Contents

[John Von Neumann 2](#_Toc492818845)

[Linus Torvalds 4](#_Toc492818846)

[Arpanet 5](#_Toc492818847)

[Spanning Tree Protocol 7](#_Toc492818848)

[Kevin Mitnick 8](#_Toc492818849)

[Li-Fi Technology 10](#_Toc492818850)

[Twitter 11](#_Toc492818851)

[Smart Building and Sustainable Development 12](#_Toc492818852)

[Andy Rubin 14](#_Toc492818853)

[Private Data Capture 15](#_Toc492818854)

[References 17](#_Toc492818855)

# John Von Neumann

John von Neumann, original name János Neumann was Hungarian-born American mathematician. Von Neumann grew from child prodigy to one of the world’s foremost mathematicians by his mid-twenties. Important work in [set theory](https://www.britannica.com/topic/set-theory/The-Neumann-Bernays-Godel-axioms#toc24043) inaugurated a career that touched nearly every major branch of mathematics. Von Neumann’s gift for applied [mathematics](https://www.britannica.com/topic/mathematics) took his work in directions that influenced [quantum theory](https://www.britannica.com/science/quantum-field-theory), [automata theory](https://www.britannica.com/topic/automata-theory), [economics](https://www.britannica.com/topic/economics), and defense planning. Von Neumann pioneered [game theory](https://www.britannica.com/topic/game-theory) and, along with [Alan Turing](https://www.britannica.com/biography/Alan-Turing) and [Claude Shannon](https://www.britannica.com/biography/Claude-Shannon), was one of the [conceptual](https://www.merriam-webster.com/dictionary/conceptual) inventors of the stored-program digital [computer](https://www.britannica.com/technology/computer).

His contributions nearly touched all streams, but majorly in mathematics and computers, his contributions in mathematics was a boon for all the subsequent mathematicians. Apart from these two streams he also worked for Nuclear weapons. His achievements are worth considerations, in mathematics he contributed towards the topics

1. Mathematics

* [Set theory](https://en.wikipedia.org/wiki/John_von_Neumann#Set_theory)
* [Ergodic theory](https://en.wikipedia.org/wiki/John_von_Neumann#Ergodic_theory)
* [Operator theory](https://en.wikipedia.org/wiki/John_von_Neumann#Operator_theory)
* [Measure theory](https://en.wikipedia.org/wiki/John_von_Neumann#Measure_theory)
* [Geometry](https://en.wikipedia.org/wiki/John_von_Neumann#Geometry)
* [Lattice theory](https://en.wikipedia.org/wiki/John_von_Neumann#Lattice_theory)
* [Mathematical formulation of quantum mechanics](https://en.wikipedia.org/wiki/John_von_Neumann#Mathematical_formulation_of_quantum_mechanics)
* [Quantum logic](https://en.wikipedia.org/wiki/John_von_Neumann#Quantum_logic)
* [Game theory](https://en.wikipedia.org/wiki/John_von_Neumann#Game_theory)
* [Mathematical economics](https://en.wikipedia.org/wiki/John_von_Neumann#Mathematical_economics)
* [Linear programming](https://en.wikipedia.org/wiki/John_von_Neumann#Linear_programming)
* [Mathematical statistics](https://en.wikipedia.org/wiki/John_von_Neumann#Mathematical_statistics)
* [Fluid dynamics](https://en.wikipedia.org/wiki/John_von_Neumann#Fluid_dynamics)
* [Mastery of mathematics](https://en.wikipedia.org/wiki/John_von_Neumann#Mastery_of_mathematics)

1. [Nuclear weapons](https://en.wikipedia.org/wiki/John_von_Neumann#Nuclear_weapons)

* [Manhattan Project](https://en.wikipedia.org/wiki/John_von_Neumann#Manhattan_Project)
* [Atomic Energy Commission](https://en.wikipedia.org/wiki/John_von_Neumann#Atomic_Energy_Commission)
* [Mutual assured destruction](https://en.wikipedia.org/wiki/John_von_Neumann#Mutual_assured_destruction)

1. [Computing](https://en.wikipedia.org/wiki/John_von_Neumann#Computing)

* [Cellular automata, DNA and the universal constructor](https://en.wikipedia.org/wiki/John_von_Neumann#Cellular_automata.2C_DNA_and_the_universal_constructor)
* [Weather systems and global warming](https://en.wikipedia.org/wiki/John_von_Neumann#Weather_systems_and_global_warming)

His contribution towards so much progressive areas is a major reason for its selection in resource.

# Linus Torvalds

LINUS TORVALDS created Linux, which now runs vast swathes of the internet, including Google and Facebook. And he invented Git, software that's now used by developers across the net to build new applications of all kinds. But that's not all Torvalds has given the internet. He's also started some serious flame wars.

Over the past few years, Torvalds has emerged as one of the most articulate and engaging critics of the technology industry.

His contributions are always inclined and directed towards a single objective of having an OS, a secure one, reliable one and most of all it should be open source, so that anybody can take its source code and modify it as per requirements whether to implement new feature in it or to implement more security parameters in the system. The open source feature of the OS was the major reason of its success, not only it was free its performance over other operating systems was also distinguishable.

The companies like INTEL, Oracle, etc started announcing support for Linux, which added a totally new dimension in the history of Linux.

Linus Torvalds invented a language that is used by tens of millions of people in the world today. If he accomplishes nothing else in his life, that one gargantuan achievement would be enough to secure his place in the history books.

At a time when computer languages were so complex they were almost impenetrable, and at a time when computer companies were steeped in a corporate culture that made the Cold War look like a sideshow, to have done what Torvalds did was no mean feat.

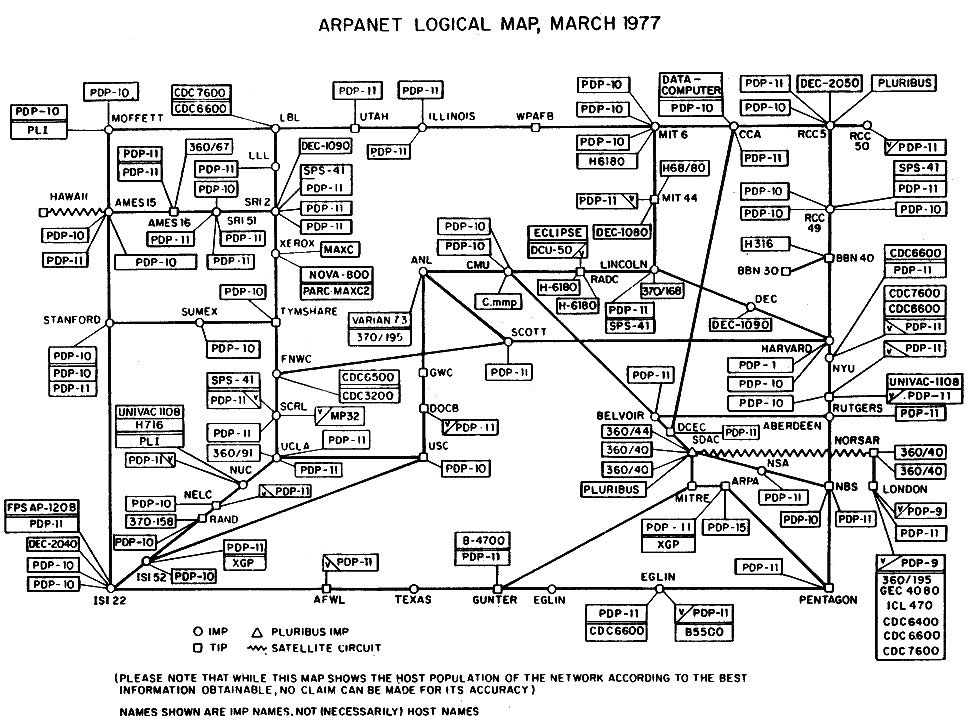
# Arpanet

Short for Advanced Research Projects Agency Network, ARPANET or ARPAnet began development in [1966](https://www.computerhope.com/history/1966.htm) by the United States [ARPA](https://www.computerhope.com/jargon/a/arpa.htm). ARPANET was a [Wide Area Network](https://www.computerhope.com/jargon/w/wan.htm) linking many Universities and research centers, was first to use [packet switching](https://www.computerhope.com/jargon/p/packetsw.htm), and was the beginning of what we consider the [Internet](https://www.computerhope.com/jargon/i/internet.htm) today. ARPANET was created to make it easier for people to access computers, improve computer equipment, and to have a more effective communication method for the military.

ARPANET first came into existence when the first two nodes were established between UCLA and Stanford Research Institute (SRI) in [1969](https://www.computerhope.com/history/1969.htm) followed shortly thereafter by UCSB and the University of Utah.

ARPANET arose from a desire to share information over great distances without the need for dedicated phone connections between each computer on a network.

At the height of the [Cold War](https://www.britannica.com/event/Cold-War), military commanders were seeking a computer communications system without a central core, with no headquarters or base of operations that could be attacked and destroyed by enemies thus blacking out the entire network in one fell swoop. ARPANET’s purpose was always more academic than military

[](https://www.computerhope.com/jargon/a/arpanet.jpg)

# Spanning Tree Protocol

Spanning-Tree Protocol (STP) prevents loops from being formed when switches or bridges are interconnected via multiple paths. Spanning-Tree Protocol implements the 802.1D IEEE algorithm by exchanging BPDU messages with other switches to detect loops, and then removes the loop by shutting down selected bridge interfaces. This algorithm guarantees that there is one and only one active path between two network devices.

Where two bridges are used to interconnect the same two computer network segments, spanning tree is a protocol that allows the [bridge](http://searchsecurity.techtarget.com/definition/bridge)s to exchange information so that only one of them will handle a given message that is being sent between two computers within the network. The spanning tree protocol prevents the condition known as a bridge loop.

The spanning tree algorithm determines the network (which computer hosts are in which segment) and this data is exchanged using Bridge Protocol Data Units (BPDUs). It is broken down into two steps:

**Step 1:** The algorithm determines the best message a bridge can send by evaluating the configuration messages it has received and choosing the best option.

**Step 2:** Once it selects the top message for a particular bridge to send, it compares its choice with possible configuration messages from the non-root-connections it has. If the best option from step 1 isn't better than what it receives from the non-root-connections, it will prune that port.

The spanning tree protocol and algorithm were developed by a committe of the IEEE.

# Kevin Mitnick

Kevin Mitnick is the world's most famous hacker, [bestselling author](https://mitnicksecurity.com/shopping/books-by-kevin-mitnick), and the [top cyber security speaker](https://mitnicksecurity.com/speaking/speaking-engagement-requests-for-kevin-mitnick). Once one of the FBI's Most Wanted because he hacked into 40 major corporations just for the challenge, Kevin is now a trusted security consultant to the Fortune 500 and governments worldwide.

Kevin mentors leaders, executives, and staff on both the theory and practice of social engineering, topics on which he is [the leading global authority](https://mitnicksecurity.com/about/social-engineering-strength). Kevin also helps consumers—from students to retirees— learns how to protect their information and themselves from harm.

As the CEO of Mitnick Security Consulting, Kevin, and [The Global Ghost Team™](https://www.mitnicksecurity.com/about/the-global-ghost-team) now maintain a 100 percent successful track record of being able to [penetrate the security](https://mitnicksecurity.com/security/information/penetration-testing) of any system they are paid to hack into using a combination of technical exploits and social engineering. Also in his role of Chief Hacking Officer of [KnowBe4](https://www.knowbe4.com/) he helps produce critically acclaimed [security awareness training programs](https://mitnicksecurity.com/shopping/kevin-mitnick-security-awareness-training) to counteract social engineering and to improve security effectiveness.

Kevin David is an American [computer security](https://en.wikipedia.org/wiki/Computer_security) consultant, author and [hacker](https://en.wikipedia.org/wiki/Hacker_(computer_security)), best known for his high-profile 1995 arrest and later five years in prison for various computer and communications-related crimes.

Mitnick's pursuit, arrest, trial, and sentence along with the associated journalism, books and films were all controversial.

He now runs the security firm Mitnick Security Consulting, LLC which helps test companies' security strengths, weaknesses, and potential loopholes. He is also the Chief Hacking Officer of the security awareness training company KnowBe4.

He is author of several books based on the Security and intrusion in systems like:

* [**Art of Intrusion:** The Real Story behind the Exploits of Hackers, Intruders and Deceivers](https://www.mitnicksecurity.com/shopping/books-by-kevin-mitnick).
* [**Art of Deception:** Controlling the Human Element of Security](https://www.mitnicksecurity.com/shopping/books-by-kevin-mitnick).

# Li-Fi Technology

Light Fidelity or [Li-Fi](http://www.techworld.com/news/networking/strathclyde-university-develops-led-li-fi-internet-connections-3423930/) is a Visible Light Communications (VLC) system running wireless communications travelling at very high speeds.

Li-Fi uses common household LED (light emitting diodes) light bulbs to enable data transfer, boasting speeds of up to 224 gigabits per second.

The term Li-Fi was coined by University of Edinburgh Professor Harald Haas during a TED Talk in 2011. Haas envisioned light bulbs that could act as wireless routers.

Subsequently, in 2012 after four years of research, Haas set up company pureLiFi with the aim 'to be the world leader in Visible Light Communications technology'.

Li-Fi and Wi-Fi are quite similar as both transmit data electromagnetically. However, Wi-Fi uses radio waves while Li-Fi runs on visible light.

As we now know, Li-Fi is a Visible Light Communications (VLC) system. This means that it accommodates a photo-detector to receive light signals and a signal processing element to convert the data into 'stream-able' content.

An LED light bulb is a semi-conductor light source meaning that the constant current of electricity supplied to an LED light bulb can be dipped and dimmed, up and down at extremely high speeds, without being visible to the human eye.

For example, data is fed into an LED light bulb (with signal processing technology), it then sends data (embedded in its beam) at rapid speeds to the photo-detector (photodiode).

The tiny changes in the rapid dimming of LED bulbs are then converted by the 'receiver' into electrical signal.

The signal is then converted back into a binary data stream that we would recognize as web, video and audio applications that run on internet enables devices.

# Twitter

Twitter and 'tweeting' is about broadcasting daily short burst messages to the world, with the hope that your messages are useful and interesting to someone. In other words, *microblogging*.

Conversely, Twitter is also about discovering interesting people online and following their burst messages for as long as they are interesting.

In addition to its relative novelty, Twitter's big appeal is how rapid and scan-friendly it is: you can track hundreds of interesting tweeters, and read their content with a glance.

This is ideal for our modern attention-deficit world.

Twitter employs a purposeful message size restriction to keep things scan-friendly: every microblog 'tweet' entry is limited to 140 characters or less. This size cap promotes the focused and clever use of language, which makes tweets very easy to scan, and also very challenging to write well. This size restriction has really made Twitter a popular social tool.

Among other things, Twitter is a way to learn about the world through another person's eyes.

Thousands of people advertise their recruiting services, their consulting businesses, their retail stores by using Twitter. And it does work.

It's more than just [instant messaging](https://www.lifewire.com/what-is-instant-messaging-2483319). Twitter is about discovering interesting people around the world. It can also be about [building a following](https://www.lifewire.com/how-to-build-a-twitter-following-3486585) of people who are interested in you and your work/hobbies and then providing those followers with some kind of knowledge value every day.

# Smart Building and Sustainable Development

The use of sustainable technologies for buildings, with the goal of creating an environment for living and working that uses fewer resources and generates less waste, also aims to retrofit existing buildings to be more efficient in terms of energy and water.

Many cities are following this way targeting both commercial and municipal buildings. These cities are called smart cities where all life processes and nerve centers of social life are read, in order to radically improve quality of life, opportunity, prosperity, social and economic development, thanks to the use of technology.

This paper deals with the study of smart buildings within smart cities, namely the use in an integrated project of computer and telematics tools with automation organized systems and passive bioclimatic strategies in architecture, determining a socio-technical management of intelligent building.

There is research carried out within the framework of intelligent buildings in the last generation cities, such as those ones with zero emissions that are taking place in the Middle East countries (Dubai, Masdar, Tiajin, and Kochi).

The topic deals with the issues of building automation as a form of technological intelligence and the study of those smart technologies integrated into the building envelope that improve its performances, making it more sustainable.

The research methodology has provided a bibliographic retrieval on the state of the art and the latest technological trends in the building field, later has followed a theoretical and comparative approach of the examined technologies, which led to the development of reasoning on operation, performance and functional capabilities of a building that is both sustainable and home automation, to arrive at the final concept of sustainable intelligent building, able to combine the artificial intelligence, home automation, and technological devices of the architectural project to enhance the building energy performance.

In conclusion, the proposed result is that of an integrated intelligent building in which artificial intelligence will become part of the shell-building in order to achieve high levels of energy efficiency and thus environmental sustainability

# Andy Rubin

Andrew E. "Andy" Rubin is an American computer programmer, engineer, entrepreneur, and venture capitalist. He is the founder and CEO of tech startup incubator [Playground Global](https://en.wikipedia.org/wiki/Playground_Global) and a partner at venture capital firm Red point Ventures.  He is the co-founder and former CEO of both [Danger Inc.](https://en.wikipedia.org/wiki/Danger_Inc.) and [Android Inc.](https://en.wikipedia.org/wiki/Android_Inc.)

After Android was acquired by [Google](https://en.wikipedia.org/wiki/Google) in 2005, Rubin became the company's Senior Vice President of Mobile and Digital Content, where he oversaw development of [Android](https://en.wikipedia.org/wiki/Android_(operating_system)), an [open-source](https://en.wikipedia.org/wiki/Open-source) [operating system](https://en.wikipedia.org/wiki/Operating_system) for [smart phones](https://en.wikipedia.org/wiki/Smartphone).

[Larry Page](https://en.wikipedia.org/wiki/Larry_Page) announced in a blog post that Rubin had moved from the Android division to take on new projects at Google, with [Sundar Pichai](https://en.wikipedia.org/wiki/Sundar_Pichai) taking over Android. In December 2013, Rubin started management of the robotics division of. On October 31,2014, he left Google after nine years at the company to start an incubator for hardware startups. He now leads [Essential Products](https://en.wikipedia.org/wiki/Essential_Products).

He has worked and with almost all the biggest names in the IT organizations like:

* [Carl Zeiss AG](https://en.wikipedia.org/wiki/Carl_Zeiss_AG)
* Apple Inc
* [General Magic](https://en.wikipedia.org/wiki/General_Magic)
* [MSN TV](https://en.wikipedia.org/wiki/MSN_TV)
* Danger Inc
* Android Inc
* [Google](https://en.wikipedia.org/wiki/Google)
* [Playground Global](https://en.wikipedia.org/wiki/Playground_Global)
* [Redpoint Ventures](https://en.wikipedia.org/wiki/Redpoint_Ventures)
* [Essential Products](https://en.wikipedia.org/wiki/Essential_Products)

# Private Data Capture

The data capturing is the process of feeding data into the system. Now this is carried out in multiple ways with the help of multiple devices which have been dedicatedly developed for this purpose only. The data capturing can be done in several ways, some of them are discussed here under:

**Manual Data Capture:** In manual data capture process, the data is entered manually by an operator using input devices like keyboard, touch screens, mouse etc.  for keying in data in the form of figures or text into particular software such as Excel or any other data or word processing program.

**Automated Data Capture:** Automated data capture involves the use of computerized technology to capture data. This method has a high initial cost on account of the initial investment required.

**Optical Character Recognition (OCR):** OCR technology is used to convert different types of machine-printed documents including image files, PDF files or scanned paper documents, into searchable and editable data

**Intelligent Character Recognition (ICR):** ICR technology helps to recognize and capture handwritten printed characters from image files.

**Optical Mark Reading (OMR):** OMR technology is used to capture human marked data from documents such as forms and surveys. The technology has the capacity to differentiate between marked and unmarked boxes.

**Magnetic Ink character Recognition (MICR):** It is a data capture technology capable of recognizing characters. It involves the recognition of specially formatted characters that are printed in magnetic ink, by a machine.

**Magnetic Stripe Cards:** Magnetic stripe cards store data using magnetic properties of certain materials. They possess stripes of iron-based magnetic materials on the card.

**Smart-Cards:** Smart cards are pocket-sized cards with embedded integrated circuits. They can function on contact or can be contactless. They contain more memory than magnetic cards and can be used for data related to personal identification, authentication, biometrics etc

**Web-Data Capture:** Data capture from web involves the capture of data from electronic forms through internet or intranet.

**Voice- Recognition:** Voice recognition is the process of converting speech into text. The text can be simple text or can be a set of commands

The private data capturing is the technique where the data can be captured in encoded format and then translated in the system into some meaningful information. Like we have for Bar Code Reader data capturing.

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