The Uses of Artificial Intelligence (AI)

Capers Jones

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Foreword: The following pages capture AI keynote presentation content from Capers Jones, released for distribution to the International Function Point Users Group (IFPUG) in January of 2025. These keynotes include his Beijing presentation from August of 2024 and a similar presentation for the (US) Air Force.

Note: Many of the illustrations in the original document were produced using artificial intelligence. As of February, 2025 AI-generated illustrations cannot be copyrighted. The remaining content of this document, while shared, is copyrighted by Capers Jones, 2025.

Acknowledgment: The IFPUG community expresses its appreciation to Mr. Jones for his lifelong pursuit of metrics-based state of and recommended improvements for software development practices globally. And now, for his forward-looking insights as the popularity and use of AI accelerates.

Joe Schofield

(This is a new Chinese robot fashion model created and controlled by artificial intelligence)

ABSTRACT FOR THE BEIJING TALK IN 2024

This talk was given on August 13 by Zoom. The talk was recorded so it could be given in 12 languages to an audience of over 1000 people in 40 countries.

Artificial intelligence (AI) is the most important invention in the past 500 years. But it is a disruptive technology that can do harm as well as good. On the beneficial side are new methods or robotic surgery and improved citations in medical and scientific papers. On the harmful and dangerous side, students are using AI to create term papers instead of writing them. Some authors are using ChatGPT and trying to sell articles or books by pretending that they were the authors.

As of today, every country, every major university, and every large corporation are exploring new uses of artificial intelligence. In addition, government agencies at every level from small towns to major cities to states and provinces are using new kinds of tools designed and sometimes controlled by artificial intelligence. This article shows samples of the emerging uses of artificial intelligence for generating images of people and structures.

Note: The AI Gemini Google Bard (now Gemini) was used for fact checking. Many of the illustrations were produced using artificial intelligence. AI illustrations cannot be copyrighted.

INTRODUCTION TO THE BEIJING TALK

This update in December of 2024 shows additional background information and also discusses more recent talks given by the author.

The images shown in this report were all created in less than 5 seconds each by using the phrase:

Pictures of …… created by artificial intelligence.

When this phrase is used, often several hundred pictures will appear. Many will be by companies such as Adobe or Shutterstock. There are also many free sources. Pictures created by artificial intelligence cannot be copyrighted.

The author was keynote speaker at the Beijing artificial intelligence conference in August. He was also invited by the Air Force to speak on new weapons controlled by artificial intelligence.

At the Beijing conference the author used AI to introduce George Washington and Abraham Lincoln, who both spoke to the audience.

Artificial intelligence is the most important invention in the past 500 years and is making major changes in over 50 industries. The purpose of this talk is to illustrate how artificial intelligence is changing jobs, and how it can be used to illustrate books and articles, design new kinds of homes and automobiles and also create new kinds of transportation such as driverless taxis and automobiles.

However, artificial intelligence can also be used for harm. It is easily possible to generate false images of people and call their relatives to ask for money.

Many kinds of new jobs will be created, but some jobs are at risk. Later in this talk are images of new robot television anchors who appear to be human beings but are actually robots that operate with artificial intelligence.

MAJOR INVENTIONS

Inventions that have helped transmit knowledge and increase business efficiency have been developed for centuries, and include:

Paper, which allowed humans to put ideas into an easily transportable medium.

The Printing Press, which made book production faster and cheaper.

Typewriters, which speeded up all kinds of writing and made all text legible.

Newspapers, which once brought news to many homes.

The telephone, which allows quick reports of breaking news.

Radio, which allowed news to reported nationally and internationally.

Automobiles, which allowed workers and students to travel further and faster.

Airplanes, which allowed goods and people to travel thousand of miles a day.

Television, which makes daily news possible.

Computers, software, and the web which allow global communication and creation of e-books.

Artificial intelligence, which can assist humans in many jobs including education of students, production and illustration of books and articles, and research.

As early as 1950 the scientist Alan Turing developed the "Turing test" to help identify artificial intelligence. His test stated that if "***a mechanical device could carry on a conversation with a human that the human did not recognize as coming from a machine then the machine was a thinking machine***" or artificial intelligence device.

EXAMPLES OF FREE ARTIFICIAL INTELLIGENCE TOOLS

ChatGPT	Probably the most widely used AI tool.
Google Bard	Popular with Google email users.
FOTOR AI	Used for images and art creation.
Jasper AI	Used for text and document content.
SORA	Used to create moving pictures from text prompts

The illustrations in this presentation were all created by artificial intelligence, by using the phrase:

"Pictures of …… created by artificial intelligence."

What is in the middle can be "ancient pyramids" or "prehistoric animals" or "famous people" or almost anything else. Usually at least 50 interesting images will appear.

Pictures created by artificial intelligence cannot be copyrighted, but some images can be licensed by companies such as Adobe.

All of the images in this presentation were free images in the public domain. The following sections show how artificial intelligence is being used in many different fields of human activities.

ARTIFICIAL INTELLIGENCE IN AUTOMOBILE DESIGN AND OPERATION

One of the most important new uses or artificial intelligence is a new generation of driverless vehicles designed by artificial intelligence and controlled by artificial intelligence.

The first image shows a new kind of driverless luxury automobile:

The next image is a Japanese self-driving taxi:

The next photo shows a prototype Mercedes Benz with artificial intelligence controls:

Following is an interior view of the Mercedes self-driving automobile:

The last automotive picture shows a possible flying automobile which may be available by around 2050:

Not only automobiles but other vehicles are being affect by artificial intelligence. Here is a new Japanese flying motorcycle in 2025:

By 2050 possibly as many as 50% of American automobiles will be designed and operated by artificial intelligence.

ARTIFICIAL INTELLIGENCE IN ARCHITECTURE

AI can aid human architects by speeding up designs and generating lists of materials. In the future AI might also be able to construct homes. Homes and office buildings will soon be constructed using 3D printers as shown by the examples below:

3D printed houses are about to compete with conventional home construction since they are cheaper, faster, and use plastics instead of wood. Printed homes don't need to be rectangular because 3D printers can handle curves as easily as straight lines.

Complex structures such as houses. made using computer-guided 3D printers. The technology of 3D printing can print a 1500 square-foot house in 24 hours for a cost of about $20,000. No doubt 3D printing will have a major impact on home construction and real-estate markets.

This picture shows how AI can generate interior views as well as exterior views:

The next picture shows a framework made by a 3D printer:

Next is an actual home built in Dubai in 2024:

The next picture shows a very modern AI designed house that could be constructed with a 3D printer in less than half the time than conventional construction:

ARTIFICIAL INTELLIGENCE FOR AUTHORSHIP AND PUBLISHING

In 2024 AI is already well embedded in the creation and production of books and magazines:

1. Artificial intelligence can produce stories, novels, and nonfiction books.
2. Artificial intelligence can create sequels to novels.
3. Artificial intelligence can convert novels into movies and TV shows or vice versa.
4. Artificial intelligence can compose and perform music and soundtracks.
5. Artificial intelligence can generate sounds such as wind noise or animal calls.
6. Artificial intelligence can create audio books.
7. Artificial intelligence can translate books and stories in all languages.
8. Artificial intelligence can produce Braille books for the blind.
9. Artificial intelligence can read books aloud for the blind.
10. Artificial intelligence can create academic course materials and teach courses.
11. Artificial intelligence can publish books and magazines.
12. Artificial intelligence can create unique art for magazines and books.
13. Artificial intelligence in hand-held devices can translate and speak all languages.
14. Artificial intelligence can perform customer support for publishing companies.
15. Artificial intelligence can check documents to see if they were produced by AI.

Already in 2024 artificial intelligence can accomplish these writing topics which until recently could only be done by humans:

1. Write novels.
2. Write short stories.
3. Write history books.
4. Write technical manuals.
5. Translate books and e-books into multiple natural languages.
6. Create audio books.

Within a few years some additional AI capabilities should be possible:

7. Convert novels into movies.
8. Convert movies into novels.
9. Convert novels or movies into television shows.
10. Convert movies into 3D interactive movies.
11. Develop unique scripts for new movies or television shows.
12. Develop interactive movies where viewers can participate.
13. Illustrate books and articles with high-quality images that cannot be copyrighted.
14. Update books on demand as requested by users, for a small additional fee.
15. The author has invented a new kind of e-book which lets readers and students speak to famous people from history and discuss interesting topics.

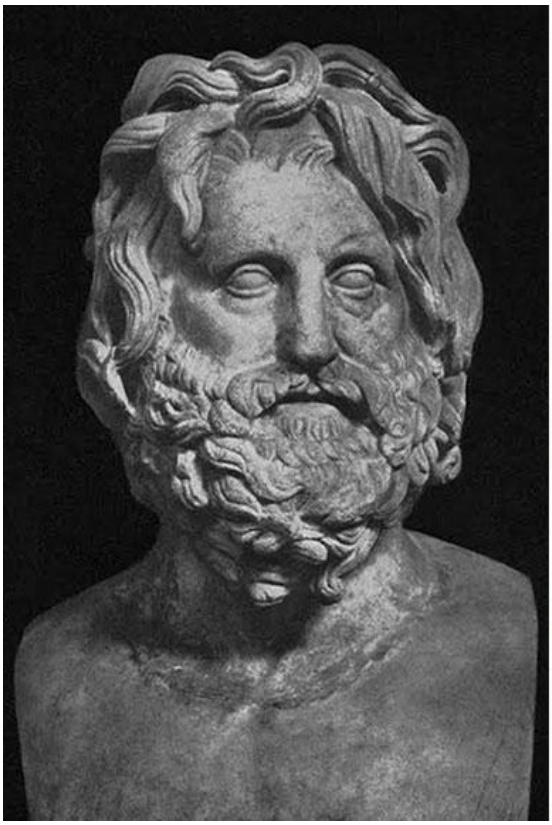
An example follows which shows Herodotus ready to teach history:

Artificial intelligence in the future may have as large an impact on authorship and publishing as the printing press and the invention of e-books.

Here are Julius Caesar and Queen Cleopatra ready to discuss Roman history:

The Greek Goddess Athena was the Goddess of both wisdom and war, and could teach military history:

Here is the Greek God Zeus, from 2500 BCE ready to discuss Greek religion:



The moon Goddess Chang’e could teach astronomy or space travel:

Julius Caesar can teach Roman history and military history:

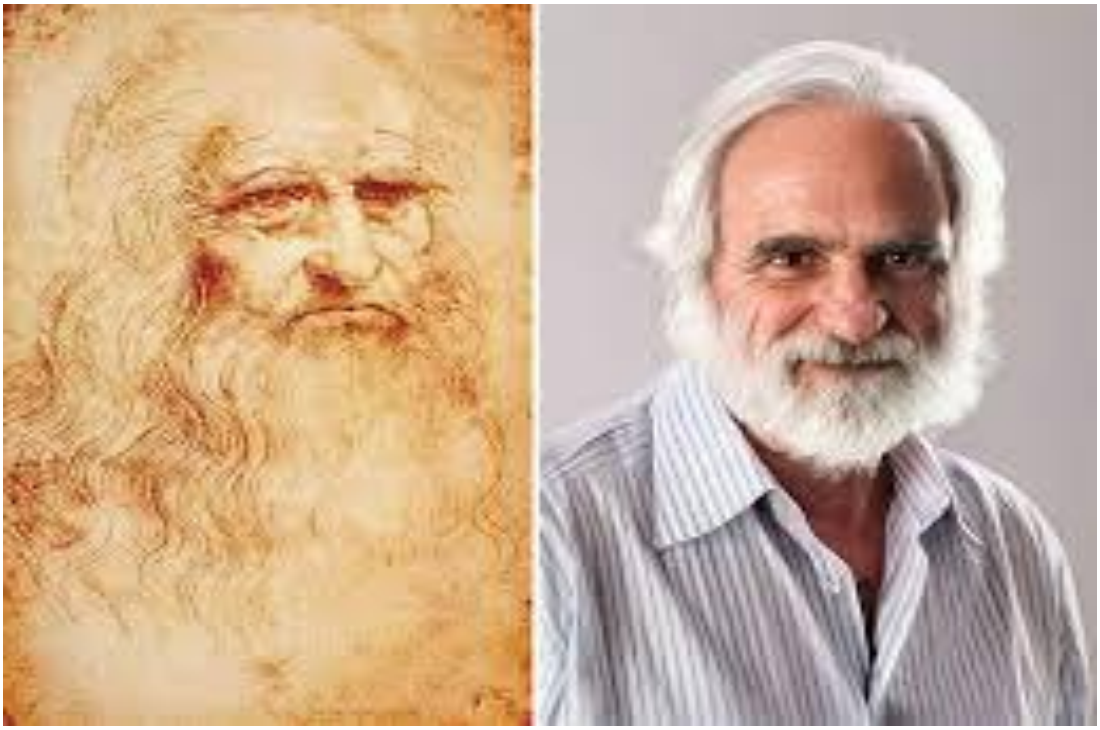
AI will also have major impacts on movies, television, and music composition and performances. If an AI tool is set to imitate well-known authors such as Rudyard Kipling or Ernest Hemingway. then AI could churn out dozens of sequels.

ARTIFICIAL INTELLGENCE IN ART AND GRAPHICS DESIGN

The legal status of artificial intelligence is being considered by national, state, and local governments.

One court case has already decided that **illustrations or graphic art created by artificial intelligence tools cannot be copyrighted.**

Pasted below is an etching of Leonardo da Vinci, and then an AI image of what he would look like:



The next painting shows a mountain landscape created by artificial intelligence:

Not only America but other countries are using artificial intelligence for art. Following is a version that was AI-generated of the famous Japanese painting of a Tsunami or tidal wave:

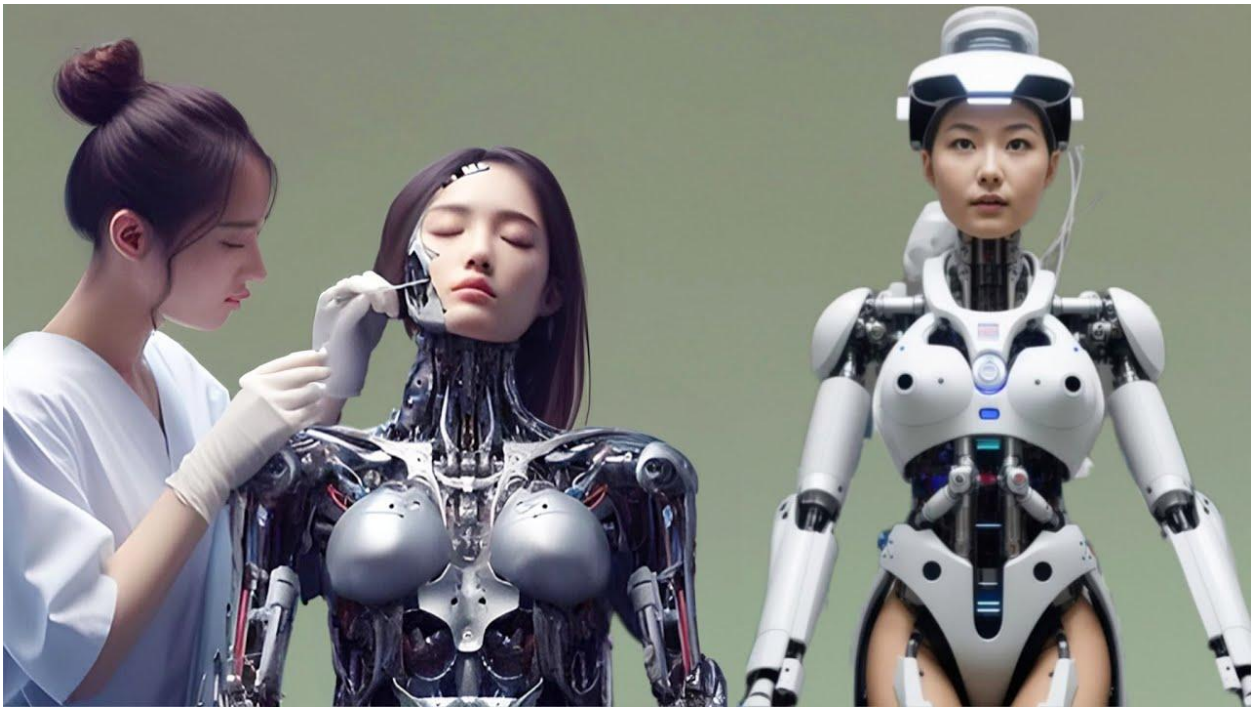
Here are two Chinese illustrations. The next image illustrates the reality of artificial intelligence images by showing a medieval Chinese female warrior from around 1000 CE:

The following picture shows an ancient male Chinese warrior from around 1200 CE:

The next image stays in Asia, and shows the famous General Genghis Khan recreated by artificial intelligence:

In the future it will be necessary for publishers to include specific limits in contracts about what aspects of books or magazine articles can be created by artificial intelligence. There will probably be court cases to determine whether stories, novels, articles, and non-fiction books created by artificial intelligence can be copyrighted.

Japan is often a leader in technologies and is already advancing in robotics and artificial intelligence technology. The next image shows a realistic female robot from Japan ready to dress as a samurai:



ARTIFICIAL INTELLIGENCE IN AVIATION

Artificial intelligence will have a major impact on both private aircraft and commercial airlines. Already many new kinds of aircraft are being designed by artificial intelligence, and some will be controlled by artificial intelligence as well. The first picture shows a planned new kind of commercial aircraft that will be faster but also quieter inside than today's planes:

Some new private aircraft will be able to land and take off vertically, and so will not require long runways:

There may also be new kinds of seaplanes designed and flown by artificial intelligence:

The next image is the interior of a large commercial aircraft that is designed and flown by artificial intelligence:

The next image shows a flying taxi, already used in Japan, China, and South Korea:

The next picture shows a future flying cruise ship which can carry over 1000 passengers on extended vacation journeys:

Aviation has been a major invention for human travel and for rapid transportation of vital materials.

The last aviation picture shows a flying city bus approaching its destination with over 50 passengers:

Artificial intelligence is having a major impact on all kinds of transportation.

ARTIFICIAL INTELLIGENCE IN DEFENSE

Every major country including China, Japan, Russia, and the United States are designing and building new kinds of weapons systems design by artificial intelligence and many of them controlled by artificial intelligence.

The first picture of a new weapon shows a future flying aircraft carrier that also floats:

It may also be possible to build tanks that are light enough to fly, especially if they do not need humans and are operated by artificial intelligence:

Aircraft are already being designed and controlled by artificial intelligence and some can reach the edges of space and therefore out of range of ground defenses:

It will soon be possible to have infantry that are robots controlled by artificial intelligence:

In all armies, robot soldiers can be (Editor note: epicted as) either male of female, and illustrated by a female robot from around 2050:

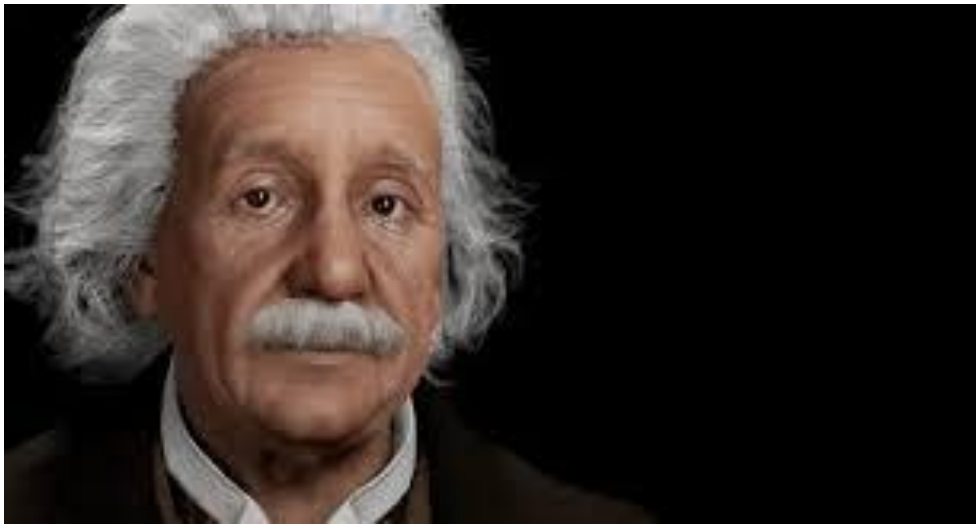
Artificial intelligence could soon create armies with robot tanks and robot soliders, but only officers and military specialists would remain human.

ARTIFICIAL INTELLIGENCE IN EDUCATION

The author who is retired from IBM has developed a new kind of teaching tool using artificial intelligence, which allows famous people from history to give lectures to modern students. Some examples are shown below:

A basic course that should be available in all virtual universities would be a history of computers from the early mechanical devices through artificial intelligence, and a good instructor would be Countess Ada Lovelace, who was the first computer programmer in the world:

It would be interesting for students to have the picture and voice of Albert Einstein deliver an introductory lecture on physics:



An advantage of AI lectures for introductory topics is that they would reduce the time that actual professors need for creating talks and giving them to new students.

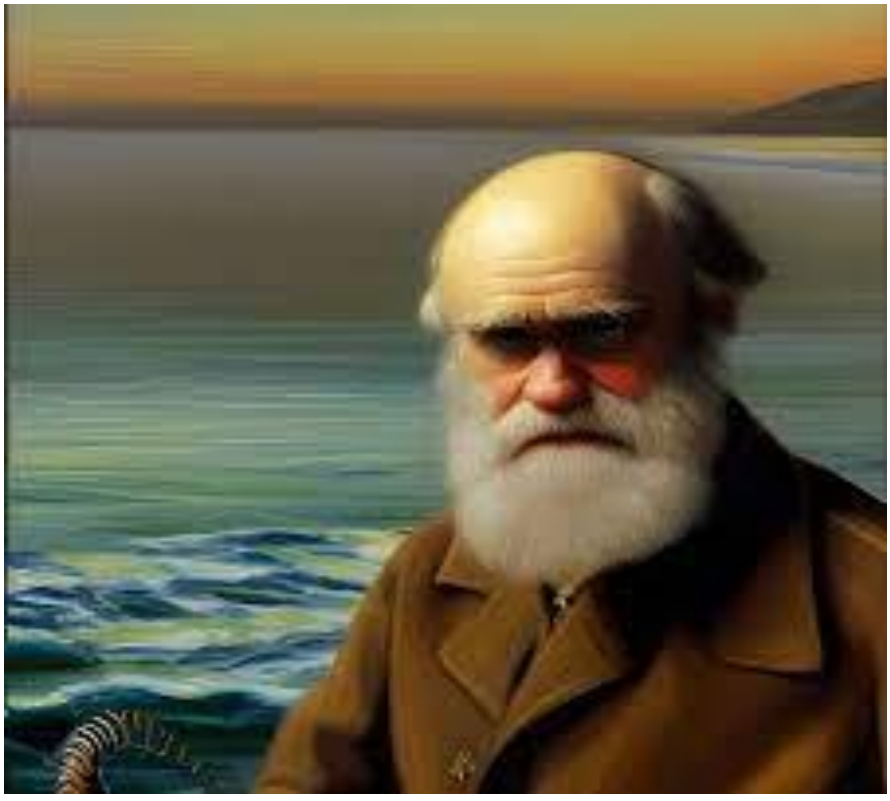
The next picture is created by artificial intelligence of Confucius teaching philosophy:

The next image shows Julius Caesar, who could teach about ancient military history:

The next picture is by Hewie Poplock of the Sarasota Technology Users Group. It shows Presidents George Washington and Abraham Lincoln meeting:

At this point, I would like to have Presidents Washington and Lincoln greet the audience in Beijing:

Another image shows a portrait of Charles Darwin ready to speak about evolution:



The last education image shows a robot teaching mathematics. This is already happening in India, as illustrated by an actual photo of an Indian elementary school with a robot math teacher:

Fairly soon robots and human teachers can both teach courses from elementary schools through post graduate courses.

ARTIFICIAL INTELLIGENCE FOR HISTORY

Artificial intelligence can recreate both ancient people, and ancient buildings and entire cities. The following image shows Egypt from about 3500 BCE:

The next picture shows a Chinese temple in spring from around 1000 CE created by artificial intelligence:

The next picture shows a Chinese temple in winter from around 1000 CE created by artificial intelligence:

This picture shows the size of one of the ships used by Admiral Zeng He to sail to America compared to the ships used by Columbus:

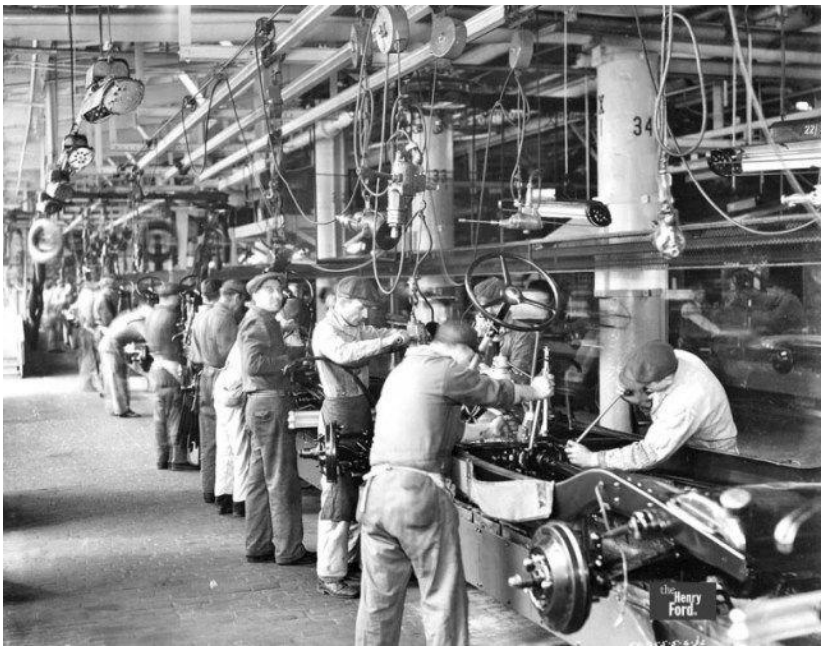
The realism of images created by artificial intelligence makes history and architecture interesting.

ARTIFICIAL INTELLIGENCE IN MANUFACTURING

One of the earliest and most widespread uses of artificial intelligence has been in manufacturing. Robotic and AI controlled manufacturing are now being used for automobiles, aircraft, home appliances, medical devices, and industrial equipment. Following is a picture of a modern automobile manufacturing plant, and then a picture of Ford manufacturing from the 1920 era:

This is a computer-controlled robotic manufacturing assembly line in 2024. Notice the absence of human workers.

Notice the difference in human labor between Henry Ford's 1920 assembly line and today's robotic assembly lines:



The reduction in manual effort is accompanied by an increase in speed. Modern automobiles in 2024 are built more than twice as fast as automobiles in 1924 at less than half the cost.

Another picture shows an automotive AI-controlled assembly line:

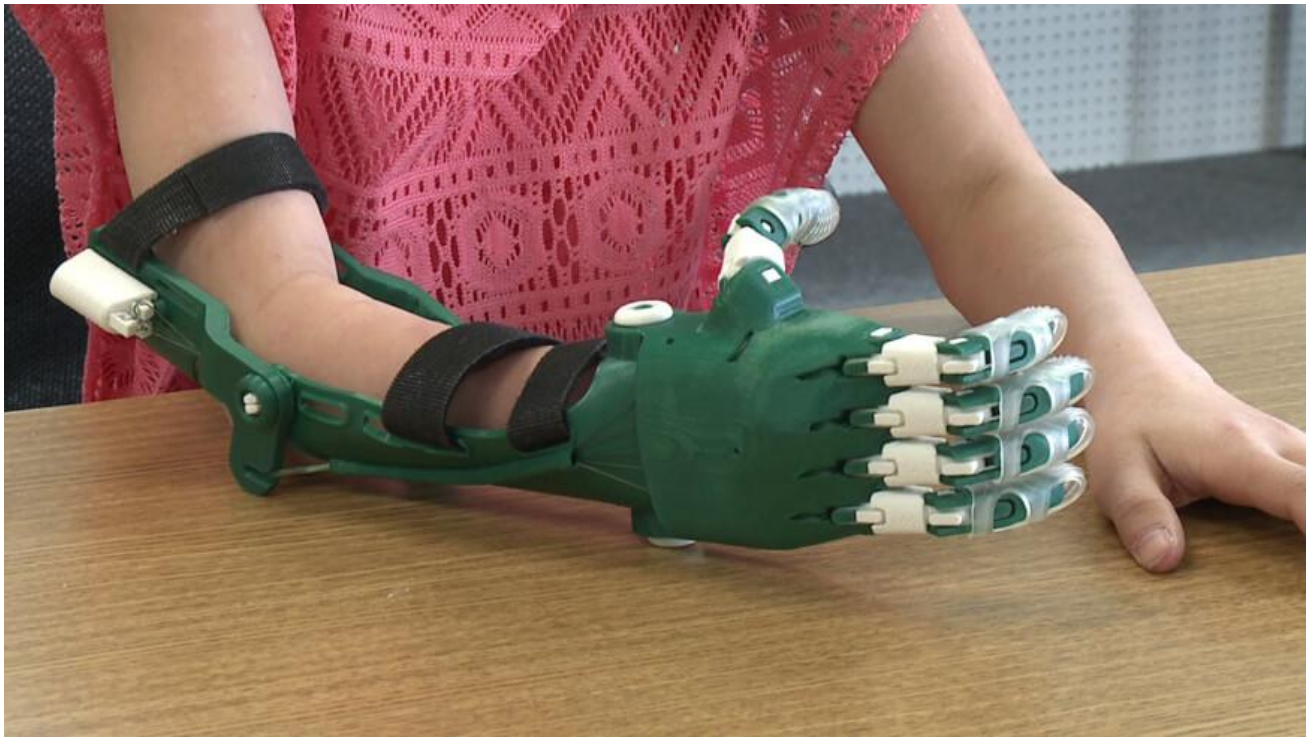
Future construction of automobiles from 3D printed components. There is no doubt that AI has transformed manufacturing from a largely manual endeavor into a fully automated endeavor.

ARTIFICIAL INTELLIGENCE IN MEDICAL PRACTICE

One of the major new uses of artificial intelligence will be in medical practice. Already in 2023 AI is being used for diagnostic studies and for research into new kinds of medicines and treatments. Robotic surgery is also becoming common.

The first picture shows a human physician and a robot surgeon discussing an operation that the robot will perform:

The following photograph shows an artificial right arm produced by a 3D printer. In the future AI will be used to produce a variety of prosthetic devices for lower costs and with higher quality than is possible today.



The next image shows a new kind of nursing assistant named Grace that is a robot controlled by artificial intelligence:

Medical devices and medical practice will be transformed greatly by the use of artificial intelligence.

USING ARTIFICIAL INTELLIGENCE TO COMPOSE AND PERFORM MUSIC

One of the oldest uses of AI has been music performance. AI can also compose music. This means that not only are authors at risk from AI competition but also musicians and composers.

In the future it might be possible to generate a composition such as a piano concerto in a few seconds, and then have a performance of the concerto with avatars of the musicians. The view from a computer screen would look like an actual auditorium with musicians and a director but the entire production would be artificial:

AI could also perform famous music by human composers such as Beethoven, Brahms, Puccini, Prokofiev, and any other composer so long as their music was written so long ago that it is not copyrighted.

ARTIFICIAL INTELLIGENCE AND SOFTWARE DEVELOPMENT

Within a few years artificial intelligence may be able to develop large systems in the 10,000- function point size range in less than 3 weeks instead of more than 3 calendar years which is the average for 2024.

In order for AI to generate large applications quickly and accurately the AI tool will need to have access to a large library of reusable components. Some of these are available today from government sources.

AI application creation will also be able to generate user's guides and tutorial materials to teach users how to provide inputs to the application and use all of the application's functions and features.

AI can also handle management tasks before software development begins including but not limited to:

- Predicting the size of the application in both lines of code and function points.
- Predicting the numbers of organizations that will want to use the application.
- Predicting probable updates for 3 years after deployment.

Once deployed AI maintenance tools can receive and repair bug reports, create new features as needed, and provide customer support for queries that come in via telephone or email. The first picture shows humans providing service in 2024:

The next picture shows customer service personnel replaced by teams of robots:

The most likely organizations to create AI software development engines will be major computer and software companies such as IBM and Microsoft, government agencies such as the Department of Defense, and major corporations that use software for business purposes such as Amazon, General Motors, or Bank of America.

THE MOST INTERESTING USES OF ARTIFICIAL INTELLIGENCE

Artificial Intelligence is a new technology that is having a major impact on corporations, government agencies, and physical devices such as aircraft and ships. This discusses some interesting topics where artificial intelligence might make improvements in air traffic control, maritime traffic control, weather reporting, and hospital monitoring systems.

Artificial Intelligence (AI) is one of the most powerful inventions in human history. AI will soon be impacting every industry and every government in the world. AI will also have a major impact on medical practice, education, jobs, and entertainment.

Already in 2024 AI can write articles for journals, write novels, edit books, compose music, and develop software. AI can also drive automobiles and fly airplanes. The only human jobs that cannot be done by AI are those such as dentists, mechanics, carpenters, and plumbers who need to manipulate tools in close quarters at remote locations.

Since AI can do so many things well, it is interesting to speculate about the move valuable kinds of AI tools for the near future. The next few paragraphs discuss some interesting opportunities for artificial intelligence to provide truly useful and beneficial services.

As a general rule, these opportunities have high value to humans, and require 24-hour a day, 7 days a week for human workers in 2024.

Artificial Intelligence for Software Maintenance and Customer Support Packages

Aging legacy software applications still contain many undiscovered bugs. It would be useful to have Artificial Intelligence maintenance tools that can scan every line of code in legacy applications and fix all reported bugs. Even better, having AI scan the legacy code might find many bugs that humans have not yet discovered.

AI could replace humans in many customer support jobs and record bug reports from human clients, that could be fed into the appropriate AI repair tools.

Since software maintenance costs more than software development, the AI maintenance support engines could save billions of dollars in a very few years. The next picture shows a robot programmer coding new routines about artificial intelligence:

An advantage of AI compared to human customer support teams would be that AI can work 24 hours a day and 365 days a year.

Artificial Intelligence for Television News Broadcasts

China, South Korea, England, and Japan all have robot news anchors which may prove troublesome for human new anchors, especially if jobs are lost.

The first image shows a female news anchor in England, who can use artificial intelligence to speak in over a dozen languages and looks real:

The next news anchor is from America:

The following picture is a new news anchor from South Korea:

The next two images are also new. The first shows a female Chinese news anchor, Xin Xiaomeng, who is not a real person, but an artificial intelligence avatar:

Next is a male television anchor from China who is also a robot:

Following is the new Japanese robot news anchor, Erica:

The next robot news anchor is from South Korea:

The next robot news anchor is from Kuwait:

The last artificial intelligence news anchor is from India:

The next image is an American male avatar, who looks and speaks like a real person:

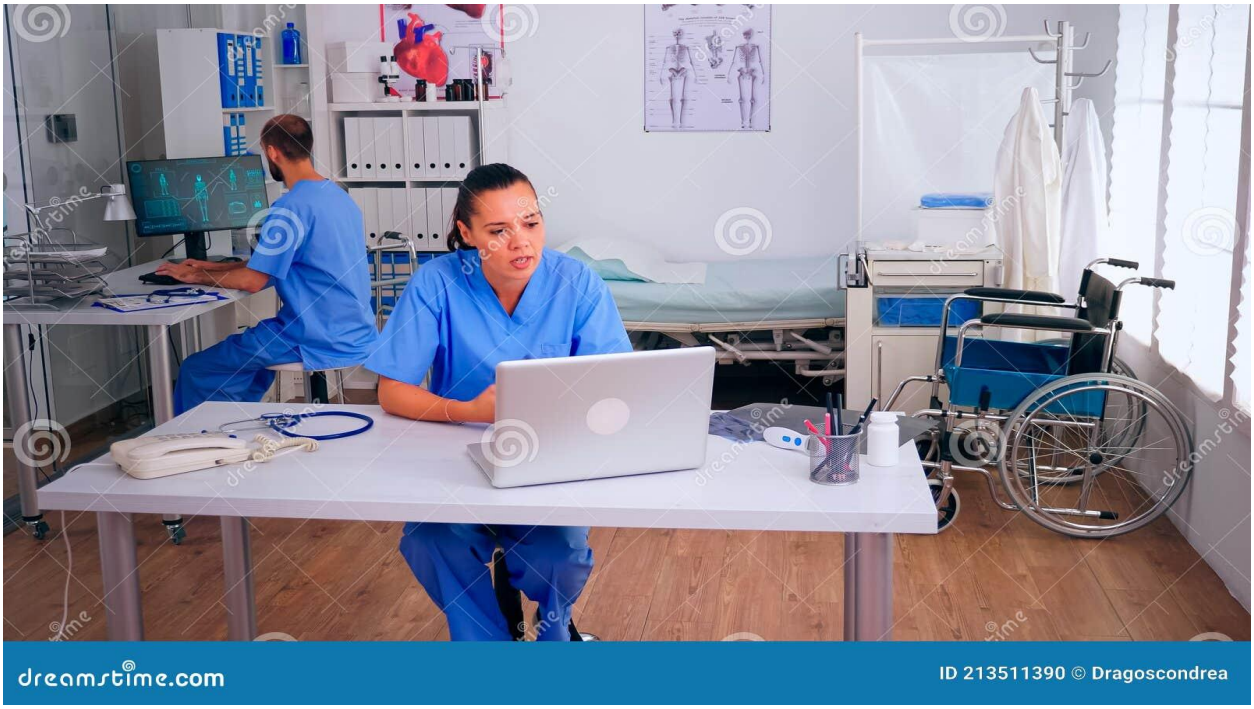
Next is a young lady avatar for customer support, who also appears and speaks like a real person:

Artificial Intelligence for Medical Tele Visits

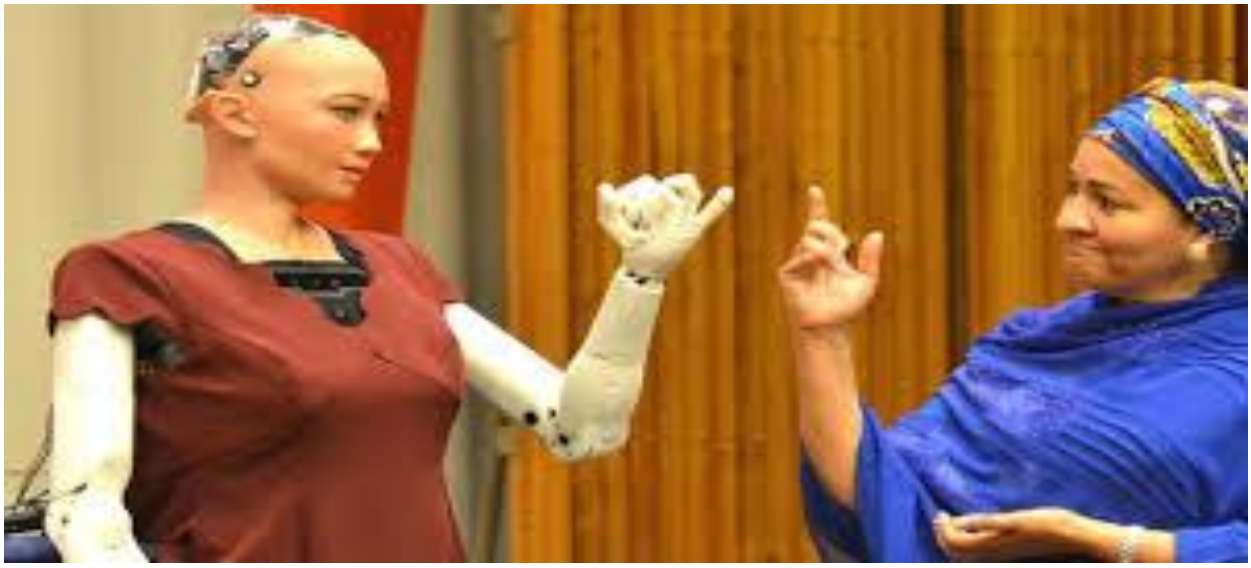
For minor medical conditions many doctors allow Tele Visits instead of office visits. These require that the patient has a computer with a camera and microphone, which in 2024 probably approximates 50% of U.S. citizens.

Tele Visits are usually for minor conditions and the human assistant records basic information such as symptoms, fevers, chills, and other essential information. AI could easily handle all of these questions and responses as well as human physician assistants. This would free up the human physician assistant to help with live patients and actual office visits.

The next image shows Tele Visits today with a live team:



By 2054 we will see future Tele Visits and preliminary examinations supported by artificial intelligence:



Artificial Intelligence for Hospital Monitoring Systems

Artificial Intelligence could monitor every patient in large hospitals 24 hours a day without breaks or pauses.

Warnings about changes in vital signs could be sent to physicians and nurses instantly, assuming the patients had attached monitors that reported to the AI system on a continuous basis.

Artificial Intelligence for processing 911 Calls

Every community uses 911 for emergency calls. This means that live telephone operators are on duty in every city in America 24 hours per day. The 911 system requires that thousands of live telephone operators must be available all over America to handle the calls. It would be very easy to create artificial intelligence images that act and look like human 911 operators.

The downside of this use of artificial intelligence is what to do with the human operators whose jobs are no longer needed?

The first medical picture shows one of today's ambulances:

The final medical image shows a future flying ambulance from about 2030 CE:

Artificial Intelligence for processing calls about traffic problems on roads and highways.

Most State and Federal highways in America have signs that provide a phone number for reporting traffic hazards, reporting speeders, or asking for information. These are often three-digit numbers such as 511.

It would be easily possible to use artificial intelligence to process these calls with little or no human involvement. The only times humans would be needed is when the call is about a traffic accident or some major issue, in which case the AI tool would notify the appropriate agency to dispatch ambulances or emergency vehicles.

The picture of traffic in 2024 was created by artificial intelligence:

By 2034 flying taxis will add to traffic problems in major cities:

Driverless water taxis and driverless water busses are already used in New York, California, Thailand, Japan, and parts of Europe:

Traffic controls by artificial intelligence are urgently needed as traffic on land and in the sky increase.

Artificial Intelligence for Weather Reporting

Artificial Intelligence could provide pinpoint weather reports by area code, street address, or GPS coordinates. Artificial Intelligence could integrate weather reports globally and provide much more thorough coverage than today.

If there were transponders in automobiles it would be possible to have continuous weather predictions while driving from state to state. Following is picture of a tornado with a rainbow created by artificial intelligence:

Artificial Intelligence for Air Traffic Control

Air Traffic control systems are already among the most sophisticated uses of computers. If artificial intelligence is added to the mix then all civilian aircraft flight paths could be analyzed in real time and advanced warnings sent out if small planes are approaching each other too closely:

Soon humans will be assisted by robotic air traffic control assistants:

Artificial Intelligence for Maritime Traffic Control

In states with extensive coastlines such as Florida there are thousands of boats moving in every direction at almost any time of day, and often at night as well. AI marine traffic control would be useful during periods of fog or before hurricanes to want boats at sea to take shelter:

Artificial Intelligence for Ship Navigation and Controls

It is technically possible for large commercial yachts, freighters, and passenger ships to have artificial intelligence operating systems that could control navigation, engines, and air conditioning without human intervention.

Regulations would require human officers and crew in case of system failures but much of the work of navigating and operating large vessels could easily be handled by AI systems.

First is an interior picture of a modern yacht with a greenhouse garden designed by artificial intelligence:

Next is a view of the control system of the yacht with many controls now handled by artificial intelligence instead of by human officers:

Artificial intelligence can also design yachts as well as navigate them. The following picture shows a hybrid wind and motor-powered mega yacht created by artificial intelligence:

AI is now becoming a common tool for high-end yacht design, which include helicopters:

It is now possible to have underwater viewing rooms on large yachts:

Artificial intelligence is also being used for large cruise ship designs:

Some cruise ships are large enough to have indoor gardens:

The next picture shows a photo of a modern camper van designed by artificial intelligence:

The final van picture shows a modern camper van interior designed by artificial intelligence:

There is no end to the future uses of artificial intelligence.

Artificial Intelligence and Space Travel

It is obvious that long space flights would be better in spaceships controlled by artificial intelligence rather than by human crews. Artificial intelligence does not require air, food, or water and can live for over 1000 years. Any exploration in space that requires more than a few years, such as visits to Pluto, will probably use artificial intelligence for guidance.

Let us start with American cities in 2075 with overhead flying driverless vehicles:

The second image shows a future spaceship controlled by artificial intelligence in 2075:

The next picture shows imaginary robots controlled by artificial intelligence ready to explore a distant planet:

This picture shows a modern working robot designed by NASA:

Before cities are built on Mars, the moon will have cities by 2070:

The next picture shows future robots exploring distant planets guided by artificial intelligence:

The next image shows a future settlement on Mars with protected greenhouses:

This is an interior view of a greenhouse on Mars in 2075 from a NASA design:

This is another interior view of a Martian greenhouse in 2075:

Gardens need to be tended, so astronauts will also be gardeners of Mars:

The final picture shows an astronaut looking back at earth in 2075:

Artificial intelligence is sweeping through more than 50 industries and making changes in all industries.

SUMMARY AND CONCLUSIONS ABOUT MAJOR BENEFITS OF AI IN 2024

Artificial Intelligence is one of the most important inventions in history. AI is about to make major changes in corporate and government operations, and changes in the operation of physical devices such as automobiles, ships, motorcycles, appliances, and aircraft.

Artificial intelligence is also changing the way television shows and movies are produced. There is no doubt that artificial intelligence is as important an invention as the printing press, the telephone, and television.

1. Some universities are now requiring that all students take at least one course in artificial intelligence, no matter what their majors are.
2. As of 2024, the jobs with the highest pay for new college graduates are those that involve artificial intelligence.
3. Medical students are now being teamed with robots for surgical procedures.
4. Self-driving taxis, water taxis, and air taxis are becoming common in Japan and China, and are starting to appear in Europe and the United States.
5. For long space trips. Artificial intelligence pilots do not require food, water, or air and can live for over 1000 years.
6. Artificial intelligence will make more changes to human jobs and living conditions than any other invention in history!

SUMMARY OF BENEFICIAL AND HARMFUL USES OF ARTIFICIAL INTELLIGENCE

Future Beneficial Uses for Artificial Intelligence

1. Urban traffic controls and rerouting drivers away from blockages
2. Routing emergency vehicles to fastest routes
3. Continuous medical monitoring of medical patients
4. Converting books into television shows and movies
5. Military threat recognition and target acquisition
6. Pilotless combat aircraft
7. Pilotless reconnaissance drones
8. Torpedo guidance and target seeking
9. Building protection systems using night cameras and motion sensing
10. AI lectures at high school and university levels

Dangerous and Criminal Uses of Artificial Intelligence

1. Telephone scams by imitating human voices based on tapping telephone calls
2. E-mail scams that imitate friends and family
3. Computer scams that seek banking and personal information
4. Spy satellites and spy balloons
5. Creating imitations of famous art or fashion designs and passing them as originals
6. Imitating voices of friends or colleagues in order to steal or get personal information
7. Password guessing
8. Fake news reports
9. Targeted phishing
10. Fake websites that offer low-cost items

The most important hazard is the use of AI for criminal activities. If a person is well known and has photos on the web and any recordings of his or her voice, criminals could construct a virtual replica of the person and use it for extortion or theft. It would easily be possible to have a phony AI replica place a telephone call to a relative or friend and ask for money.

Hopefully major software research companies such as IBM or Microsoft will be able to develop methods or tools that can detect whether a phone call is coming from an actual human or an imitation created by AI. Until then millions of people are at risk from potential scams created by criminals using AI.

RECENT REPORT AND ARTICLES ON ARTIFICIAL INTELLIGENCE

Five Ways Artificial Intelligence Will Change the World	NBC News 2023
The Future of AI's Impact on Society	MIT Technology Review 2023
How Will AI Impact the Future of Work	Forbes 2023
Artificial Intelligence News	Science Daily 2023
Artificial Intelligence (AI) Technology	The Guardian 2023
Artificial Intelligence	BBC News 2023

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The McGraw Hill Illustrated Encyclopedia of Robotics and Artificial Intelligence, McGraw Hill 2022.

Fundamental of Artificial Intelligence: Problem Solving and Automated Reasoning; Miroslav Kubert, McGraw Hill, 2023

The Essence of Artificial Intelligence; Alison Crowly, Prentice Hall; 2023

Philosophy & Artificial Intelligence; Todd C. Moody; Prentice Hall 2023

Artificial Intelligence: A Modern Approach; Stuart Russel and Peter Norvig; Pearson; 2022

Readings on Software and Technical Educational Changes

Starr, Paul; The Social Transformation of American Medicine; Basic Books; Perseus Group; 1982; ISBN 0-465-07834-2. **NOTE: This book won a Pulitzer Prize in 1982 and is highly recommended as a guide for improving both professional education and professional status. There is much of value for the software community.**

Strassmann, Paul; Information Payoff; Information Economics Press, Stamford, Ct; 1985.

Strassmann, Paul; Governance of Information Management: The Concept of an Information Constitution; 2nd edition; (eBook); Information Economics Press, Stamford, Ct; 2004.

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Weinberg, Gerald M.; The Psychology of Computer Programming; Van Nostrand Reinhold, New York; 1971; ISBN 0-442-29264-3; 288 pages.

Weinberg, Gerald M; Becoming a Technical Leader; Dorset House; New York; 1986; ISBN 0-932633-02-1; 284 pages.

Yourdon, Ed; Death March - The Complete Software Developer's Guide to Surviving "Mission Impossible" Projects; Prentice Hall PTR, Upper Saddle River, NJ; ISBN 0-13-748310-4; 1997; 218 pages.

Author's Books on Risk from 1978 to 2024

1. Software Development Patterns and Anti-Patterns; Taylor Francis, 2022
2. The Technical and Social History of Software Engineering; Addison Wesley, 2013
3. Quantifying Software – Global and Industry Perspectives; CRC Press, 2012
4. The Economics of Software Quality, Prentice Hall, 2011
5. Software Engineering Best Practices; McGraw Hill, 2009.
6. Software Assessments, Benchmarks, and Best Practices; Addison Wesley Longman, Boston, Ma; 2000
7. The Year 2000 Software Problem, Addison Wesley Longman, Boston, MA; 1998.
8. Software Quality – Analysis and Guidelines for Success (International Thomson Computer Press; Boston, MA; 1997).
9. Patterns of Software System Failure and Success; International Thomson Computer Press: Boston, MA; 1995).
10. Assessment and Control of Software Risks; Prentice Hall, Englewood Cliffs, NJ; 1994.
11. Software Quality Today; IBM Corporation; 1978
12. Software Engineering Best Practices; IBM Corporation 1978

Sample of Author's Journal Articles on Risks

More than 200 journal articles between 1978 and 2023 in magazines such as Scientific American, IBM Systems Journal, Datamation, Crosstalk, IEEE Transactions on Software Engineering, Cutter Software Journal, and others. This list shows a sample of one article per year even though several might have been published in the same year. Some of the titles include:

1. "High Efficiency Defect Removal Efficiency"; IEEE Software; August 2019
2. "Challenges of Software Project Management"; IEEE Computer; June 2017"
3. "Corporate Software Risk Reduction"; ITT Journal; August 2016
4. "Defenses Against Software Litigation"; IEEE Computer; March 2015
5. Software Benchmark Analysis"; IEEE Software; June 2014
6. "Software Measurement Errors"; IEEE Software; December 2012
7. "Software Quality Economics"; IEEE Software; January 2011
8. "Economics of Software Outsourcing"; Datamation; November 2010
9. "Quality Control for Embedded Software"; IEEE Computer, May 2009.
10. "Preventing Software Failure: Problems Noted in Breach of Contract Lawsuits"; U.S. Air Force software journal *Crosstalk*, June 2008.
11. "Software Defect Potentials"; Crosstalk, Air Force Technology Support Center; December 2007
12. "Social and Technical Reasons for Software Project Failure"; *Crosstalk;* Air Force Technology Support Center, June 2006.
13. "Software Engineering State of the Art"; IEEE Software; February 2005.
14. "The Evolution of Defense Software"; *Crosstalk*; Air Force Technology Support Center; November 2004
15. "Conflict and Litigation between Software Clients and Developers"; IEEE Computer; April 2001.
16. "Analysis of Damages due to the Y2K Problem"; IEEE Software; December 2000.
17. "Sizing Up Software"; *Scientific American Magazine*; December 191 (1978).