazari's work. Centuries before the modern robotics and computations, Al-Jazari was building the first automated device and is among the first to introduce the concept of programming.

Margaret Hamilton: She is the inventor of the term " Software Engineering." Not only did she coin the term, she was the one that has brought it to the level of respect given to it nowadays. She was the director of the Software Engineering Division of the MIT Instrumentation Laboratory, which developed on flight software for NASA's Apollo space program. In other words, she wrote the program that put the man on the moon.

Works Citied:

- Encyclopedia Britannica. (2019). *John von Neumann – Princeton, 1930–42* . [online] Available at: https://www. britannica. com/biography/John-von-Neumann/Princeton-1930-42. Accessed on 17 th September 2019.
- Embryo. asu. edu. (2019). *John von Neumann (1903-1957) | The Embryo Project Encyclopedia* . [online] Available at: https://embryo.

asu. edu/pages/john-von-neumann-1903-1957. Accessed on 17 th September 2019.

- “ Introductory Comments.” *History of Mathematics John Von Neumann: Selected Letters* , 2005. [Book]
- Macrae, Norman. *John Von Neumann the Scientific Genius Who Pioneered the Modern Computer, Game Theory, Nuclear Deterrence, and Much More* . American Mathematical Society, 2014. [Book]
- “ What Is von Neumann Architecture? – Definition from Techopedia.” *Techopedia. com* , https://www. techopedia. com/definition/32480/von-neumann-architecture. Accessed on 17 th September 2019.
- “ Internet Hall of Fame.” *Tim Berners-Lee | Internet Hall of Fame* , Available at: http://www. internethalloffame. org/inductees/tim-berners-lee. Accessed on 17 th September 2019.
- “ Home.” *FAMOUS INVENTORS* , https://www. famousinventors. org/al-jazari. Accessed on 17 th September 2019.
- McMillan, Robert. “ Her Code Got Humans on the Moon-And Invented Software Itself.” *Wired* , Conde Nast, 29 June 2017, http://www. wired. com/2015/10/margaret-hamilton-nasa-apollo. Accessed on 17 th September 2019.