A Very Short History Of Data Science

Gil Press Contributor ⓘ

*I write about technology, entrepreneurs and innovation.*

The story of how data scientists became sexy is mostly the story of the coupling of the mature discipline of statistics with a very young one--computer science. The term "Data Science" has emerged only recently to specifically designate a new profession that is expected to make sense of the vast stores of big data. But making sense of data has a long history and has been discussed by scientists, statisticians, librarians, computer scientists and others for years. The following timeline traces the evolution of the term "Data Science" and its use, attempts to define it, and related terms.

1962 John W. Tukey writes in "The Future of Data Analysis": "For a long time I thought I was a statistician, interested in inferences from the particular to the general. But as I have watched mathematical statistics evolve, I have had cause to wonder and doubt... I have come to feel that my central interest is in *data analysis*... Data analysis, and the parts of statistics which adhere to it, must...take on the characteristics of science rather than those of mathematics... data analysis is intrinsically an empirical science... How vital and how important... is the rise of the stored-program electronic computer? In many instances the answer may surprise many by being 'important but not vital,' although in others there is no doubt but what the computer has been 'vital.'" In 1947, Tukey coined the term "bit" which Claude Shannon used in his 1948 paper "A Mathematical Theory of Communications." In 1977, Tukey published *Exploratory Data Analysis*, arguing that more emphasis needed to be placed on using data to suggest hypotheses to

test and that Exploratory Data Analysis and Confirmatory Data Analysis "can—
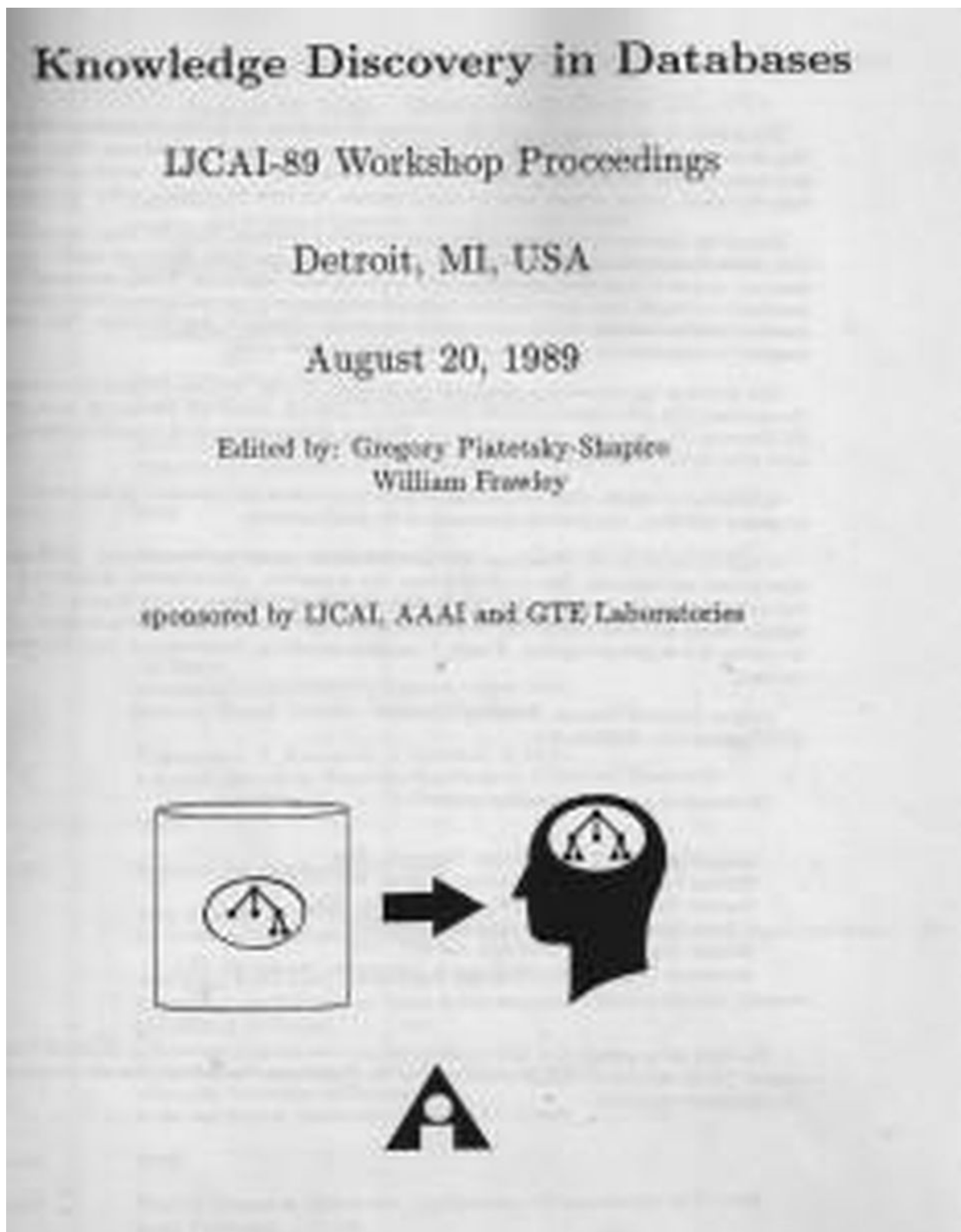and should—proceed side by side."

John W. Tukey

EXPLORATORY DATA ANALYSIS
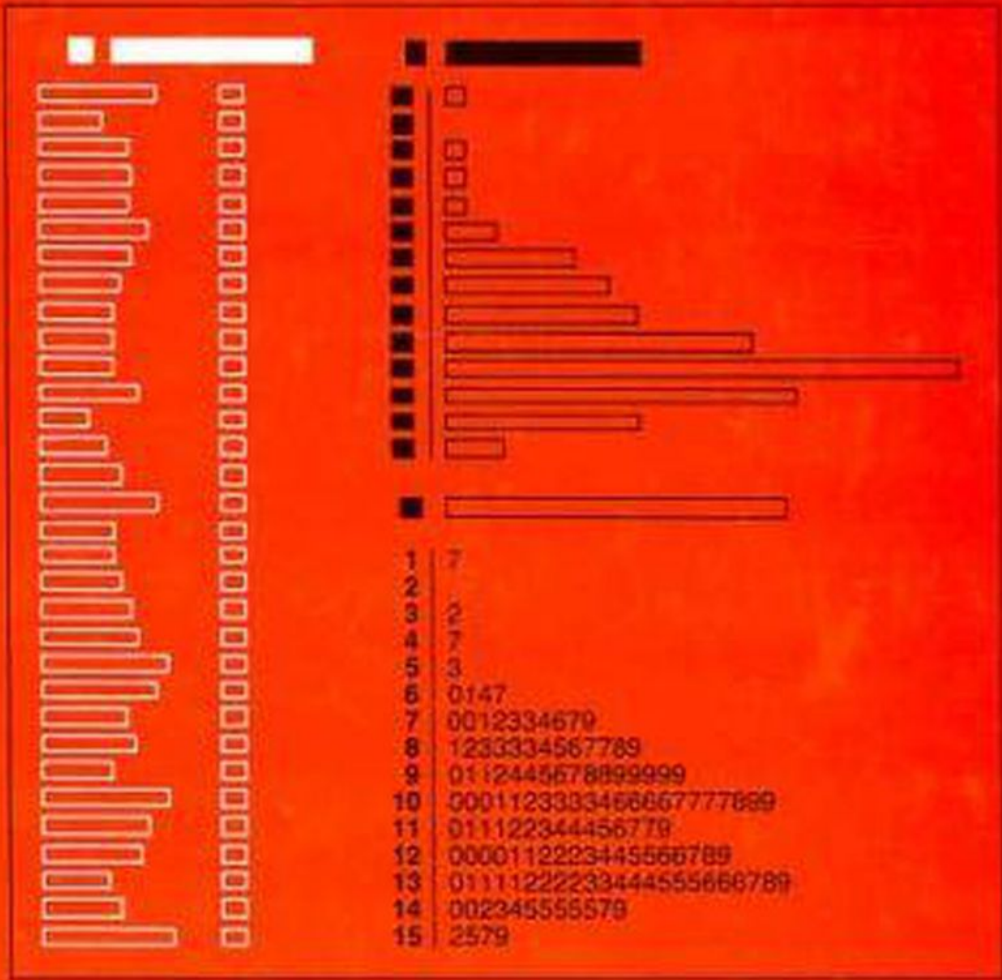
1974 Peter Naur publishes *Concise Survey of Computer Methods* in Sweden and the United States. The book is a survey of contemporary data processing methods that are used in a wide range of applications. It is organized around the concept of data as defined in the *IFIP Guide to Concepts and Terms in Data Processing*: "[Data is] a representation of facts or ideas in a formalized manner capable of being communicated or manipulated by some process." The Preface to the book tells the reader that a course plan was presented at the IFIP Congress in 1968, titled "Datalogy, the science of data and of data processes and its place in education," and that in the text of the book, "the term 'data science' has been used freely." Naur offers the following definition of data science: "The science of dealing with data, once they have been established, while the relation of the data to what they represent is delegated to other fields and sciences."

1977 The International Association for Statistical Computing (IASC) is established as a Section of the ISI. "It is the mission of the IASC to link traditional statistical methodology, modern computer technology, and the knowledge of domain experts in order to convert data into information and knowledge."
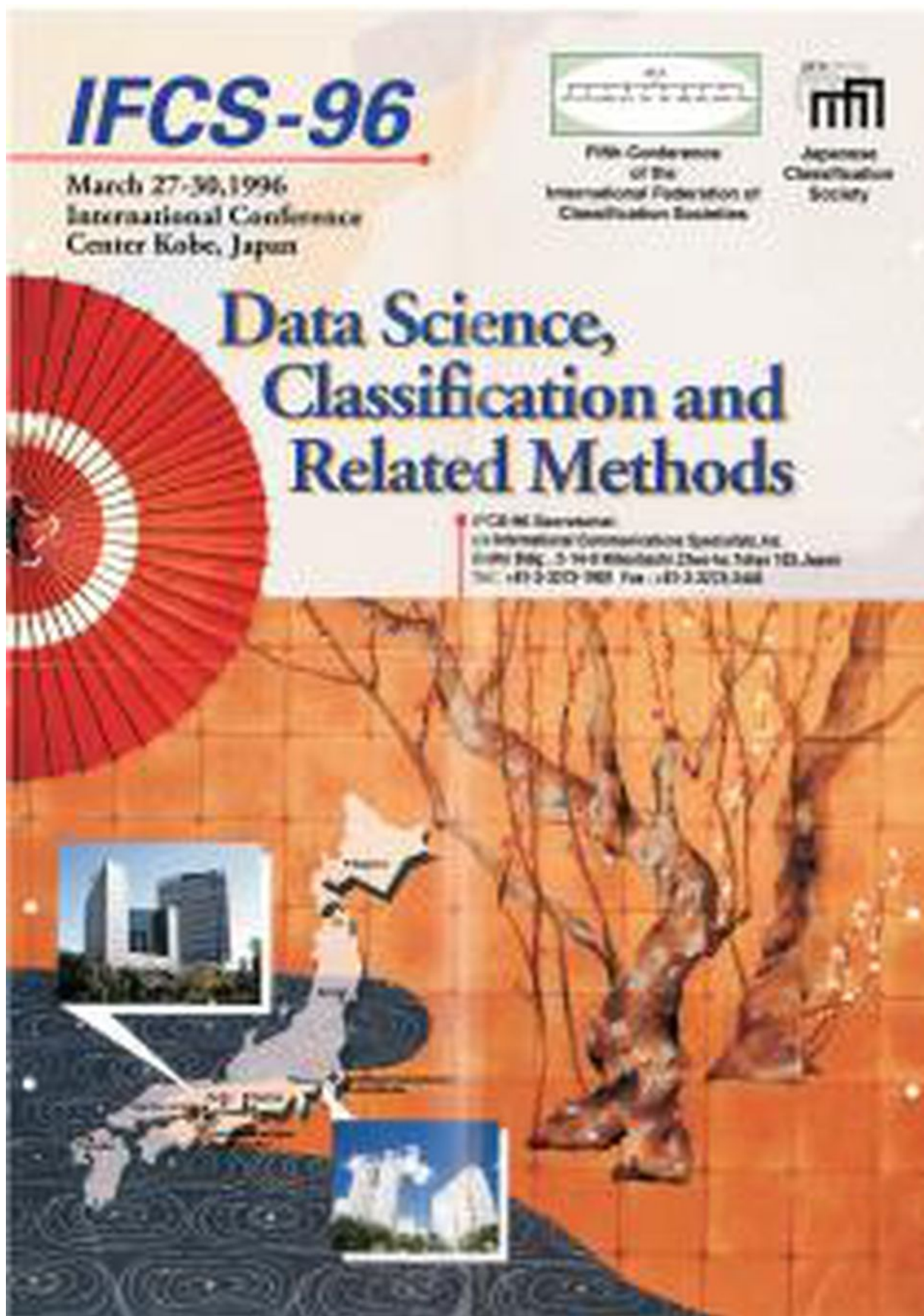
Knowledge Discovery in Databases

IJCAI-89 Workshop Proceedings

Detroit, MI, USA

August 20, 1989

Edited by: Gregory Piatetsky-Shapiro
William Frawley

sponsored by IJCAI, AAAI and GTE Laboratories

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1989 Gregory Piatetsky-Shapiro organizes and chairs the first Knowledge Discovery in Databases (KDD) workshop. In 1995, it became the annual ACM

SIGKDD Conference on Knowledge Discovery and Data Mining (KDD).

September 1994 *BusinessWeek* publishes a cover story on "Database Marketing": "Companies are collecting mountains of information about you, crunching it to predict how likely you are to buy a product, and using that knowledge to craft a marketing message precisely calibrated to get you to do so... An earlier flush of enthusiasm prompted by the spread of checkout scanners in the 1980s ended in widespread disappointment: Many companies were too overwhelmed by the sheer quantity of data to do anything useful with the information... Still, many companies believe they have no choice but to brave the database-marketing frontier."

1996 Members of the *International Federation of Classification Societies (IFCS)* meet in Kobe, Japan, for their biennial conference. For the first time, the term "data science" is included in the title of the conference ("Data science, classification, and related methods"). The IFCS was founded in 1985 by six country- and language-specific classification societies, one of which, *The Classification Society*, was founded in 1964. The classification societies have variously used the terms data analysis, data mining, and data science in their publications.

1996 Usama Fayyad, Gregory Piatetsky-Shapiro, and Padhraic Smyth publish

"From Data Mining to Knowledge Discovery in Databases." They write:

"Historically, the notion of finding useful patterns in data has been given a variety of names, including data mining, knowledge extraction, information discovery, information harvesting, data archeology, and data pattern processing... In our view, KDD [Knowledge Discovery in Databases] refers to the overall process of discovering useful knowledge from data, and data mining refers to a particular step in this process. *Data mining* is the application of specific algorithms for extracting patterns from data... the additional steps in the KDD process, such as data preparation, data selection, data cleaning, incorporation of appropriate prior knowledge, and proper interpretation of the results of mining, are essential to ensure that useful knowledge is derived from the data. Blind application of data-mining methods (rightly criticized as data dredging in the statistical literature) can be a dangerous activity, easily leading to the discovery of meaningless and invalid patterns."

1997 In his inaugural lecture for the H. C. Carver Chair in Statistics at the University of Michigan, Professor C. F. Jeff Wu (currently at the Georgia Institute of Technology), calls for statistics to be renamed data science and statisticians to be renamed data scientists.

1997 The journal Data Mining and Knowledge Discovery is launched; the reversal of the order of the two terms in its title reflecting the ascendance of "data mining" as the more popular way to designate "extracting information from large databases."

December 1999 Jacob Zahavi is quoted in "Mining Data for Nuggets of Knowledge" in Knowledge@Wharton: "Conventional statistical methods work well with small data sets. Today's databases, however, can involve millions of rows and scores of columns of data... Scalability is a huge issue in data mining. Another technical challenge is developing models that can do a better job analyzing data, detecting non-linear relationships and interaction between elements... Special data mining tools may have to be developed to address web-site decisions."

2001 William S. Cleveland publishes "Data Science: An Action Plan for Expanding the Technical Areas of the Field of Statistics." It is a plan "to enlarge

the major areas of technical work of the field of statistics. Because the plan is ambitious and implies substantial change, the altered field will be called 'data science.'" Cleveland puts the proposed new discipline in the context of computer science and the contemporary work in data mining: "...the benefit to the data analyst has been limited, because the knowledge among computer scientists about how to think of and approach the analysis of data is limited, just as the knowledge of computing environments by statisticians is limited. A merger of knowledge bases would produce a powerful force for innovation. This suggests that statisticians should look to computing for knowledge today just as data science looked to mathematics in the past. ... departments of data science should contain faculty members who devote their careers to advances in computing with data and who form partnership with computer scientists."

2001 Leo Breiman publishes "Statistical Modeling: The Two Cultures" (PDF): "There are two cultures in the use of statistical modeling to reach conclusions from data. One assumes that the data are generated by a given stochastic data model. The other uses algorithmic models and treats the data mechanism as unknown. The statistical community has been committed to the almost exclusive use of data models. This commitment has led to irrelevant theory, questionable conclusions, and has kept statisticians from working on a large range of interesting current problems. Algorithmic modeling, both in theory and practice, has developed rapidly in fields outside statistics. It can be used both on large complex data sets and as a more accurate and informative alternative to data modeling on smaller data sets. If our goal as a field is to use data to solve problems, then we need to move away from exclusive dependence on data models and adopt a more diverse set of tools."

April 2002 Launch of *Data Science Journal*, publishing papers on "the management of data and databases in Science and Technology. The scope of the Journal includes descriptions of data systems, their publication on the internet, applications and legal issues." The journal is published by the Committee on Data for Science and Technology (CODATA) of the International Council for Science (ICSU).

January 2003 Launch of *Journal of Data Science*: "By 'Data Science' we mean almost everything that has something to do with data: Collecting, analyzing, modeling...... yet the most important part is its applications--all sorts of applications. This journal is devoted to applications of statistical methods at large…. The *Journal of Data Science* will provide a platform for all data workers to present their views and exchange ideas."

May 2005 Thomas H. Davenport, Don Cohen, and Al Jacobson publish "Competing on Analytics," a Babson College Working Knowledge Research Center report, describing "the emergence of a new form of competition based on the extensive use of analytics, data, and fact-based decision making… Instead of competing on traditional factors, companies are beginning to employ statistical and quantitative analysis and predictive modeling as primary elements of competition. " The research is later published by Davenport in the *Harvard Business Review* (January 2006) and is expanded (with Jeanne G. Harris) into the book *Competing on Analytics: The New Science of Winning* (March 2007).

September 2005 The National Science Board publishes "Long-lived Digital Data Collections: Enabling Research and Education in the 21st Century." One of the recommendations of the report reads: "The NSF, working in partnership with collection managers and the community at large, should act to develop and mature the career path for data scientists and to ensure that the research enterprise includes a sufficient number of high-quality data scientists." The report defines data scientists as "the information and computer scientists, database and software engineers and programmers, disciplinary experts, curators and expert annotators, librarians, archivists, and others, who are crucial to the successful management of a digital data collection."

2007 The Research Center for Dataology and Data Science is established at Fudan University, Shanghai, China. In 2009, two of the center's researchers, Yangyong Zhu and Yun Xiong, publish "Introduction to Dataology and Data Science," in which they state "Different from natural science and social science, Dataology and Data Science takes data in cyberspace as its research object. It is a

new science." The center holds annual symposiums on Dataology and Data Science.

2013第四届数据科学国际研讨会

July 2008 The JISC publishes the final report of a study it commissioned to "examine and make recommendations on the role and career development of data scientists and the associated supply of specialist data curation skills to the research community. " The study's final report, "The Skills, Role & Career Structure of Data Scientists & Curators: Assessment of Current Practice & Future Needs," defines data scientists as "people who work where the research is carried out--or, in the case of data centre personnel, in close collaboration with the creators of the data--and may be involved in creative enquiry and analysis, enabling others to work with digital data, and developments in data base technology."

January 2009 *Harnessing the Power of Digital Data for Science and Society* is published. This report of the Interagency Working Group on Digital Data to the Committee on Science of the National Science and Technology Council states that "The nation needs to identify and promote the emergence of new disciplines and specialists expert in addressing the complex and dynamic challenges of digital preservation, sustained access, reuse and repurposing of data. Many disciplines are seeing the emergence of a new type of data science and management expert, accomplished in the computer, information, and data sciences arenas and in another domain science. These individuals are key to the current and future success of the scientific enterprise. However, these individuals often receive little recognition for their contributions and have limited career paths."

January 2009 Hal Varian, Google's Chief Economist, tells the *McKinsey Quarterly*: "I keep saying the sexy job in the next ten years will be statisticians. People think I'm joking, but who would've guessed that computer engineers would've been the sexy job of the 1990s? The ability to take data—to be able to understand it, to process it, to extract value from it, to visualize it, to

communicate it—that's going to be a hugely important skill in the next decades... Because now we really do have essentially free and ubiquitous data. So the complimentary scarce factor is the ability to understand that data and extract value from it... I do think those skills—of being able to access, understand, and communicate the insights you get from data analysis—are going to be extremely important. Managers need to be able to access and understand the data themselves."

March 2009 Kirk D. Borne and other astrophysicists submit to the Astro2010 Decadal Survey a paper titled "The Revolution in Astronomy Education: Data Science for the Masses "(PDF): "Training the next generation in the fine art of deriving intelligent understanding from data is needed for the success of sciences, communities, projects, agencies, businesses, and economies. This is true for both specialists (scientists) and non-specialists (everyone else: the public, educators and students, workforce). Specialists must learn and apply new data science research techniques in order to advance our understanding of the Universe. Non-specialists require information literacy skills as productive members of the 21st century workforce, integrating foundational skills for lifelong learning in a world increasingly dominated by data."

May 2009 Mike Driscoll writes in "The Three Sexy Skills of Data Geeks": "...with the Age of Data upon us, those who can model, munge, and visually communicate data—call us statisticians or data geeks—are a hot commodity." [Driscoll will follow up with The Seven Secrets of Successful Data Scientists in August 2010]

June 2009 Nathan Yau writes in "Rise of the Data Scientist": "As we've all read by now, Google's chief economist Hal Varian commented in January that the next sexy job in the next 10 years would be statisticians. Obviously, I whole-heartedly agree. Heck, I'd go a step further and say they're sexy now— mentally and physically. However, if you went on to read the rest of Varian's interview, you'd know that by statisticians, he actually meant it as a general title for someone who is able to extract information from large datasets and then present something of use to non-data experts... [Ben] Fry... argues for an entirely new field that combines the skills and talents from often disjoint areas of expertise... [computer

science; mathematics, statistics, and data mining; graphic design; infovis and human-computer interaction]. And after two years of highlighting visualization on FlowingData, it seems collaborations between the fields are growing more common, but more importantly, computational information design edges closer to reality. We're seeing *data scientists*—people who can do it all— emerge from the rest of the pack."

June 2009 Troy Sadkowsky creates the data scientists group on LinkedIn as a companion to his website, datasceintists.com (which later became datascientists.net).

February 2010 Kenneth Cukier writes in *The Economist* Special Report "Data, Data Everywhere": "... a new kind of professional has emerged, the data scientist, who combines the skills of software programmer, statistician and storyteller/artist to extract the nuggets of gold hidden under mountains of data."

June 2010 Mike Loukides writes in "What is Data Science?": "Data scientists combine entrepreneurship with patience, the willingness to build data products incrementally, the ability to explore, and the ability to iterate over a solution. They are inherently interdisciplinary. They can tackle all aspects of a problem, from initial data collection and data conditioning to drawing conclusions. They can think outside the box to come up with new ways to view the problem, or to work with very broadly defined problems: 'here's a lot of data, what can you make from it?'"

September 2010 Hilary Mason and Chris Wiggins write in "A Taxonomy of Data Science": "...we thought it would be useful to propose one possible taxonomy... of what a data scientist does, in roughly chronological order: Obtain, Scrub, Explore, Model, and iNterpret.... Data science is clearly a blend of the hackers' arts... statistics and machine learning... and the expertise in mathematics and the domain of the data for the analysis to be interpretable... It requires creative decisions and open-mindedness in a scientific context."
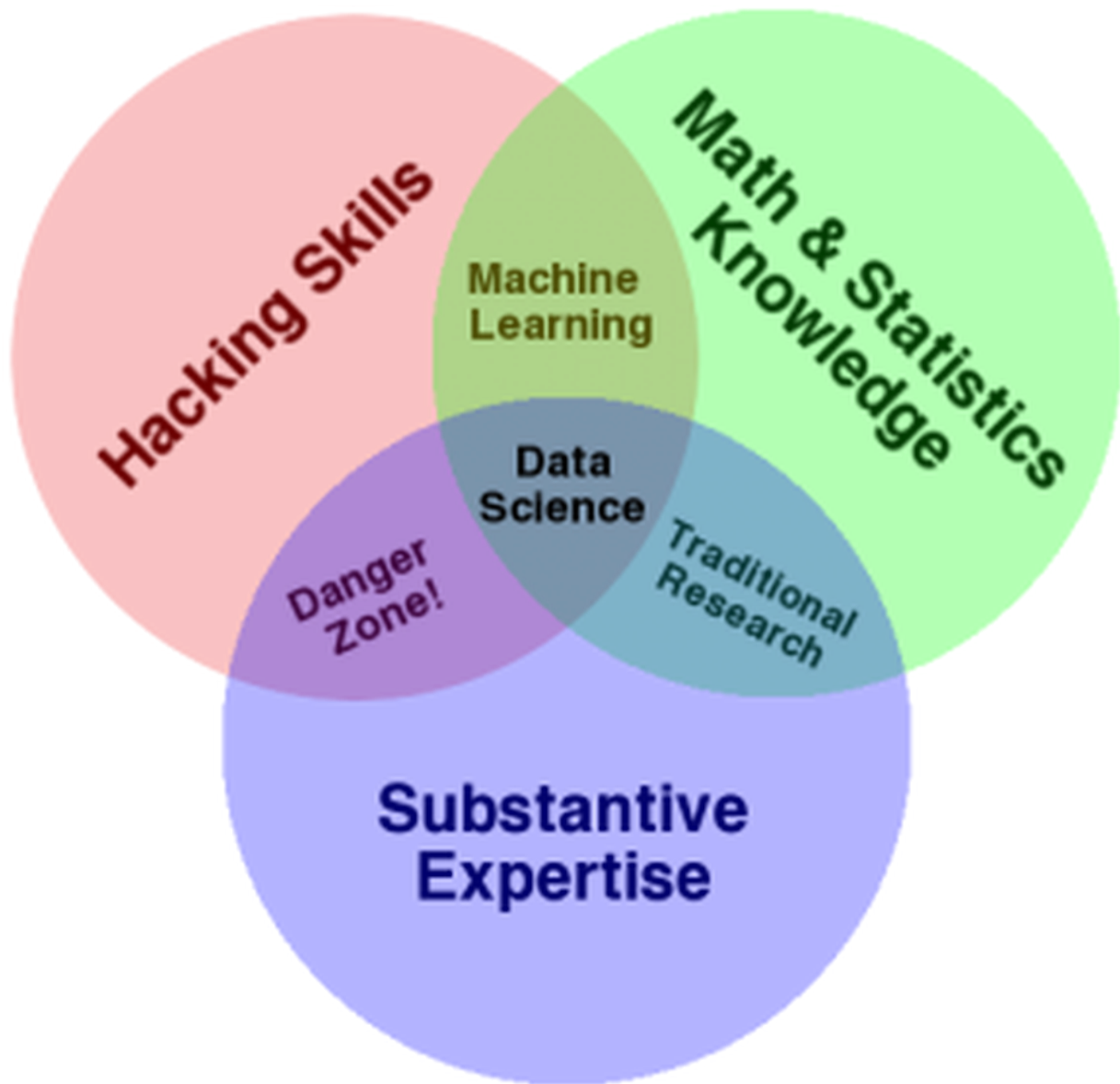
Source: Drew Conway

September 2010 Drew Conway writes in "The Data Science Venn Diagram": "…one needs to learn a lot as they aspire to become a fully competent data scientist. Unfortunately, simply enumerating texts and tutorials does not untangle the knots. Therefore, in an effort to simplify the discussion, and add my own thoughts to what is already a crowded market of ideas, I present the Data Science Venn Diagram… hacking skills, math and stats knowledge, and substantive expertise."

May 2011 Pete Warden writes in "Why the term 'data science' is flawed but useful": "There is no widely accepted boundary for what's inside and outside of data science's scope. Is it just a faddish rebranding of statistics? I don't think so, but I also don't have a full definition. I believe that the recent abundance of data

has sparked something new in the world, and when I look around I see people with shared characteristics who don't fit into traditional categories. These people tend to work beyond the narrow specialties that dominate the corporate and institutional world, handling everything from finding the data, processing it at scale, visualizing it and writing it up as a story. They also seem to start by looking at what the data can tell them, and then picking interesting threads to follow, rather than the traditional scientist's approach of choosing the problem first and then finding data to shed light on it."

May 2011 David Smith writes in "'Data Science': What's in a name?": "The terms 'Data Science' and 'Data Scientist' have only been in common usage for a little over a year, but they've really taken off since then: many companies are now hiring for 'data scientists', and entire conferences are run under the name of 'data science'. But despite the widespread adoption, some have resisted the change from the more traditional terms like 'statistician' or 'quant' or 'data analyst'…. I think 'Data Science' better describes what we actually do: a combination of computer hacking, data analysis, and problem solving."

June 2011 Matthew J. Graham talks at the Astrostatistics and Data Mining in Large Astronomical Databases workshop about "The Art of Data Science" (PDF). He says: "To flourish in the new data-intensive environment of 21st century science, we need to evolve new skills… We need to understand what rules [data] obeys, how it is symbolized and communicated and what its relationship to physical space and time is."

September 2011 Harlan Harris writes in "Data Science, Moore's Law, and Moneyball" : "'Data Science' is defined as what 'Data Scientists' do. What Data Scientists do has been very well covered, and it runs the gamut from data collection and munging, through application of statistics and machine learning and related techniques, to interpretation, communication, and visualization of the results. Who Data Scientists are may be the more fundamental question… I tend to like the idea that Data Science is defined by its practitioners, that it's a career path rather than a category of activities. In my conversations with people,

it seems that people who consider themselves Data Scientists typically have eclectic career paths, that might in some ways seem not to make much sense."
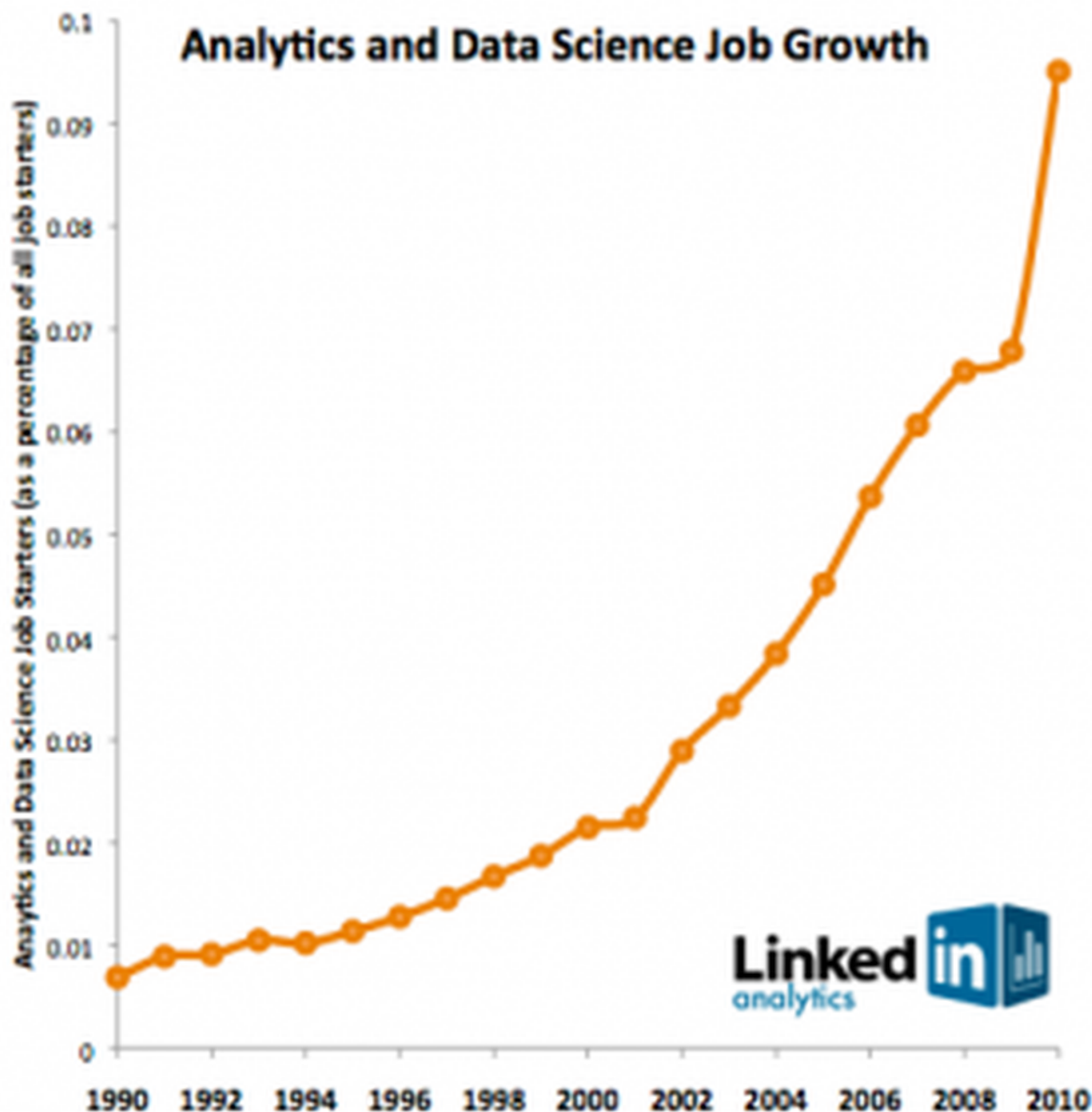
September 2011 D.J. Patil writes in "Building Data Science Teams": "Starting in 2008, Jeff Hammerbacher (@hackingdata) and I sat down to share our experiences building the data and analytics groups at Facebook and LinkedIn. In many ways, that meeting was the start of data science as a distinct professional specialization.... we realized that as our organizations grew, we both had to figure out what to call the people on our teams. 'Business analyst' seemed too limiting. 'Data analyst' was a contender, but we felt that title might limit what people could do. After all, many of the people on our teams had deep engineering expertise. 'Research scientist' was a reasonable job title used by companies like Sun, HP,

Xerox, Yahoo, and IBM. However, we felt that most research scientists worked on projects that were futuristic and abstract, and the work was done in labs that were isolated from the product development teams. It might take years for lab research to affect key products, if it ever did. Instead, the focus of our teams was to work on data applications that would have an immediate and massive impact on the business. The term that seemed to fit best was data scientist: those who use both data and science to create something new. "

September 2012 Tom Davenport and D.J. Patil publish "Data Scientist: The Sexiest Job of the 21st Century" in the *Harvard Business Review*.

An earlier version of this timeline was published in WhatsTheBigData.com

See also A Very Short History of Big Data and A Very Short History of Information Technology

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I'm Managing Partner at gPress, a marketing, publishing, research and education consultancy. Previously, I held senior marketing and research management positions at NORC, DEC and EMC. Most recently, I was Senior Director, Thought Leadership Marketing at EMC, where I launche... **MORE**

24,558 views | Oct 22, 2018, 04:34pm

Two Drops Of Patience: UNICEF And Rotary's Fight To Eradicate Polio

Sarah Ferguson   Brand Contributor
UNICEF USA BRANDVOICE

We're closer than ever to ending polio. In 2017, UNICEF engaged in polio eradication programs in more than 50 countries. Please support UNICEF's

efforts to vaccinate every single child against preventable childhood diseases.

PLEASE DONATE

Rotary volunteers traveled to a remote region of northeastern Uganda to vaccinate children against polio.   ©
JON RIERA FOR ROTARY INTERNATIONAL

Polio is a highly contagious, paralyzing and potentially fatal disease that can strike at any age, but mainly affects children under age 5. Polio is incurable, but easily preventable with a simple vaccine. Wild poliovirus exists in the smallest geographical area in history, but that includes some of the most difficult-to-reach areas in the world. Polio is endemic to just three countries: Nigeria, Afghanistan and Pakistan.

To stay polio-free, countries must maintain high routine immunization and sensitive surveillance. In 1988, UNICEF and Rotary International formed a partnership dedicated to eradicating polio worldwide once and for all. Every year, hundreds of Rotary members work side-by-side with health workers to vaccinate children in polio-affected countries.

Travel with Rotary volunteer Patience Asiimwe in 360-degree virtual reality to a remote region of northeastern Uganda to vaccinate children who otherwise might be missed:

Two Drops of Patience

▶

 Since UNICEF and Rotary began their partnership, both organizations, as members of the Global Polio Eradication Initiative, have played a fundamental role in dramatically decreasing the number of polio-endemic countries. Just 22 polio cases were confirmed worldwide in 2017, a reduction of more than 99.9 percent since the 1980s, when the world saw about 1,000 cases per day.

We are closer than ever before to eradicating this disease. This means a world in which every child would be safe from the paralysis the virus causes, and no family would ever have to bear the emotional and financial costs of the disease again. This would be only the second human disease in history that we've wiped off the face of the earth — a milestone that every member of the polio community, from health workers to donors and public health officials, will be a part of accomplishing.

 No child should ever suffer from polio. Please support UNICEF and Rotary International's efforts to vaccinate every child and eradicate polio once and for all.

Sarah Ferguson Brand Contributor   Follow

Sarah Ferguson is a writer and critic whose work has appeared in The Guardian, Elle, Vogue, New York Magazine, Mother Jones and The New York Times Book Review, among other publications.

105,791 views | Nov 2, 2018, 07:45am

# Walmart 'Black Friday' 2018: 5 Best Early Access Deals On HDTVs

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Electronics retailers don't wait for these days to drop their special deals. In fact, the best time to buy electronics is at the beginning of November. Many of the biggest retailers have already started rolling out their early Black Friday savings.

As one of the largest retailers on the planet, it's no great shock that Walmart has already started unveiling their early Black Friday deals. What is a shock is the quality of the deals they're offering and the potential savings. We'll be taking a look at the best early access deals on HDTVs, for those who've been looking for an exceptional TV at a budget price.

VIZIO 43- inch Class FHD (1080P) Smart LED TV
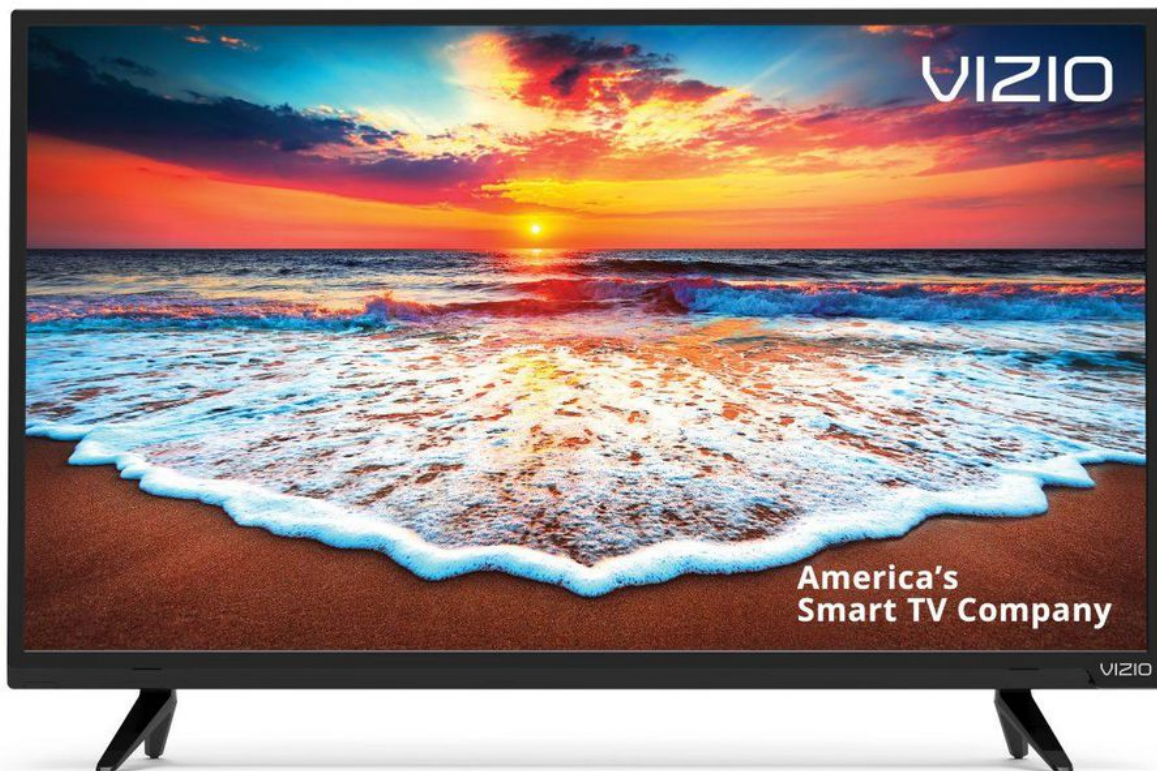
VIZIO 43- inch Class FHD (1080P) Smart LED TV (D43fx-F4)   WALMART

One of the biggest savings on HDTVs from Walmart is also one of the cheapest HDTVs you can find. The Vizio 43- inch Class FHD supports Blu-Ray quality HD of 1080p, meaning you'll be able to watch most of your movies and a lot of your streaming in crystal-clear digital quality. The backlit LED screen ensures a smoother, more even and consistent viewing experience as well, with uniform and consistent lighting so there won't be murky dim patches.

The Vizio 43-inch Class FHD is a full-fledged Smart TV, as well. You can browse and launch your video apps natively from the TV using the SmartCast Home remote. You can also control your TV from anywhere in the house using the included Vizio SmartCast Mobile App. Finally, the Vizio 43- inch Class FHD

comes bundled with over 100 channels with the Vizio WatchFree app. You'll be ready to roll, straight out of the box.

YOU MAY ALSO LIKE

All of this for less than $200. The early access Black Friday sale price is **$198**, **29 percent off the SRP of $278**.

Shop Now: $198

VIZIO 55- inch Class 4K Ultra HD

VIZIO 55- inch Class 4K Ultra HD (2160P) HDR Smart LED TV (D55x-G1)   WALMART

While the Vizio 43- inch Class FHD is a chance to break into the world of HDTVs on a budget, the Vizio 55- inch Class 4K Ultra HD is your chance to experience the highest of the high-end HDTVs at one of the best prices you'll find on the Internet.

The Vizio 55- inch Class 4K Ultra HD supports the highest resolution currently available, the ridiculous 2160p. Not only will you start to pick out reoccurring Hobbits watching *Lord Of The Rings*, at that resolution, but you'll also start to feel Viggo Mortensen and Orland Bloom's sweat.

The Vizio 55- inch also supports all Smart TV functions, same as the 43- inch Class FHD. It also supports Chromecast so you can use thousands of video and music playback apps just using your TV.

The 55- inch Class 4K Ultra HD is one of the most affordable 4K TVs you can find anywhere, online or otherwise, at **$348** - a **27 percent savings** from its list price.

Shop Now: **$348**

Sceptre 32- inch Class HD (720P) LED TV (X322BV-SR)

Sceptre 32- inch Class HD (720P) LED TV (E325BD-SR) with Built-in DVD Player   WALMART

If you've been waiting to get into the HDTV game for less than $100, you might've been out of luck, even last year. Thankfully, the rising quality and interest in HDTVs has driven costs down to the point that quite respectable TVs can be found for a song.

The Sceptre 32- inch Class HD might seem small compared to the other HDTVs we've already listed. Stop and consider for a moment that until the last 10 years, even a 25- inch TV would've seemed monolithic. We are spoiled for choice A 32-inch screen is more than big enough to enjoy your favorite movies, tv series, and games without cropping or visual distortion.

The Sceptre 32- inch could be an ideal choice for people living in smaller spaces. Larger screens might dominate the entire room, where a 32- inch might tuck comfortably into your corner. It's also a good choice if you move semi-regularly, as larger monitors can be prohibitively heavy and awkward to move, at times.

At **only $90**, you could buy a couple of these 720p and hand them out to all of your loved ones who are still stick streaming on their laptops or even, heaven forbid, their smartphones.

Shop Now: $90

SAMSUNG 55- inch Class 4K

SAMSUNG 55- inch Class 4K (2160P) Ultra HD Smart QLED TV QN55Q6FN (2018 model)   WALMART

For those whom size or price isn't an issue and want to find the most world-class 4K HDTV at a reasonable price, the SAMSUNG 55- inch Class 4K is one of the best on the market. You won't realize what you've been missing until you watch a movie on the Samsung 55- inch Class 4K, with its distinctive QLED lighting. The QLED arrays offer over 1 billion shades and hues, at a liquid 240Hz refresh rate at

the above-HD resolution of 2160p. You'll have a hard time telling the screen from reality at that resolution.

While it still costs a pretty penny, the Samsung 55- inch Class 4K knocks a sizeable chunk from the list price. Save **33 percent of the SRP of $1,499** with a ticket price of **only $998.**

Shop Now: $998

RCA 50- inch Class 4K (2160P) LED TV (RLDED5098-UHD)

RCA 50- inch Class 4K (2160P) LED TV (RLDED5098-UHD) WALMART

If you're looking to experience the 4K revolution at HDTV prices, the RCA 50-inch Class 4K LED TV is your chance to do so. The RCA 50- inch supports playback of up to 2160p, double the rate of Blu-Ray quality HD.

The RCA 4K TV might not have all the built-in apps of other models we've mentioned, but it's got more than enough connectivity to handle even the most plugged-in living room.

The RCA 4K TV offers the chance to experience your favorite media in stunning, crisp HD without paying for all of the bells and whistles. If you're not afraid of an HDMI cord, you can watch your favorite movies and TV series at double HD quality for only **$220**, a 12 percent savings from the **list price of $250**.

HDTVs offer a chance to re-engage with your favorite movies, tv series, and video games. It's such a relief after decades of staring at tiny, compressed screens, squinting to make out the action let alone be moved by it.

Shop Now: $799

Looking For More Early Access Black Friday Deals?

The Holiday deals are starting to come fast and furious, even in the first week of November! Whether you're looking to keep tabs on the best early access Black Friday deals on HDTVs or other tech products, or looking for authoritative product round-ups and reviews, we'll be bringing you extensive Black Friday coverage, each and every day.

Sign up for a Forbes blog account today, follow the blog, or subscribe to the RSS feed to keep up with the deals!

ForbesFinds is a shopping service for our readers. Forbes searches premium retailers to find the new products — from clothes to gadgets — and the latest deals.

| Nov 1, 2018, 06:02pm

#GoogleWalkout: 'Don't Be Evil,' 'Not OK Google,' Protest Workers In Fallout To Sexual Harassment Charges

Samar Marwan Forbes Staff
I write about tech.

FORBES

The protesting Google employees had stories to share: images of naked women included in office presentations. A manager telling two female employees not to "les out." Denying benefits for minority groups.

In downtown San Francisco just after 11 a.m. Thursday morning, dozens of Google employees—in coordination with staff from the internet giant's offices

around the world—gathered to protest how Google has handled sexual harassment allegations. The walkout followed a *New York Times* report that Google had quietly given a $90 million exit package to former executive Andy Rubin after a colleague accused him of sexual coercion and Google found her claim credible.

Rubin has called the allegations "a smear campaign." Google CEO Sundar Pichai on Thursday said, "Moments like this show that we didn't always get it right and so we are committed to doing better."
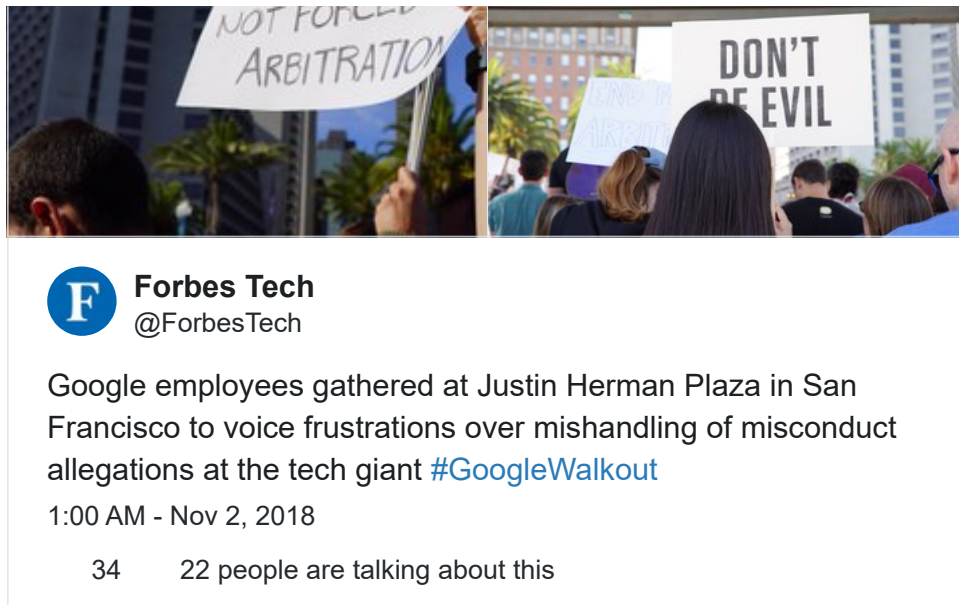
That assurance hasn't gone far enough for the workers exiting Google's offices in London, Tokyo, Mountain View, California, and elsewhere, the latest employee backlash Pichai and Alphabet CEO Larry Page have faced. In the last year, as a wave of employee activism has rolled through West Coast tech companies, Pichai has dealt with protests over the company's military contracts, its nascent plans for a Chinese search engine and how it's handled efforts to diversify its mostly male, white and Asian workforce.

Chants in San Francisco's palm-tree-ringed plaza were led by Google product manager Cathy Bi, who asked the crowd, "How many of you have a story that hasn't been told because you were scared, didn't feel safe, feared retaliation?" Bi said she hasn't come forward with her own allegations due to fear of retaliation.

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Organizers of the protest have shared a list of demands: equal pay, an end to forced arbitration in cases of harassment and discrimination and a more structured reporting process for harassment, including a publicly disclosed sexual harassment transparency report.

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Google employees gathered at Justin Herman Plaza in San Francisco to voice frustrations over mishandling of misconduct allegations at the tech giant #GoogleWalkout

1:00 AM - Nov 2, 2018

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The leaders of the protest read anonymous stories shared by fellow Googlers: "In 2014, there was a boy's club culture on the team I was on. I personally reported a manager on the team for including a gif of a lighter shaped as a naked woman in his presentation. When the lighter was turned on the breasts would light up, and this team LOVED it. I sent that presentation to HR and talked to them about it. He was given a warning and that same year he was given manager of the year award."

Men and women in the crowd outside San Francisco's Ferry Building held signs that read, "I reported, and he got promoted" and "Happy to quit for $90M—no sexual harassment required."

Others wore T-shirts that read, "Black Lives Matter" and "Phenomenal Latina." Holding a sign that read, "Black Women Matter" was Google marketer Christian Boyd, who said she walked out because she felt that her demographic's voice gets washed out. "It's really important for me to be a representation of black women at this company because we are the most underrepresented group at Google," said Boyd. "I'll be very disappointed if Google doesn't make changes."

Google employee, Rana Abdelhamid protests sexual misconduct at #GoogleWalkout   FORBES

Pichai's initial response, in which he disclosed that Google had fired 48 people for sexual harassment without exit packages, didn't satisfy employees, which prompted a second apology from the CEO. Protesters said the situation reflects structural problems with the company.

"I walked out today because currently the way our workplace is organized it's not a safe space for all women, especially for women who live at the intersections of various identities," said Google Cloud marketer Rana Abdelhamid. "We want more than just the intention of saying that things are going to happen, we need to see structures developing in order to make reporting more accessible," said Abdelhamid.

I'm the SF based assistant editor on the Forbes tech team. I write about tech as it pertains to the MENA region, diversity and developing countries. Before joining Forbes, I was a Cairo based senior staff writer for Scoop Empire and contributed to BuzzFeed, Elite Daily and T... **MORE**

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'Castlevania Requiem' Review: A Fantastic Collection Of Two Of The Best Games In The Series

Ollie Barder　Contributor
Forbes Games Reviews　Contributor Group ⓘ
Games
I cover gaming in Japan as well the pop-culture here.

The 'Castlevania' classic 'Rondo of Blood' is included in this collection.　CREDIT: KONAMI

What with the recent success of the new *Castlevania* series on Netflix, Konami has commemorated that with a new collection of arguably the best *Castlevania* games in the series for the PlayStation 4.

The two games in this collection are *Rondo of Blood* and *Symphony of the Night*. The fact they are bundled together is also no accident, as these two games are also directly connected in terms of narrative.

For those unfamiliar with the *Castlevania* games, they often pitch a member of the Belmont family against legions of the undead controlled by Dracula himself. The original games were a strict mix of platform and close combat, as the various Belmonts across the ages tend to use whips.

The early games on the NES laid the groundwork for the series and while there were a few missteps on the SNES and Game Boy, though I am one of the few that actually likes *Castlevania: The Adventure*, it was when the series came to the PC Engine that things really began to shine.

This brings us to *Rondo of Blood*. Released back in 1993 for the PC Engine CD, it was an almost perfect distillation of all the prior *Castlevania* games before it and was subsequently hugely popular as well as being very highly regarded.

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Featuring Richter Belmont on a crusade to free his lover Annette from the despicable claws of Dracula. Using the classic Vampire Killer whip passed down the Belmont line, *Rondo of Blood* was exactly what *Castlevania* fans craved.

Except, there was a catch. Despite the game's inherent excellence, it was never given a Western release and as such often went for insane prices for those that tried to import it from Japan.

'Symphony of the Night' is actually a direct sequel to 'Rondo of Blood'.   CREDIT: KONAMI

However, the game was worth it. With fantastic visuals for the time, a very memorable soundtrack and tight gameplay, *Rondo of Blood* represents the best of classic *Castlevania*.

Thankfully, *Rondo of Blood* did eventually get a Western release, first on the PSP in 2007 as part of *Castlevania: The Dracula X Chronicles* and then again on the Wii Virtual Console in 2010.

However, I am very happy the game has come to the PlayStation 4, especially as this version of *Rondo of Blood* is a direct port of the PC Engine CD original and not the PSP version which employed 2.5D graphics.

For newer players though, *Rondo of Blood* is a difficult game. Even for the time, this entry into the *Castlevania* series was tough. However, if you are willing to put in the effort, then a wonderfully crafted game awaits you.

This brings me onto *Symphony of the Night*. While *Rondo of Blood* is very much a classic *Castlevania* game in terms of how it plays and its uncompromising difficulty, *Symphony of the Night* is a very different game and a lot more accessible with it.

To be honest, most gamers are familiar with *Symphony of the Night* as it was one of the mainstays of the original PlayStation's massive library.

What made it different from the older *Castlevania* though was how it allowed for exploration and had more role-playing game type functional underpinnings. From character leveling and equipping differing weapons, the exacting nature of the platforming and combat in the older *Castlevania* games was loosened up a bit here.

'Rondo of Blood' is a challenging game.   CREDIT: KONAMI

Taking on the role of Dracula's son [Alucard](), *Symphony of the Night* follows on directly from Rondo of Blood and involves a newly resurrected Dracula and the fate of Richter Belmont.

So while these games are very different from one another, they are directly linked in terms of their characters and plot.

That's why I think this collection is so fantastic. Not only does it allow newer players to experience classic *Castlevania* gameplay with *Rondo of Blood* but also see how that grew and changed into the more open-ended *Symphony of the Night*.

On the latter, there is one minor point to make. If you enjoyed the original dialogue in *Symphony of the Night*, along with the heavily memed "What is a man?" speech, then this version has different dialogue. The translation is still fine but for those that grew up with the original PlayStation version of *Symphony of the Night*, then it's worth knowing that this version is not quite the same regarding the audio.

It's also worth noting that this collection doesn't really have much in the way of extras and has not been remastered in the modern sense. Put simply, these are emulated versions of the original games and are faithful to the original pixel art as well as how they played.

Personally, this is exactly what I want to see with classic game re-releases such as these. Whether they may look dated is not the point, the fact that you can play them as they were originally intended is far more important.

Considering that most modern platform holders don't support backward compatibility properly, it means that the history of video games can often be forgotten and overlooked.

So when we get collections of classic games like *Castlevania Requiem*, I am always relieved when I realize they haven't been interfered with too much.

Overall, *Castlevania Requiem* is an excellent collection of two very important as well as very different *Castlevania* games. If you have enjoyed the recent Netflix series and don't know much about the games it is based off, then this is probably the perfect collection to get to grips with the saga.

Castlevania Requiem: Symphony of the Night & Rondo of Blood

Platform: PlayStation 4

Developer: Konami

Publisher: Konami

Released: October 26th 2018

Price: $19.99

Score: 9/10

Castlevania Requiem: Symphony of the Night & Rondo of Blood Launc…

Disclosure: Konami sent me a copy of this game for the purposes of this review.

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