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# What happens when AI stops playing games?

<https://youtu.be/7pHaNMdWGsk>

The question, “can a machine be made to think like a person?” has always been tied to strategy games. Games, with their clear rules and obvious winners and losers, were perfect proving grounds for early computer scientists, who could break them down into clearly defined problem sets. Audiences could marvel at the progress of man vs machine face offs, even if they didn’t fully understand the underlying technology. The earliest AI game systems relied on a brute force, top-down approach: programmers downloaded every possible outcome into their AI systems, which were built around narrowly defined, rule-based criteria. In the 1950s, the earliest versions of neural networks and machine learning arrived. This represented a shift towards bottom-up programming, systems designed to determine the probability of various outcomes based on training data. One early system, a virtual rat solving a maze, was made up of vacuum tubes, motors, and clutches. As the rat navigated, the machine learned and shifted probabilities. IBM debuted their first AI Grand Challenge — a multi-year effort meant to push the limits of artificial intelligence — in 1997. Deep Blue beat reigning chess world champion Gary Kasparov, and was seen as the final triumph for the top-down approach. In the last decade, advances in machine learning, deep learning, and natural language processing paved the way for AIs like Watson on Jeopardy!, AlphaGo, and Dota 2—increasingly complex systems that still existed within the framework of games.

**The Hard Tech Revolutionizing Computing: A Guided Journey**

[**https://youtu.be/eyVSVn7jeRg**](https://youtu.be/eyVSVn7jeRg)

At IBM, we invest in and create the fundamental technologies that power the world of computing. Many of the modern digital technologies that you use today, running businesses, banks, airlines, digital commerce, in our devices originated in innovations created by IBM, many of them right here in this building. It would be impossible to tell the story of computing without IBM, and it would be equally impossible to understand the next computing revolution without the technologies that IBM Research is now pioneering. This short film provides a glimpse of the innovations that we're building that will power computing today and for decades to come. First, we will look about what it takes to push the absolute limits of computing performance. You're going to be the first ones to see the world's first two nanometer node computer chip. Next, we'll check in with our quantum computing team to talk about how we have created machines that calculate as nature does. We will show you the latest advancements in quantum computing hardware and software, as we work towards building a thousand qubit plus machine in the next two years, and at the same time, make it as easy to program these powerful machines as it is to use today's programming tools. Our next stop will take us deep into the world of languages and AI. We'll see how natural language processing is being applied to not just human language, but to the language of our machines, the world of code and to the language of industries such as chemistry. And lastly, we will survey the world's largest computer, the cloud. We'll learn how the future of business will be made possible through a visionary serverless open architecture, aimed at making the massively heterogeneous and distributed computers that make up the hybrid cloud ultimately work as if it was a single infinitely powerful computer. It is an exciting journey into our hard tech projects that will change how you think about computing and the coming era of accelerated discovery. Let's get started.

# IBM Research — Inventing What's Next

<https://youtu.be/3BExJetsHFk>

IBM researchers are inventing what’s next in science and technology. Our goal is to catalyze and drive the advancements that shape our world. Learn more at www.research.ibm.com.

# Math is life at IBM Research

<https://youtu.be/mLPiG3_o5hM>

Math scientists play a central role in the work of IBM Research -- from developing new algorithms that operate a quantum computer to using math to understand the genome of an organism. Learn more about IBM Research: www.research.ibm.com.

# IBM Research and the Future of Computing - Dario Gil Welcome Address

<https://youtu.be/2RBbw6uG94w>

Dario Gil, Director, IBM Research, IBM Chair, MIT-IBM Watson AI Lab, presents IBM Research's vision for the future of computing where bits, neurons, and qubits will come together to accelerate scientific discoveries.

# A Beginner’s Guide to Quantum Computing

<https://youtu.be/S52rxZG-zi0>

Dr. Talia Gershon, a materials scientist by training, came to IBM Research in 2012. After 4.5 years of developing next-generation solar cell materials, she got inspired to learn about quantum computing because it might enable all kinds of discoveries (including new materials). Having authored the Beginner's Guide to the QX, she passionately believes that anyone can get started learning quantum! - Maker Faire Bay Area 2017