Request for Reconsideration after Final Action

The table below presents the data as entered.

Input Field	Entered
SERIAL NUMBER	79212595
LAW OFFICE ASSIGNED	LAW OFFICE 113
MARK SECTION	
MARK	https://tmng-al.uspto.gov/resting2/api/img/79212595/large
LITERAL ELEMENT	WATSON HEALTH
STANDARD CHARACTERS	YES
USPTO-GENERATED IMAGE	YES
MARK STATEMENT	The mark consists of standard characters, without claim to any particular font style, size or color.
ARGUMENT(S)	

REQUEST FOR RECONSIDERATION

Applicant's Mark is not Primarily Merely a Surname

Under §2(e)(4) of the Trademark Act, 15 U.S.C. §1052(e)(4), a mark that is primarily merely a surname is not registrable on the Principal Register absent a showing of acquired distinctiveness under §2(f), 15 U.S.C. §1052(f). The test for determining whether a mark is primarily merely a surname **depends on the primary significance of the mark as a whole to the purchasing public.** *In re Hutchinson Tech. Inc.,* 852 F.2d 552, 554, 7 USPQ2d 1490, 1492 (Fed. Cir. 1988). The impact the applied-for term has on the purchasing public must be evaluated to determine whether the primary, and only, significance of the term is a surname significance. TMEP 1211.01, *In re Harris-Intertype Corp.,* 518 F.2d 629, 186 USPQ 238, 239 (CCPA 1975). Each case must be decided on its own facts, based upon the evidence in the record. *In re Etablissements Darty et Fils,* 759 F.2d 15, 17, 225 USPQ 652, 653 (Fed. Cir. 1985). Additionally, there is no rule regarding the type or amount of evidence necessary to demonstrate that the applied-for mark would be perceived as primarily merely a surname. *In re Eximius Coffee,* 120 USPQ2d 1276, 1277 (TTAB 2016).

As outlined by the Examining Attorney, the Trademark Trial and Appeal Board has identified five examples of inquiries that may lead to evidence regarding the public's perception of a term's primary significance: (1) whether the surname is rare; (2) whether the term is the surname of anyone connected with the applicant; (3) whether the term has any recognized meaning other than as a surname; (4) whether it has the "structure and pronunciation" of a surname; and (5) whether the stylization of lettering is distinctive enough to create a separate commercial impression. *In re Benthin Mgmt. GmbH*, 37 USPQ2d 1332, 1333-1334 (TTAB 1995). Additionally, if there is any doubt as to whether a term is primarily merely a surname, the Board will resolve the doubt in favor of the applicant. *In re Yeley*, 85 USPQ2d at 1151; *In re Benthin*, 37 USPQ2d at 1334.

The Examining Attorney has provided as evidence for his refusal, information from the Lexis database showing that over 387,000 Americans have "WATSON" as a surname; Wikipedia and Merriam-Webster information showing the term "WATSON" is defined as "a patronymic surname of English and Scottish origin" and a "biographical name;" and internet pages that say "WATSON" is described as a "famous Anglo-Scottish surname of great antiquity."   However, often a word will have a meaning or significance in addition to its significance as a surname. The examining attorney must determine the **primary meaning of the term to the public.** TMEP 1211.01(a). If there is a readily recognized meaning of a term, apart from its surname significance, such that the primary significance of the term is not that of a surname, registration should be granted on the Principal Register without evidence of acquired distinctiveness. *In re Isabella Fiore LLC*, 75 USPQ2d 1564 (TTAB 2005).

"The question is not whether a mark having surname significance might also have a non-surname significance, but whether, in the context of the goods or services at issue, that non-surname significance is the mark's primary significance to the purchasing public, thus eclipsing and relegating the mark's surname significance to secondary rather than primary status." *Mitchell Miller, P.C. v. Miller*, 105 USPQ2d 1615, 1621 (TTAB 2013). A Google search conducted on google.com on July 15, 2019 of the term "WATSON" shows the first non-advertisement hit is to Applicant's goods and services, IBM WASTON located at https://www.ibm.com/watson. (See Exhibit A attached). Similarly, the next seven hits also refer to Applicant's products or services. Also appearing on the right side of the first page of the Google search results, is the link and image to the Wikipedia page for Watson, Applicant's famous question answering computer system capable of answering questions posed in natural language. As mentioned in the last office action response, Applicant's Watson computer system famously competed against two human competitors on the quiz show *Jeopardy!* in 2011, winning the first-place prize of $1,000,000. (See NY Times article reporting same as Exhibit B attached).

Also on Wikipedia.org, if one enters "Watson" into the search bar, the results page shows a category titled "Computing," which appears before the category titled "Names." The first entry under "Computing" is to Applicant's Watson computer and business. (Wikipedia.org, July 15, 2019, see Exhibit C attached). Similarly, and arguably more relevant, on Webopedia, the online tech dictionary for students, educators and IT professionals, the first entry, as well as several additional entries, is also to Applicant's Watson computing platform. (Webopedia.com, July 15, 2019, see Exhibit D attached).

"A trademark is a trademark only if it is used in trade. When it is used in trade it must have some impact upon the purchasing public, and it is that impact or impression which should be evaluated in determining whether or not the primary significance of a word when applied to a product is a surname significance. If it is, *and it is only that,* then it is primarily merely a surname." *In re Harris-Intertype Corp.*, 518 F.2d 629, 631, 186 USPQ 238, 239 (C.C.P.A. 1975). In the instant case, WATSON as used in the mark WATSON HEALTH, and applied to Applicant's goods and services, clearly has a primary significance other than as a surname. As demonstrated in the evidence attached by Applicant, in this context, it is first and foremost primarily linked to Applicant's famous computing platform and the enormous business surrounding it. The following excerpts, taken from the Wikipedia page on WATSON (See Exhibit C), further evidence the **primary** significance WATSON has to the consuming public:

Watson is a question-answering computer system capable of answering questions posed in natural language. The computer system was initially developed to answer questions on the quiz show Jeopardy! and, in 2011, the Watson computer system competed on Jeopardy! winning the first place prize of $1 million.

In February 2013, IBM announced that Watson software system's first commercial application would be for utilization management decisions in lung cancer treatment at Memorial Sloan Kettering Cancer Center in NY.

In recent years, the Watson capabilities have been extended and the way in which Watson works has been changed to take advantage of new deployment models (Watson on IBM Cloud) and evolved machine learning capabilities and optimized hardware available to developers and researchers. It is no longer purely a question answering computing system designed from Q&A pairs but can now 'see', 'hear', 'read', 'talk', 'taste', 'interpret', 'learn' and 'recommend'.

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On June 3, 2014, three new Watson Ecosystem partners were chosen from more than 400 business concepts submitted by teams spanning 18 industries from 43 countries. The winners were Majestyk Apps with their adaptive educational platform, FANG (Friendly Anthropomorphic Networked Genome); Red Ant with their retail sales trainer; and GenieMD with their medical recommendation service.

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IBM CEO Virginia Rometty said she wants Watson to generate $10 billion in annual revenue within ten years.

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In 2015, the engineering firm ENGEO created an online service via the IBM partner program named GoFetchCode. GoFetchCode applies Watson's natural language processing and question-answering capabilities to the International Code Council's 's model building codes.

IBM Watson is being used for several projects relating to education, and has entered partnerships with Pearson Education, Blackboard, Sesame Workshop and Apple.

In its partnership with Pearson, Watson is being made available inside electronic text books to provide natural language, one-on-one tutoring to students on the reading material.

As an individual using the free Watson APIs available to the public, Ashok Goel, a professor at Georgia Tech, used Watson to create a virtual teaching assistant to assist students in his class.

The research group of Sabri Pllana developed an assistant for learning parallel programming using the IBM Watson.

In August 2016, IBM announced it would be using Watson for weather forecasting. Specifically, the company announced they would use Watson to analyze data from over 200,000 Weather Underground personal weather stations, and data from other sources, as a part of project Deep Thunder.

On February 5–6, 2017, tax preparation company H&R Block began nationwide use of a Watson-based program.

In September 2017, IBM announced that with its acquisition of The Weather Company's advertising sales division, and a partnership with advertising neural network Cognitiv, Watson will provide AI-powered advertising solutions.

Consumers are not likely to encounter IBM's WATSON HEALTH computer and medical goods and services and think that WATSON refers to someone's surname. Rather, they are primarily likely to think WATSON refers to Applicant's famous computing system and the very extensive business and wide range of products and services Applicant has developed surrounding the name. The determining factor is the primary (not secondary) significance to the purchasing public. Applicant believes it has well established that the primary significance to the purchasing public of the name WATSON in the context of the mark WATSON HEALTH as applied to Applicant's goods and services, is other than a surname.

Further, the treatment of marks that include additional wording beyond what might be considered a surname, depends on the significance of the non-surname wording. *In re Hutchinson Tech. Inc.,* 852 F.2d 552, 555, 7 USPQ2d 1490, 1493 (Fed. Cir. 1988). In the Hutchinson case, the mark HUTCHINSON TECHNOLOGY for computer components was found to be not primarily merely a surname when the mark was considered as a whole. The Court in Hutchinson stated that the mark sought to be registered must be considered in its entirety and not as two separate parts with each part being evaluated for registrability separately. The Court found "[t]he fatal flaw in the board's analysis is that the mark sought to be registered is not HUTCHINSON or TECHNOLOGY, but HUTCHINSON TECHNOLOGY. The board never considered what the purchasing public would think when confronted with the mark as a whole." *Id.* This is similar to the instant case, where Applicant is applying for the mark WATSON HEALTH, and the Examining Attorney is focusing solely on WATSON in his analysis

and not on the mark as a whole.

It is also worth noting Applicant's other WATSON formative marks for similar goods and services, where the marks were not found to be primarily merely a surname even though the non-surname material was disclaimed:

WATSON EDUCATION – Reg. No 5688407, Reg. Date March 5, 2019 – "EDUCATION" disclaimed;

WATSON EDUCATION – Reg. No. 5759765, Reg. Date May 28, 2019 – "EDUCATION" disclaimed; and

WATSON ANALYTICS – Reg. No. 5403813 Reg. Date February 20, 2018 – "ANALYTICS" disclaimed.

Clearly, in each of these recent cases, it was determined that the primary significance of the mark was other than a surname. Applicant sees no reason why the instant case should be treated any differently. It is respectfully requested that the Examining Attorney reconsider the refusal to register and pass this application to registration in the Principal Register.

Respectfully Submitted,

International Business Machines Corporation

EVIDENCE SECTION

EVIDENCE FILE NAME(S)	
ORIGINAL PDF FILE	evi_70197985-20190715145551700602_._WatsonHealth_ExhibitA.pdf
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DESCRIPTION OF EVIDENCE FILE	online web pages from Wikipedia, NY Times and Webopedia
SIGNATURE SECTION	
RESPONSE SIGNATURE	/Valerie Calloway/
SIGNATORY'S NAME	Valerie Calloway
SIGNATORY'S POSITION	Attorney of record, Ohio bar member
SIGNATORY'S PHONE NUMBER	914-765-7246
DATE SIGNED	07/15/2019
AUTHORIZED SIGNATORY	YES
CONCURRENT APPEAL NOTICE FILED	YES
FILING INFORMATION SECTION	
SUBMIT DATE	Mon Jul 15 18:01:27 EDT 2019
TEAS STAMP	USPTO/RFR-XX.XX.XX.XX-201 90715180127087240-7921259 5-62037dde1bdbd635157ff2a 4438c2d1ee8a08956c77ca2f5 d6646fc350717e1b-N/A-N/A- 20190715145551700602

Request for Reconsideration after Final Action

To the Commissioner for Trademarks:

Application serial no. **79212595** WATSON HEALTH(Standard Characters, see https://tmng-al.uspto.gov/resting2/api/img/79212595/large) has

been amended as follows:

ARGUMENT(S)
In response to the substantive refusal(s), please note the following:

<u>REQUEST FOR RECONSIDERATION</u>

<u>Applicant's Mark is not Primarily Merely a Surname</u>

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Watson is being used via IBM partner program as a Chatterbot to provide the conversation for children's toys.

In 2015, the engineering firm ENGEO created an online service via the IBM partner program named GoFetchCode. GoFetchCode applies Watson's natural language processing and question-answering capabilities to the International Code Council's 's model building codes.

IBM Watson is being used for several projects relating to education, and has entered partnerships with Pearson Education, Blackboard, Sesame Workshop and Apple.

In its partnership with Pearson, Watson is being made available inside electronic text books to provide natural language, one-on-one tutoring to students on the reading material.

As an individual using the free Watson APIs available to the public, Ashok Goel, a professor at Georgia Tech, used Watson to create a virtual teaching assistant to assist students in his class.

The research group of Sabri Pllana developed an assistant for learning parallel programming using the IBM Watson.

In August 2016, IBM announced it would be using Watson for weather forecasting. Specifically, the company announced they would use Watson to analyze data from over 200,000 Weather Underground personal weather stations, and data from other sources, as a part of project Deep Thunder.

On February 5–6, 2017, tax preparation company H&R Block began nationwide use of a Watson-based program.

In September 2017, IBM announced that with its acquisition of The Weather Company's advertising sales division, and a partnership with advertising neural network Cognitiv, Watson will provide AI-powered advertising solutions.

Consumers are not likely to encounter IBM's WATSON HEALTH computer and medical goods and services and think that WATSON refers to someone's surname. Rather, they are primarily likely to think WATSON refers to Applicant's famous computing system and the very extensive business and wide range of products and services Applicant has developed surrounding the name. The determining factor is the primary (not secondary) significance to the purchasing public. Applicant believes it has well established that the primary significance to the purchasing public of the name WATSON in the context of the mark WATSON HEALTH as applied to Applicant's goods and services, is other than a surname.

Further, the treatment of marks that include additional wording beyond what might be considered a surname, depends on the significance of the non-surname wording. *In re Hutchinson Tech. Inc.,* 852 F.2d 552, 555, 7 USPQ2d 1490, 1493 (Fed. Cir. 1988). In the Hutchinson case, the mark HUTCHINSON TECHNOLOGY for computer components was found to be not primarily merely a surname when the mark was considered as a whole. The Court in Hutchinson stated that the mark sought to be registered must be considered in its entirety and not as two separate parts with each part being evaluated for registrability separately. The Court found "[t]he fatal flaw in the board's analysis is that the mark sought to be registered is not HUTCHINSON or TECHNOLOGY, but HUTCHINSON TECHNOLOGY. The board never considered what the purchasing public would think when confronted with the mark as a whole." *Id.* This is similar to the instant case, where Applicant is applying for the mark WATSON HEALTH, and the Examining Attorney is focusing solely on WATSON in his analysis and not on the mark as a whole.

It is also worth noting Applicant's other WATSON formative marks for similar goods and services, where the marks were not found to be primarily merely a surname even though the non-surname material was disclaimed:

WATSON EDUCATION – Reg. No 5688407, Reg. Date March 5, 2019 – "EDUCATION" disclaimed;

WATSON EDUCATION – Reg. No. 5759765, Reg. Date May 28, 2019 – "EDUCATION" disclaimed; and

WATSON ANALYTICS – Reg. No. 5403813 Reg. Date February 20, 2018 – "ANALYTICS" disclaimed.

Clearly, in each of these recent cases, it was determined that the primary significance of the mark was other than a surname. Applicant sees no reason why the instant case should be treated any differently. It is respectfully requested that the Examining Attorney reconsider the refusal to register and pass this application to registration in the Principal Register.

Respectfully Submitted,

International Business Machines Corporation

EVIDENCE

Evidence in the nature of online web pages from Wikipedia, NY Times and Webopedia has been attached.

Original PDF file:

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Evidence-1

Evidence-2

Original PDF file:

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Evidence-5

Evidence-6

Evidence-7

Evidence-8

Evidence-9

Evidence-10

Evidence-11

Evidence-12

Evidence-13

Evidence-14

Evidence-15

Evidence-16

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Evidence-2

SIGNATURE(S)

Request for Reconsideration Signature

Signature: /Valerie Calloway/   Date: 07/15/2019

Signatory's Name: Valerie Calloway

Signatory's Position: Attorney of record, Ohio bar member

Signatory's Phone Number: 914-765-7246

The signatory has confirmed that he/she is an attorney who is a member in good standing of the bar of the highest court of a U.S. state, which includes the District of Columbia, Puerto Rico, and other federal territories and possessions; and he/she is currently the owner's/holder's attorney or an associate thereof; and to the best of his/her knowledge, if prior to his/her appointment another U.S. attorney or a Canadian attorney/agent

not currently associated with his/her company/firm previously represented the owner/holder in this matter: (1) the owner/holder has filed or is concurrently filing a signed revocation of or substitute power of attorney with the USPTO; (2) the USPTO has granted the request of the prior representative to withdraw; (3) the owner/holder has filed a power of attorney appointing him/her in this matter; or (4) the owner's/holder's appointed U.S. attorney or Canadian attorney/agent has filed a power of attorney appointing him/her as an associate attorney in this matter.

The applicant is filing a Notice of Appeal in conjunction with this Request for Reconsideration.

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IBM announces the 2019 list of Women Leaders in AI. Explore stories of women across the world leading change and innovation through AI with IBM **Watson**.
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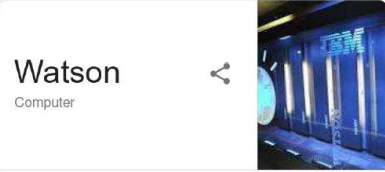
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Watson is a question-answering computer system capable of answering questions posed in natural language, developed in IBM's DeepQA project by a research team led by principal investigator David Ferrucci. Watson was named after IBM's first CEO, industrialist Thomas J. Watson. Wikipedia

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Computer Wins on 'Jeopardy!': Trivial, It's Not
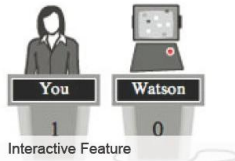

Carol Kaelson/Jeopardy Productions Inc., via Associated Press

Two "Jeopardy!" champions, Ken Jennings, left, and Brad Rutter, competed against a computer named Watson, which proved adept at buzzing in quickly.

By JOHN MARKOFF
Published: February 16, 2011

YORKTOWN HEIGHTS, N.Y. — In the end, the humans on "Jeopardy!" surrendered meekly.

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ArtsBeat Blog: Computer Botches Geography on 'Jeopardy!' (February 15, 2011)

Facing certain defeat at the hands of a room-size I.B.M. computer on Wednesday evening, Ken Jennings, famous for winning 74 games in a row on the TV quiz show, acknowledged the obvious. "I, for one, welcome our new computer overlords," he wrote on his video screen, borrowing a line from a "Simpsons" episode.

From now on, if the answer is "the computer champion on 'Jeopardy!,'" the question will be, "What is Watson?"

For I.B.M., the showdown was not merely a well-publicized stunt and a $1 million prize, but proof that the company has taken a big step toward a world in which intelligent machines will understand and respond to humans, and perhaps inevitably, replace some of them.

Watson, specifically, is a "question answering machine" of a type that artificial intelligence researchers have struggled with for decades — a computer akin to the one on "Star Trek" that can understand questions posed in natural language and answer them.

Watson showed itself to be imperfect, but researchers at I.B.M. and other companies are already developing uses for Watson's technologies that could have a significant impact on the way doctors practice and consumers buy products.

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"Cast your mind back 20 years and who would have
thought this was possible?" said Edward Feigenbaum, a
Stanford University computer scientist and a pioneer in the
field.

In its "Jeopardy!" project, I.B.M. researchers were tackling
a game that requires not only encyclopedic recall, but also
the ability to untangle convoluted and often opaque
statements, a modicum of luck, and quick, strategic button
pressing.

The contest, which was taped in January here at the
company's T. J. Watson Research Laboratory before an
audience of I.B.M. executives and company clients, played
out in three televised episodes concluding Wednesday. At
the end of the first day, Watson was in a tie with Brad
Rutter, another ace human player, at $5,000 each, with Mr.
Jennings trailing with $2,000.

But on the second day, Watson went on a tear. By night's
end, Watson had a commanding lead with a total of
$35,734, compared with Mr. Rutter's $10,400 and Mr.
Jennings's $4,800.

Victory was not cemented until late in the third match, when Watson was in Nonfiction.
"Same category for $1,200," it said in a manufactured tenor, and lucked into a Daily
Double. Mr. Jennings grimaced.

Even later in the match, however, had Mr. Jennings won another key Daily Double it
might have come down to Final Jeopardy, I.B.M. researchers acknowledged.

The final tally was $77,147 to Mr. Jennings's $24,000 and Mr. Rutter's $21,600.

More than anything, the contest was a vindication for the academic field of artificial
intelligence, which began with great promise in the 1960s with the vision of creating a
thinking machine and which became the laughingstock of Silicon Valley in the 1980s,
when a series of heavily financed start-up companies went bankrupt.

Despite its intellectual prowess, Watson was by no means omniscient. On Tuesday evening
during Final Jeopardy, the category was U.S. Cities and the clue was: "Its largest airport is
named for a World War II hero; its second largest for a World War II battle."

Watson drew guffaws from many in the television audience when it responded "What is
Toronto?????"

The string of question marks indicated that the system had very low confidence in its
response, I.B.M. researchers said, but because it was Final Jeopardy, it was forced to give a
response. The machine did not suffer much damage. It had wagered just $947 on its result.
(The correct answer is, "What is Chicago?")

"We failed to deeply understand what was going on there," said David Ferrucci, an I.B.M.
researcher who led the development of Watson. "The reality is that there's lots of data
where the title is U.S. cities and the answers are countries, European cities, people,
mayors. Even though it says U.S. cities, we had very little confidence that that's the
distinguishing feature."

The researchers also acknowledged that the machine had benefited from the "buzzer
factor."

Both Mr. Jennings and Mr. Rutter are accomplished at anticipating the light that signals it
is possible to "buzz in," and can sometimes get in with virtually zero lag time. The danger

is to buzz too early, in which case the contestant is penalized and "locked out" for roughly a quarter of a second.

Watson, on the other hand, does not anticipate the light, but has a weighted scheme that allows it, when it is highly confident, to hit the buzzer in as little as 10 milliseconds, making it very hard for humans to beat. When it was less confident, it took longer to buzz in. In the second round, Watson beat the others to the buzzer in 24 out of 30 Double Jeopardy questions.

"It sort of wants to get beaten when it doesn't have high confidence," Dr. Ferrucci said. "It doesn't want to look stupid."

Both human players said that Watson's button pushing skill was not necessarily an unfair advantage. "I beat Watson a couple of times," Mr. Rutter said.

When Watson did buzz in, it made the most of it. Showing the ability to parse language, it responded to, "A recent best seller by Muriel Barbery is called 'This of the Hedgehog,' " with "What is Elegance?"

It showed its facility with medical diagnosis. With the answer: "You just need a nap. You don't have this sleep disorder that can make sufferers nod off while standing up," Watson replied, "What is narcolepsy?"

The coup de grâce came with the answer, "William Wilkenson's 'An Account of the Principalities of Wallachia and Moldavia' inspired this author's most famous novel." Mr. Jennings wrote, correctly, Bram Stoker, but realized that he could not catch up with Watson's winnings and wrote out his surrender.

Both players took the contest and its outcome philosophically.

"I had a great time and I would do it again in a heartbeat," said Mr. Jennings. "It's not about the results; this is about being part of the future."

For I.B.M., the future will happen very quickly, company executives said. On Thursday it plans to announce that it will collaborate with Columbia University and the University of Maryland to create a physician's assistant service that will allow doctors to query a cybernetic assistant. The company also plans to work with Nuance Communications Inc. to add voice recognition to the physician's assistant, possibly making the service available in as little as 18 months.

"I have been in medical education for 40 years and we're still a very memory-based curriculum," said Dr. Herbert Chase, a professor of clinical medicine at Columbia University who is working with I.B.M. on the physician's assistant. "The power of Watson-like tools will cause us to reconsider what it is we want students to do."

I.B.M. executives also said they are in discussions with a major consumer electronics retailer to develop a version of Watson, named after I.B.M.'s founder, Thomas J. Watson, that would be able to interact with consumers on a variety of subjects like buying decisions and technical support.

Dr. Ferrucci sees none of the fears that have been expressed by theorists and science fiction writers about the potential of computers to usurp humans.

"People ask me if this is HAL," he said, referring to the computer in "2001: A Space Odyssey." "HAL's not the focus; the focus is on the computer on 'Star Trek,' where you have this intelligent information seek dialogue, where you can ask follow-up questions and the computer can look at all the evidence and tries to ask follow-up questions. That's very cool."

This article has been revised to reflect the following correction:

Correction: February 24, 2011

An article last Thursday about the I.B.M. computer Watson misidentified the academic field vindicated by Watson's besting of two human opponents on "Jeopardy!" It is artificial intelligence — not computer science, a broader field that includes artificial intelligence.

A version of this article appeared in print on February 17, 2011, on page A1 of the New York edition.

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WIKIPEDIA

Watson

Watson may refer to:

Companies

- Actavis, a pharmaceutical company formerly known as Watson Pharmaceuticals
- A.S. Watson Group, retail division of Hutchison Whampoa
- Thomas J. Watson Research Center, IBM research center
- Watson Systems, maker of shopping trolleys
- A. J. Watson, IndyCar roadster chassis constructor

Computing

- Watson (computer), an IBM supercomputer which won the game show *Jeopardy!*
- Dr. Watson (debugger), the internal debugger for the Windows platform
- Intellext Watson, an application for the Windows platform
- Karelia Watson, an application for the Macintosh platform

Name

- Watson (surname)
- Watson (given name)

Fictional characters

- Dr. Watson, a character in *Sherlock Holmes* stories
- Mary Jane Watson, a Spider-Man character
- Esme Watson, a character in Australian television program *A Country Practice*

Places

Antarctica

- Watson Peninsula, South Orkney Islands

Australia

- Watson, Australian Capital Territory
  - Division of Watson, an electoral district of the Australian House of Representatives
- Watson, South Australia, a stop on the Trans-Australian Railway
- Watson Island (Queensland), an island in Howick Group National Park, Queensland, Australia

Canada

Contents

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Fictional characters

Places

Other

See also

- Watson, Saskatchewan
- Watson Island (British Columbia), an island in the Queen Charlotte Strait in British Columbia, Canada
- Watson Lake, Yukon

United States

- Watson, Alabama
- Watson, Arkansas
- Watson Island, a neighborhood in Miami, Florida
- Watson, Illinois
- Watson, Indiana
- Watson, Iowa
- Watson, Louisiana
- Watson, Minnesota
- Watson, Missouri
- Watson, New York
- Watson, Ohio
- Watson, Oklahoma
- Watson, West Virginia
- Watson Creek, a stream in Minnesota
- Watson House (Chincoteague Island, Virginia)

Other

- Jeannette K. Watson Fellowship, internship grant
- Thomas J. Watson Fellowship, travel grant
- The Watson Twins, an indie country-rock group
- George Watson's College, a school in Edinburgh, Scotland
- USS *Watson* (DD-482), a proposed United States Navy destroyer canceled in 1946
- Watson (crater), a lunar impact crater on the far side of the Moon

See also

- Justice Watson (disambiguation)

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Watson (computer)

Watson is a question-answering computer system capable of answering questions posed in natural language,[2] developed in IBM's DeepQA project by a research team led by principal investigator David Ferrucci.[3] Watson was named after IBM's first CEO, industrialist Thomas J. Watson.[4][5]

The computer system was initially developed to answer questions on the quiz show *Jeopardy!*[6] and, in 2011, the Watson computer system competed on *Jeopardy!* against legendary champions Brad Rutter and Ken Jennings[4][7] winning the first place prize of $1 million.[8]

In February 2013, IBM announced that Watson software system's first commercial application would be for utilization management decisions in lung cancer treatment at Memorial Sloan Kettering Cancer Center, New York City, in conjunction with WellPoint (now Anthem).[9] IBM Watson's former business chief, Manoj Saxena, says that 90% of nurses in the field who use Watson now follow its guidance.[10]
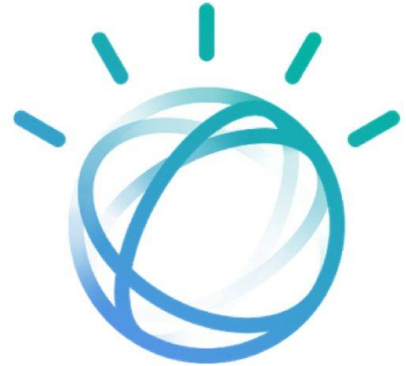
Watson's avatar, inspired by the IBM "Smarter Planet" logo[1]

Contents
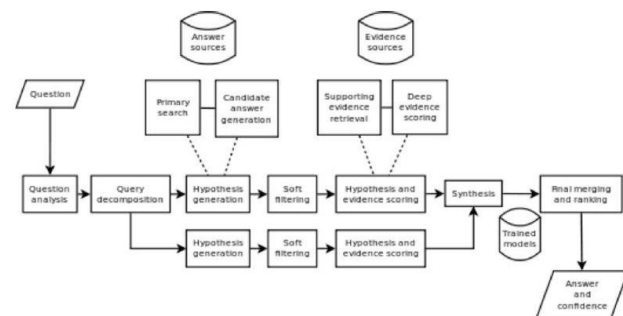
Description

Watson was created as a question answering (QA) computing system that IBM built to apply advanced natural language processing, information retrieval, knowledge representation, automated reasoning, and machine learning technologies to the field of open domain question answering.[2]

The high-level architecture of IBM's DeepQA used in Watson[11]

> The key difference between QA technology and document search is that document search takes a keyword query and returns a list of documents, ranked in order of relevance to the query (often based on popularity and page ranking), while QA technology takes a question expressed in natural language, seeks to understand it in much greater detail, and returns a precise answer to the question.[12]

When created, IBM stated that, "more than 100 different techniques are used to analyze natural language, identify sources, find and generate hypotheses, find and score evidence, and merge and rank hypotheses."[13]

In recent years, the Watson capabilities have been extended and the way in which Watson works has been changed to take advantage of new deployment models (Watson on IBM Cloud) and evolved machine learning capabilities and optimised hardware available to developers and researchers. It is no longer purely a question answering (QA) computing system designed from Q&A pairs but can now 'see', 'hear', 'read', 'talk', 'taste', 'interpret', 'learn' and 'recommend'.

Software

Watson uses IBM's DeepQA software and the Apache UIMA (Unstructured Information Management Architecture) framework implementation. The system was written in various languages, including Java, C++, and Prolog, and runs on the SUSE Linux Enterprise Server 11 operating system using the Apache Hadoop framework to provide distributed computing.[14][15][16]

Hardware

The system is workload-optimized, integrating massively parallel POWER7 processors and built on IBM's *DeepQA* technology,[17] which it uses to generate hypotheses, gather massive evidence, and analyze data.[2] Watson employs a cluster of ninety IBM Power 750 servers, each of which uses a 3.5 GHz POWER7 eight-core processor, with four threads per core. In total, the system has 2,880 POWER7 processor threads and 16 terabytes of RAM.[17]

According to John Rennie, Watson can process 500 gigabytes, the equivalent of a million books, per second.[18] IBM's master inventor and senior consultant, Tony Pearson, estimated Watson's hardware cost at about three million dollars.[19] Its Linpack performance stands at 80 TeraFLOPs, which is about half as fast as the cut-off line for the Top 500 Supercomputers list.[20] According to Rennie, all content was stored in Watson's RAM for the Jeopardy game because data stored on hard drives would be too slow to be competitive with human Jeopardy champions.[18]

Data

The sources of information for Watson include encyclopedias, dictionaries, thesauri, newswire articles and literary works. Watson also used databases, taxonomies and ontologies. Specifically, DBPedia, WordNet and Yago were used.[21] The IBM team provided Watson with millions of documents, including dictionaries, encyclopedias and other reference material that it could use to build its knowledge.[22]

Operation

Watson parses questions into different keywords and sentence fragments in order to find statistically related phrases.[22] Watson's main innovation was not in the creation of a new algorithm for this operation but rather its ability to quickly execute hundreds of proven language analysis algorithms simultaneously.[22][24] The more algorithms that find the same answer independently the more likely Watson is to be correct.[22] Once Watson has a small number of potential solutions, it is able to check against its database to ascertain whether the solution makes sense or not.[22]

Comparison with human players

Watson's basic working principle is to parse keywords in a clue while searching for related terms as responses. This gives Watson some advantages and disadvantages compared with human *Jeopardy!* players.[25] Watson has deficiencies in understanding the contexts of the clues. As a result, human players usually generate responses faster than Watson, especially to short clues.[22] Watson's programming prevents it from using the popular tactic of buzzing before it is sure of its response.[22] Watson has consistently better reaction time on the buzzer once it has generated a response, and is immune to human players' psychological tactics, such as jumping between categories on every clue.[22][26]

In a sequence of 20 mock games of *Jeopardy*, human participants were able to use the average six to seven seconds that Watson needed to hear the clue and decide whether to signal for responding.[22] During that time, Watson also has to evaluate the response and determine whether it is sufficiently

> The computer's techniques for unravelling *Jeopardy!* clues sounded just like mine. That machine zeroes in on keywords in a clue then combs its memory (in Watson's case, a 15-terabyte databank of human knowledge) for clusters of associations with those words. It rigorously checks the top hits against all the contextual information it can muster: the category name; the kind of answer being sought; the time, place, and gender hinted at in the clue; and so on. And when it feels "sure" enough, it decides to

confident in the result to signal.[22] Part of the system used to win the *Jeopardy!* contest was the electronic circuitry that receives the "ready" signal and then examined whether Watson's confidence level was great enough to activate the buzzer. Given the speed of this circuitry compared to the speed of human reaction times, Watson's reaction time was faster than the human contestants except when the human anticipated (instead of reacted to) the ready signal.[27] After signaling, Watson speaks with an electronic voice and gives the responses in *Jeopardy!*'s question format.[22] Watson's voice was synthesized from recordings that actor Jeff Woodman made for an IBM text-to-speech program in 2004.[28]

The *Jeopardy!* staff used different means to notify Watson and the human players when to buzz,[27] which was critical in many rounds.[26] The humans were notified by a light, which took them tenths of a second to perceive.[29][30] Watson was notified by an electronic signal and could activate the buzzer within about eight milliseconds.[31] The humans tried to compensate for the perception delay by anticipating the light,[32] but the variation in the anticipation time was generally too great to fall within Watson's response time.[26] Watson did not attempt to anticipate the notification signal.[30][32]

buzz. This is all an instant, intuitive process for a human *Jeopardy!* player, but I felt convinced that under the hood my brain was doing more or less the same thing.

— Ken Jennings[23]

Ken Jennings, Watson, and Brad Rutter in their *Jeopardy!* exhibition match.

History

Development

Since Deep Blue's victory over Garry Kasparov in chess in 1997, IBM had been on the hunt for a new challenge. In 2004, IBM Research manager Charles Lickel, over dinner with coworkers, noticed that the restaurant they were in had fallen silent. He soon discovered the cause of this evening hiatus: Ken Jennings, who was then in the middle of his successful 74-game run on *Jeopardy!*. Nearly the entire restaurant had piled toward the televisions, mid-meal, to watch the phenomenon. Intrigued by the quiz show as a possible challenge for IBM, Lickel passed the idea on, and in 2005, IBM Research executive Paul Horn backed Lickel up, pushing for someone in his department to take up the challenge of playing *Jeopardy!* with an IBM system. Though he initially had trouble finding any research staff willing to take on what looked to be a much more complex challenge than the wordless game of chess, eventually David Ferrucci took him up on the offer.[33] In competitions managed by the United States government, Watson's predecessor, a system named Piquant, was usually able to respond correctly to only about 35% of clues and often required several minutes to respond.[34][35][36] To compete successfully on *Jeopardy!*, Watson would need to respond in no more than a few seconds, and at that time, the problems posed by the game show were deemed to be impossible to solve.[22]

In initial tests run during 2006 by David Ferrucci, the senior manager of IBM's Semantic Analysis and Integration department, Watson was given 500 clues from past *Jeopardy!* programs. While the best real-life competitors buzzed in half the time and responded correctly to as many as 95% of clues, Watson's first pass could get only about 15% correct. During 2007, the IBM team was given three to five years and a staff of 15 people to solve the problems.[22] By 2008, the developers had advanced Watson such that it could compete with *Jeopardy!* champions.[22] By February 2010, Watson could beat human *Jeopardy!* contestants on a regular basis.[37]

During the game, Watson had access to 200 million pages of structured and unstructured content consuming four terabytes of disk storage[14] including the full text of the 2011 edition of Wikipedia,[38] but was not connected to the Internet.[39][22] For each clue, Watson's three most probable responses were displayed on the television screen. Watson consistently outperformed its human opponents on the game's signaling device, but had trouble in a few categories, notably those having short clues containing only a few words.

Although the system is primarily an IBM effort, Watson's development involved faculty and graduate students from Rensselaer Polytechnic Institute, Carnegie Mellon University, University of Massachusetts Amherst, the University of Southern California's Information Sciences Institute, the University of Texas at Austin, the Massachusetts Institute of Technology, and the University of Trento,[11] as well as students from New York Medical College.[40]

Jeopardy!

Preparation

In 2008, IBM representatives communicated with *Jeopardy!* executive producer Harry Friedman about the possibility of having Watson compete against Ken Jennings and Brad Rutter, two of the most successful contestants on the show, and the program's producers agreed.[22][41] Watson's differences with human players had generated conflicts between IBM and *Jeopardy!* staff during the planning of the competition.[25] IBM repeatedly expressed concerns that the show's writers would exploit Watson's cognitive deficiencies when writing the clues, thereby turning the game into a Turing test. To alleviate that claim, a third party randomly picked the clues from previously written shows that were never broadcast.[25] *Jeopardy!* staff also showed concerns over Watson's reaction time on the buzzer. Originally Watson

Watson demo at an IBM booth at a trade show

signalled electronically, but show staff requested that it press a button physically, as the human contestants would.[42] Even with a robotic "finger" pressing the buzzer, Watson remained faster than its human competitors. Ken Jennings noted, "If you're trying to win on the show, the buzzer is all", and that Watson "can knock out a microsecond-precise buzz every single time with little or no variation. Human reflexes can't compete with computer circuits in this regard." [26][32][43] Stephen Baker, a journalist who recorded Watson's development in his book *Final Jeopardy*, reported that the conflict between IBM and *Jeopardy!* became so serious in May 2010 that the competition was almost canceled.[25] As part of the preparation, IBM constructed a mock set in a conference room at one of its technology sites to model the one used on *Jeopardy!*. Human players, including former *Jeopardy!* contestants, also participated in mock games against Watson with Todd Alan Crain of *The Onion* playing host.[22] About 100 test matches were conducted with Watson winning 65% of the games.[44]

To provide a physical presence in the televised games, Watson was represented by an "avatar" of a globe, inspired by the IBM "smarter planet" symbol. Jennings described the computer's avatar as a "glowing blue ball criss-crossed by 'threads' of thought—42 threads, to be precise",[23] and stated that the number of thought threads in the avatar was an in-joke referencing the significance of the number 42 in Douglas Adams' *Hitchhiker's Guide to the Galaxy*.[23] Joshua Davis, the artist who designed the avatar for the project, explained to Stephen Baker that there are 36 triggerable states that Watson was able to use throughout the game to show its confidence in responding to a clue correctly; he had hoped to be able to find forty-two, to add another level to the *Hitchhiker's Guide* reference, but he was unable to pinpoint

enough game states.[45]

A practice match was recorded on January 13, 2011, and the official matches were recorded on January 14, 2011. All participants maintained secrecy about the outcome until the match was broadcast in February.[46]

Practice match

In a practice match before the press on January 13, 2011, Watson won a 15-question round against Ken Jennings and Brad Rutter with a score of $4,400 to Jennings's $3,400 and Rutter's $1,200, though Jennings and Watson were tied before the final $1,000 question. None of the three players responded incorrectly to a clue.[47]

First match

The first round was broadcast February 14, 2011, and the second round, on February 15, 2011. The right to choose the first category had been determined by a draw won by Rutter.[48] Watson, represented by a computer monitor display and artificial voice, responded correctly to the second clue and then selected the fourth clue of the first category, a deliberate strategy to find the Daily Double as quickly as possible.[49] Watson's guess at the Daily Double location was correct. At the end of the first round, Watson was tied with Rutter at $5,000; Jennings had $2,000.[48]

Watson's performance was characterized by some quirks. In one instance, Watson repeated a reworded version of an incorrect response offered by Jennings. (Jennings said "What are the '20s?" in reference to the 1920s. Then Watson said "What is 1920s?") Because Watson could not recognize other contestants' responses, it did not know that Jennings had already given the same response. In another instance, Watson was initially given credit for a response of "What is a leg?" after Jennings incorrectly responded "What is: he only had one hand?" to a clue about George Eyser (the correct response was, "What is: he's missing a leg?"). Because Watson, unlike a human, could not have been responding to Jennings's mistake, it was decided that this response was incorrect. The broadcast version of the episode was edited to omit Trebek's original acceptance of Watson's response.[50] Watson also demonstrated complex wagering strategies on the Daily Doubles, with one bet at $6,435 and another at $1,246.[51] Gerald Tesauro, one of the IBM researchers who worked on Watson, explained that Watson's wagers were based on its confidence level for the category and a complex regression model called the Game State Evaluator.[52]

Watson took a commanding lead in Double Jeopardy!, correctly responding to both Daily Doubles. Watson responded to the second Daily Double correctly with a 32% confidence score.[51]

Although it wagered only $947 on the clue, Watson was the only contestant to miss the Final Jeopardy! response in the category U.S. CITIES ("Its largest airport was named for a World War II hero; its second largest, for a World War II battle"). Rutter and Jennings gave the correct response of Chicago, but Watson's response was "What is Toronto?????" [51][53][54] Ferrucci offered reasons why Watson would appear to have guessed a Canadian city: categories only weakly suggest the type of response desired, the phrase "U.S. city" did not appear in the question, there are cities named Toronto in the U.S., and Toronto in Ontario has an American League baseball team.[55] Dr. Chris Welty, who also worked on Watson, suggested that it may not have been able to correctly parse the second part of the clue, "its second largest, for a World War II battle" (which was not a standalone clause despite it following a semicolon, and required context to understand that it was referring to a second-largest *airport*).[56] Eric Nyberg, a professor at Carnegie Mellon University and a member of the development team, stated that the error occurred because Watson does not possess the comparative knowledge to discard that potential response as not viable.[54] Although not displayed to the audience as with non-Final Jeopardy! questions, Watson's second choice was Chicago. Both Toronto and Chicago were well below Watson's confidence threshold, at 14% and 11% respectively. (This lack of confidence was the reason for the multiple

question marks in Watson's response.)

The game ended with Jennings with $4,800, Rutter with $10,400, and Watson with $35,734.[51]

Second match

During the introduction, Trebek (a Canadian native) joked that he had learned Toronto was a U.S. city, and Watson's error in the first match prompted an IBM engineer to wear a Toronto Blue Jays jacket to the recording of the second match.[57]

In the first round, Jennings was finally able to choose a Daily Double clue,[58] while Watson responded to one Daily Double clue incorrectly for the first time in the Double Jeopardy! Round.[59] After the first round, Watson placed second for the first time in the competition after Rutter and Jennings were briefly successful in increasing their dollar values before Watson could respond.[59][60] Nonetheless, the final result ended with a victory for Watson with a score of $77,147, besting Jennings who scored $24,000 and Rutter who scored $21,600.[61]

Final outcome

The prizes for the competition were $1 million for first place (Watson), $300,000 for second place (Jennings), and $200,000 for third place (Rutter). As promised, IBM donated 100% of Watson's winnings to charity, with 50% of those winnings going to World Vision and 50% going to World Community Grid.[62] Similarly, Jennings and Rutter donated 50% of their winnings to their respective charities.[63]

In acknowledgment of IBM and Watson's achievements, Jennings made an additional remark in his Final Jeopardy! response: "I for one welcome our new computer overlords", echoing a similar memetic reference to the episode "Deep Space Homer" on *The Simpsons*, in which TV news presenter Kent Brockman speaks of welcoming "our new insect overlords".[64][65] Jennings later wrote an article for *Slate*, in which he stated:

> IBM has bragged to the media that Watson's question-answering skills are good for more than annoying Alex Trebek. The company sees a future in which fields like medical diagnosis, business analytics, and tech support are automated by question-answering software like Watson. Just as factory jobs were eliminated in the 20th century by new assembly-line robots, Brad and I were the first knowledge-industry workers put out of work by the new generation of 'thinking' machines. 'Quiz show contestant' may be the first job made redundant by Watson, but I'm sure it won't be the last.[23]

Philosophy

Philosopher John Searle argues that Watson—despite impressive capabilities—cannot actually think.[66] Drawing on his Chinese room thought experiment, Searle claims that Watson, like other computational machines, is capable only of manipulating symbols, but has no ability to understand the meaning of those symbols; however, Searle's experiment has its detractors.[67]

Match against members of the United States Congress

On February 28, 2011, Watson played an untelevised exhibition match of *Jeopardy!* against members of the United States House of Representatives. In the first round, Rush D. Holt, Jr. (D-NJ, a former *Jeopardy!* contestant), who was challenging the computer with Bill Cassidy (R-LA, later Senator from Louisiana), led with Watson in second place.

However, combining the scores between all matches, the final score was $40,300 for Watson and $30,000 for the congressional players combined.[68]

IBM's Christopher Padilla said of the match, "The technology behind Watson represents a major advancement in computing. In the data-intensive environment of government, this type of technology can help organizations make better decisions and improve how government helps its citizens."[68]

Current and future applications

According to IBM, "The goal is to have computers start to interact in natural human terms across a range of applications and processes, understanding the questions that humans ask and providing answers that humans can understand and justify."[37] It has been suggested by Robert C. Weber, IBM's general counsel, that Watson may be used for legal research.[69] The company also intends to use Watson in other information-intensive fields, such as telecommunications, financial services and government.[70]

Watson is based on commercially available IBM Power 750 servers that have been marketed since February 2010. IBM also intends to market the DeepQA software to large corporations, with a price in the millions of dollars, reflecting the $1 million needed to acquire a server that meets the minimum system requirement to operate Watson. IBM expects the price to decrease substantially within a decade as the technology improves.[22]

Commentator Rick Merritt said that "there's another really important reason why it is strategic for IBM to be seen very broadly by the American public as a company that can tackle tough computer problems. A big slice of [IBM's profit] comes from selling to the U.S. government some of the biggest, most expensive systems in the world."[71]

In 2013, it was reported that three companies were working with IBM to create apps embedded with Watson technology. Fluid is developing an app for retailers, one called "The North Face", which is designed to provide advice to online shoppers. Welltok is developing an app designed to give people advice on ways to engage in activities to improve their health. MD Buyline is developing an app for the purpose of advising medical institutions on equipment procurement decisions.[72][73]

In November 2013, IBM announced it would make Watson's API available to software application providers, enabling them to build apps and services that are embedded in Watson's capabilities. To build out its base of partners who create applications on the Watson platform, IBM consults with a network of venture capital firms, which advise IBM on which of their portfolio companies may be a logical fit for what IBM calls the Watson Ecosystem. Thus far, roughly 800 organizations and individuals have signed up with IBM, with interest in creating applications that could use the Watson platform.[74]

On January 30, 2013, it was announced that Rensselaer Polytechnic Institute would receive a successor version of Watson, which would be housed at the Institute's technology park and be available to researchers and students.[75] By summer 2013, Rensselaer had become the first university to receive a Watson computer.[76]

On February 6, 2014, it was reported that IBM plans to invest $100 million in a 10-year initiative to use Watson and other IBM technologies to help countries in Africa address development problems, beginning with healthcare and education.[77]

On June 3, 2014, three new Watson Ecosystem partners were chosen from more than 400 business concepts submitted by teams spanning 18 industries from 43 countries. "These bright and enterprising organizations have discovered innovative ways to apply Watson that can deliver demonstrable business benefits", said Steve Gold, vice president, IBM

Watson Group. The winners were Majestyk Apps with their adaptive educational platform, FANG (Friendly Anthropomorphic Networked Genome);[78][79] Red Ant with their retail sales trainer;[80] and GenieMD[81] with their medical recommendation service.[82]

On July 9, 2014, Genesys Telecommunications Laboratories announced plans to integrate Watson to improve their customer experience platform, citing the sheer volume of customer data to analyze is staggering.[83]

Watson has been integrated with databases including *Bon Appétit* magazine to perform a recipe generating platform.[84]

Watson is being used by Decibel, a music discovery startup, in its app MusicGeek which uses the supercomputer to provide music recommendations to its users. The use of the artificial intelligence of Watson has also been found in the hospitality industry. GoMoment uses Watson for its Rev1 app, which gives hotel staff a way to quickly respond to questions from guests.[85] Arria NLG has built an app that helps energy companies stay within regulatory guidelines, making it easier for managers to make sense of thousands of pages of legal and technical jargon.

OmniEarth, Inc. uses Watson computer vision services to analyze satellite and aerial imagery, along with other municipal data, to infer water usage on a property-by-property basis, helping water districts in drought-stricken California improve water conservation efforts.[86]

In September 2016, Condé Nast has started using IBM's Watson to help build and strategize social influencer campaigns for brands. Using software built by IBM and Influential, Condé Nast's clients will be able to know which influencer's demographics, personality traits and more best align with a marketer and the audience it is targeting.[87]

In February 2017, Rare Carat, a New York City-based startup and e-commerce platform for buying diamonds and diamond rings, introduced an IBM Watson-powered artificial intelligence chatbot called "Rocky" to assist novice diamond buyers through the daunting process of purchasing a diamond. As part of the IBM Global Entrepreneur Program, Rare Carat received the assistance of IBM in the development of the Rocky Chat Bot.[88][89][90] In May 2017, IBM partnered with the Pebble Beach Company to use Watson as a concierge.[91] Watson's artificial intelligence was added to an app developed by Pebble Beach and was used to guide visitors around the resort. The mobile app was designed by IBM iX and hosted on the IBM Cloud. It uses Watson's Conversation applications programming interface.

In November 2017, in Mexico City, the Experience Voices of Another Time was opened at the National Museum of Anthropology using IBM Watson as an alternative to visiting a museum.[92]

Healthcare

In healthcare, Watson's natural language, hypothesis generation, and evidence-based learning capabilities are being investigated to see how Watson may contribute to clinical decision support systems and the increase in Artificial intelligence in healthcare for use by medical professionals.[93] To aid physicians in the treatment of their patients, once a physician has posed a query to the system describing symptoms and other related factors, Watson first parses the input to identify the most important pieces of information; then mines patient data to find facts relevant to the patient's medical and hereditary history; then examines available data sources to form and test hypotheses;[93] and finally provides a list of individualized, confidence-scored recommendations.[94] The sources of data that Watson uses for analysis can include treatment guidelines, electronic medical record data, notes from healthcare providers, research materials, clinical studies, journal articles and patient information.[93] Despite being developed and marketed as a "diagnosis and treatment advisor", Watson has never been actually involved in the medical diagnosis process, only in

assisting with identifying treatment options for patients who have already been diagnosed.[95]

In February 2011, it was announced that IBM would be partnering with Nuance Communications for a research project to develop a commercial product during the next 18 to 24 months, designed to exploit Watson's clinical decision support capabilities. Physicians at Columbia University would help to identify critical issues in the practice of medicine where the system's technology may be able to contribute, and physicians at the University of Maryland would work to identify the best way that a technology like Watson could interact with medical practitioners to provide the maximum assistance.[96]

In September 2011, IBM and WellPoint (now Anthem) announced a partnership to utilize Watson's data crunching capability to help suggest treatment options to physicians.[97] Then, in February 2013, IBM and WellPoint gave Watson its first commercial application, for utilization management decisions in lung cancer treatment at Memorial Sloan–Kettering Cancer Center.[9]

IBM announced a partnership with Cleveland Clinic in October 2012. The company has sent Watson to the Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, where it will increase its health expertise and assist medical professionals in treating patients. The medical facility will utilize Watson's ability to store and process large quantities of information to help speed up and increase the accuracy of the treatment process. "Cleveland Clinic's collaboration with IBM is exciting because it offers us the opportunity to teach Watson to 'think' in ways that have the potential to make it a powerful tool in medicine", said C. Martin Harris, MD, chief information officer of Cleveland Clinic.[98]

In 2013, IBM and MD Anderson Cancer Center began a pilot program to further the center's "mission to eradicate cancer".[99][100] However, after spending $62 million, the project did not meet its goals and it has been stopped.[101]

On February 8, 2013, IBM announced that oncologists at the Maine Center for Cancer Medicine and Westmed Medical Group in New York have started to test the Watson supercomputer system in an effort to recommend treatment for lung cancer.[102]

On July 29, 2016, IBM and Manipal Hospitals[103][104][105](a leading hospital chain in India), announced launch of IBM Watson for Oncology, for cancer patients. This product provides information and insights to physicians and cancer patients to help them identify personalized, evidence-based cancer care options. Manipal Hospitals is the second hospital[106] in the world to adopt this technology and first in the world to offer it to patients online as an expert second opinion through their website.[103][107]. Manipal has discontinued this contract on 2018, December.

On January 7, 2017, IBM and Fukoku Mutual Life Insurance entered into a contract for IBM to deliver analysis to compensation payouts via its IBM Watson Explorer AI, this resulted in the loss of 34 jobs and the company said it would speed up compensation payout analysis via analysing claims and medical record and increase productivity by 30%. The company also said it would save ¥140m in running costs.[108]

It is said that IBM Watson will be carrying the knowledge-base of 1000 cancer specialists which will bring a revolution in the field of healthcare. IBM is regarded as a disruptive innovation. However the stream of oncology is still in its nascent stage.[109]

Several startups in the healthcare space have been effectively using seven business model archetypes to take solutions based on IBM Watson to the marketplace. These archetypes depends on the value generate for the target user (e.g. patient focus vs. healthcare provider and payer focus) and value capturing mechanisms (e.g. providing information or connecting stakeholders).[110]

In 2019 Eliza Strickland calls "the Watson Health story [...] a cautionary tale of hubris and hype" and provides a "representative sample of projects" with their status.[111]

IBM Watson Group

On January 9, 2014 IBM announced it was creating a business unit around Watson, led by senior vice president Michael Rhodin.[112] IBM Watson Group will have headquarters in New York's Silicon Alley and will employ 2,000 people. IBM has invested $1 billion to get the division going. Watson Group will develop three new cloud-delivered services: Watson Discovery Advisor, Watson Engagement Advisor, and Watson Explorer. Watson Discovery Advisor will focus on research and development projects in pharmaceutical industry, publishing, and biotechnology, Watson Engagement Advisor will focus on self-service applications using insights on the basis of natural language questions posed by business users, and Watson Explorer will focus on helping enterprise users uncover and share data-driven insights based on federated search more easily.[112] The company is also launching a $100 million venture fund to spur application development for "cognitive" applications. According to IBM, the cloud-delivered enterprise-ready Watson has seen its speed increase 24 times over—a 2,300 percent improvement in performance and its physical size shrank by 90 percent—from the size of a master bedroom to three stacked pizza boxes.[112] IBM CEO Virginia Rometty said she wants Watson to generate $10 billion in annual revenue within ten years.[113] On 20 September 2017, Anantha Chandrakasan, dean of the MIT School of Engineering announced Antonio Torralba as the MIT director of the MIT-IBM Watson AI Lab.[114] In March 2018, IBM's CEO Ginni Rometty proposed "Watson's Law," the "use of and application of business, smart cities, consumer applications and life in general."[115]

Chatterbot

Watson is being used via IBM partner program as a Chatterbot to provide the conversation for children's toys.[116]

Building codes

In 2015, the engineering firm ENGEO created an online service via the IBM partner program named GoFetchCode. GoFetchCode applies Watson's natural language processing and question-answering capabilities to the International Code Council's model building codes.[117]

Teaching assistant

IBM Watson is being used for several projects relating to education, and has entered partnerships with Pearson Education, Blackboard, Sesame Workshop and Apple.[118][119]

In its partnership with Pearson, Watson is being made available inside electronic text books to provide natural language, one-on-one tutoring to students on the reading material.[120]

As an individual using the free Watson APIs available to the public, Ashok Goel, a professor at Georgia Tech, used Watson to create a virtual teaching assistant to assist students in his class.[121] Initially, Goel did not reveal the nature of "Jill", which was created with the help of a few students and IBM. Jill answered questions where it had a 97% certainty of an accurate answer, with the remainder being answered by human assistants.[122]

The research group of Sabri Pllana developed an assistant for learning parallel programming using the IBM Watson.[123] A survey with a number of novice parallel programmers at the Linnaeus University indicated that such

assistant will be welcome by students that learn parallel programming.

Weather forecasting

In August 2016, IBM announced it would be using Watson for weather forecasting.[124] Specifically, the company announced they would use Watson to analyze data from over 200,000 Weather Underground personal weather stations, and data from other sources, as a part of project Deep Thunder.[125]

Fashion

IBM Watson together with Marchesa designed a dress that changed the colour of the fabric depending on the mood of the audience. The dress lit up in different colours based on the sentiment of Tweets about the dress. Tweets were passed through a Watson tone analyzer and then sent back to a small computer inside the waist of the dress.[126]

Tax preparation

On February 5–6, 2017, tax preparation company H&R Block began nationwide use of a Watson-based program.[127]

Advertising

In September 2017, IBM announced that with its acquisition of The Weather Company's advertising sales division, and a partnership with advertising neural network Cognitiv, Watson will provide AI-powered advertising solutions.[128][129]

See also

- Artificial intelligence
- Blue Gene
- Commonsense knowledge (artificial intelligence)
- Glossary of artificial intelligence
- Strong AI
- Tech companies in the New York metropolitan area
- Wolfram Alpha

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External links

- Watson homepage (http://www.ibmwatson.com/)
- DeepQA homepage (http://www.research.ibm.com/deepqa/deepqa.shtml)
- About Watson on Jeopardy.com (https://web.archive.org/web/20091010111119/http://www.jeopardy.com /news/ibm.php)
- Smartest Machine on Earth (PBS *NOVA* documentary about the making of Watson) (http://video.pbs.org/video /1786674622)
- Power Systems (http://www.ibm.com/systems/power)
- The Watson Trivia Challenge (https://www.nytimes.com/interactive/2010/06/16/magazine/watson-trivia-game.html). *The New York Times*. June 16, 2010.
- This is Watson (http://ieeexplore.ieee.org/xpl/tocresult.jsp?reload=true&isnumber=6177717) – IBM Journal of Research and Development (published by the IEEE)

J! Archive

- *Jeopardy!* Show #6086 – Game 1, Part 1 (http://www.j-archive.com/showgame.php?game_id=3575)
- *Jeopardy!* Show #6087 – Game 1, Part 2 (http://www.j-archive.com/showgame.php?game_id=3576)

- *Jeopardy!* Show #6088 – Game 2 (http://www.j-archive.com/showgame.php?game_id=3577)

Videos

- PBS NOVA documentary on the making of Watson (http://video.pbs.org/video/1786674622)
- Building Watson – A Brief Overview of the DeepQA Project (https://www.youtube.com/watch?v=3G2H3DZ8rNc) on YouTube (21:42), IBMLabs
- How Watson Answers a Question (https://www.youtube.com/watch?v=DywO4zksfXw) on YouTube
- David Ferrucci, Dan Cerutti and Ken Jennings on IBM's Watson at Singularity Summit 2011 (https://www.youtube.com/watch?v=oFMeBId7vIM) on YouTube
- A Computer Called Watson (https://www.youtube.com/watch?v=ZvbWyREkMkw) on YouTube – November 15, 2011, David Ferrucci at Computer History Museum, alternate (https://www.youtube.com/watch?v=8e8G-jJa0KI)
- IBM Watson and the Future of Healthcare (https://www.youtube.com/watch?v=U_KhvJyjZ6c) on YouTube – 2012
- IBM Watson-Introduction and Future Applications (https://www.youtube.com/watch?v=I-gZkqCXOgs) on YouTube – IBM at EDGE 2012
- IBM Watson for Healthcare (https://www.youtube.com/watch?v=UFF9bI6e29U) on YouTube – Martin Kohn, 2013
- IBM Watson playlist (https://www.youtube.com/playlist?list=PL4F1C783776E708A8), IBMLabs Watson playlist (https://www.youtube.com/playlist?list=PL3A7FC0CD1F1BB3D1)

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