August 9th

Donald David Albert Huffman

Born: Aug. 9, 1925;

Ohio
Died: October 7, 1999

Huffman coding, a type of lossless data compression, was developed by Huffman while he was an undergraduate at MIT in 1952. It came about because Huffman's teacher, Robert Fano [Nov 11], offered students a choice of taking a final exam or writing a term paper about efficient encoding. What Fano neglected to tell them was that the topic was a notorious hard open problem. Nevertheless, the encoding that Huffman discovered was optimal, in that it produced the lowest possible average message length.

Aside from information theory, Huffman was also a pioneer in mathematical origami, which employs paper folding to visualize and solve mathematical equations.

Marvin Minsky

Born: Aug. 9, 1927;

New York City
Died: January 24, 2016

Minsky was a pioneer in AI, cognitive psychology, computational linguistics, and robotics.

In 1959, he and John McCarthy [Sept 4] co-founded the MIT AI Project [Sept 00] , later renamed the AI Lab [Feb 5], and now the MIT Computer Science and AI Lab (CSAIL). In 1985, Minsky became a founding member of the MIT Media Lab [Dec 1].

In [Jan 00] 1969, he published the book "Perceptrons" (with Seymour Papert [Feb 29]), which became a foundational work in neural networks. However, the book has also been blamed for directing research away from this area for many years.

In 1970, Minsky predicted: "In from three to eight years we will have a machine with the general intelligence of an average human being. I mean a machine that will be able to read Shakespeare, grease a car, play office politics, tell a joke, have a fight. At that point, the machine will begin to educate itself with fantastic speed. In a few months it will be at genius level, and a few months after that its powers will be incalculable."

In 1987, Minsky wrote "The Society of Mind", another landmark book which proposed that consciousness and thought were decomposable into a series of agents, each with specific functionality. The book is organized into 270 interconnected one-page ideas, reflecting the structure of the theory itself.

Marvin Minsky (2008). Photo by Sethwoodworth. CC BY 3.0.

Minsky was also a prolific engineer, building SNARC, the first neural network simulator in 1951, the first head-mounted graphical display (1963), several mechanical arms and hands, the Confocal Scanning Microscope (1956), the "Muse" synthesizer (with Ed Fredkin [Oct 2]), and one of the first LOGO "turtles" (with Papert).

He was an adviser for Stanley Kubrick's movie "2001: A Space Odyssey" [April 2]. and one of the characters, Victor Kaminski, was named in his honor. Minsky is also mentioned in the movie, and in Arthur C. Clarke's [Dec 16] novelization.

Minsky was a talented improvisational pianist, and his 1981 paper "Music, Mind and Meaning" illuminated some of the connections between music and the mind.

There are many humorous stories about him. For example:

One day, Minsky wandered into a lab where he saw a frustrated student hitting the side of a malfunctioning computer. Appalled, Minsky exclaimed, "You can't fix a computer without knowing what's wrong with it!" Minsky then walked over to it, whacked it in the same place, and it started working.

Bill Bennett, who co-invented the Minsky-Bennett Arm, remembered how Minsky was almost killed by a table-tennis playing robot. Its vision system mistook Minsky's brightly lit bald head for the ball, and tried to hit it with the bat.

Alfred Vaino Aho

Born: Aug. 9, 1941;

Timmins, Ontario

Aho is noted for his work on programming languages and algorithms, and for his fine textbooks. His first bestseller was "Principles of Compiler Design" in 1977, written with Jeffrey D. Ullman [Nov 22] , which featured a green dragon on the cover. In 1986, Aho, Ullman, and Ravi Sethi brought out a new edition, that's often called the "red dragon" book, and briefly appeared in the movie "Hackers" [Sept 15]). Monica Lam joined the gang in 2007 with the release of the "purple dragon" book.

Aho, John Hopcroft [Oct 7], and Ullman also wrote the "Design and Analysis of Computer Algorithms" in 1974, which was one of the most highly cited books in computer science for several decades.

Aho was a co-author of the AWK programming language with

Peter J. Weinberger [Oct 27] and Brian Kernighan [Jan 1] (the "A" stands for "Aho"). He also wrote the initial versions of the pattern-matching utilities egrep and fgrep for UNIX; fgrep ("f" for fast) employs the Aho-Corasick algorithm.

The Illiac Suite

Aug. 9, 1956

The Illiac Suite for String Quartet is generally agreed to be the first score composed by a computer. It was first performed (by human musicians) on this day in the Wedgewood Lounge at the Univ. of Illinois.

Lejaren Hiller and Leonard Isaacson programmed the university's ILLIAC I [Sept 1] to generate compositional material. Each of the four movements represents a particular musical experiment. For instance, the fourth part employed generative grammars and Markov chains.

Hiller and Isaacson wrote an article about the Illiac Suite for the December 1959 issue of *Scientific American*, and published the first book on computer-generated music, "Experimental Music: Composition with an Electronic Computer", which caused some fuss in the musical establishment.

Logic Theorist

Aug. 9, 1956

The "Logic Theorist" was the first program deliberately engineered to mimic the problem solving skills of a human being, and on this day it produced its first complete proof of a theorem. It has since been called "the first AI program".

It was written between 1955 and 1956 by Allen Newell [March 19], Herbert A. Simon [June 15] and J. Clifford Shaw [Feb 23]. Shaw coded the system using an early version of IPL-II (Information Processing Language) on a computer at RAND's [Oct 1] Santa Monica research facility. In January 1956, Simon walked into his classroom declaring: "over the Christmas Holiday, Newell and I invented a thinking machine."

The Theorist would eventually prove 38 of the first 52 theorems in chapter 2 of the Whitehead and Russell's "Principia Mathematica", producing new and more elegant proofs for a few of them.

The authors wrote to Bertrand Russell [May 18] on October 2 to let him know of their work. Russell responded that he was pleased to know that the proofs could be accomplished by machine, and that he wished he had known of the possibility "before Whitehead and I wasted ten years doing it by hand".

Toronado's MISAR

Aug. 9, 1976

General Motors (GM) announced that its 1977 Oldsmobile Toronado would use the MISAR (Microprocessed Sensing and Automatic Regulation) Ignition System. This was the first time a car had included an onboard digital computer, although the Volkswagen 1600 had used an earlier 'computer' built from transistors [May 28].

MISAR managed spark plug firings in the engine, utilizing sensors that measured engine vacuum, coolant temperature, engine speed, and crank shaft position.

A 1976 Oldsmobile Toronado. Photo by Bull-Doser.

Work on the system had been motivated by the bad reputation of earlier versions of the Toronado for fuel economy. A US government report had reported that it could only manage 8.6 miles on a gallon of gas. Field tests with MISAR installed demonstrated that fuel economy improved by about 9%.

The system was designed by Thomas W. Evernham and Donald G. Guetersloh in the Delco Remy Division of GM. It was a two-chip microprocessor built by Rockwell Microelectronics, probably consisting of a 4-bit PPS-4/2 chip and 1KB of RAM.

Another early car to use a microprocessor was the 1978 Cadillac Seville. The chip, a modified 8-bit Motorola 6802 [March 7], operated the car's optional "Trip Computer," a dashboard display showing fuel mileage and estimated time of arrival.

Modern high-end vehicles, such as the 7-Series BMW and S-class Mercedes, utilize about 100 processors.

First E-mail From Space

Aug. 9 (or 28), 1991

Shannon Lucid and James C. Adamson aboard the Space Shuttle Atlantis, mission STS-43, used an Apple Mac Portable [Sept 20] and the AppleLink online service [May 20] to send the first e-mail from space:

"Hello Earth! Greetings from the STS-43 Crew. This is the first AppleLink from space. Having a GREAT time, wish you were here,...send cryo and RCS! Hasta la vista, baby,...we'll be back!"

The AppleLink software connected to NASA at the Johnson Space Center, and the e-mail was sent to Marcia Ivins.

The mission was something of an Apple love fest. The astronauts also wore WristMac watches – pre-Apple Watch [April 24] wearables that transferred data to the Mac Portable through a serial port. However, the watches weren't made by Apple, but by Ex

Machina Inc. of NYC, based on a Seiko design. Indeed, the WristMac's official name was the Seiko RC-4500. Seiko also produced the first "computer watch", the UC-2000, in [Jan 00] 1984.

For more space shuttle stories, see [Jan 22], [Feb 24], [March 11], [Apr 00], [Apr 10], [Oct 4]

The Dot-Com Bubble Begins

Aug. 9, 1995

This day saw Netscape Communications' [March 25] successful IPO. Its stock reached a high of $74.75 before closing at $58, setting the company's value at $2.2 million. It was the best opening day for a stock issue of this size in Wall Street history, and inspired a horde of other Internet firms to organize their own IPOs.

As a consequence, today is considered the beginning of the "dot-com bubble." Its peak is usually identified as [March 10] 2000 (five years later), after which things went the way of all over-inflated bubbles.

OpenStreetMap Launched

Aug. 9, 2004

OpenStreetMap (OSM) is a collaborative project to create a free editable map of the world. It was started by Steve Coast, inspired by the success of Wikipedia, and frustration at the lack of free map data in the UK. In 2006 business control was passed to the OpenStreetMap Foundation, a non-profit organization, and the site currently has over 6 million users, with perhaps several hundred thousand contributors of map information.

OSM received a big push in 2012, when Google Maps [Feb 8] started charging for certain forms of data; several prominent websites switched to OSM in response.

For more maps, see [Feb 4], [March 6], [July 14], [Sept 19], [Dec 24].

Anatomy of a Subway Hack

Aug. 9, 2009

A Federal Judge granted an injunction preventing three MIT students (Zack Anderson, R.J. Ryan, and Alessandro Chiesa) from presenting the talk, "Anatomy of a Subway Hack," at DEFCON [June 9]. They had planned to demonstrate several attacks on CharlieCard, the RFID smartcard used by the Massachusetts Bay Transportation Authority (MBTA) in the Boston subway.

Although the talk didn't take place, the presentation was somehow posted to WikiLeaks [Oct 4] on August 10.

The court renewed the temporary restraining order on August 14 despite the media attention and the public release of the presentation.