# Some Technologies that impact Society

SIRI in iPhone 4

- Siri is not Apple's first venture into voice-activated controls and speech-recognition, although the program makes a few big leaps over the capabilities of VoiceOver, the technology used in iPhone 4.

- It has both speech input and output, meaning you can speak to it, and it can speak back to you.

- You speak to Siri to ask it questions and give it commands, such as small tasks that you'd like it to complete.

- Siri does not process your speech input locally on your phone.

- The software sends commands through a remote server, so you have to be connected to Wi-Fi or a 3G signal.
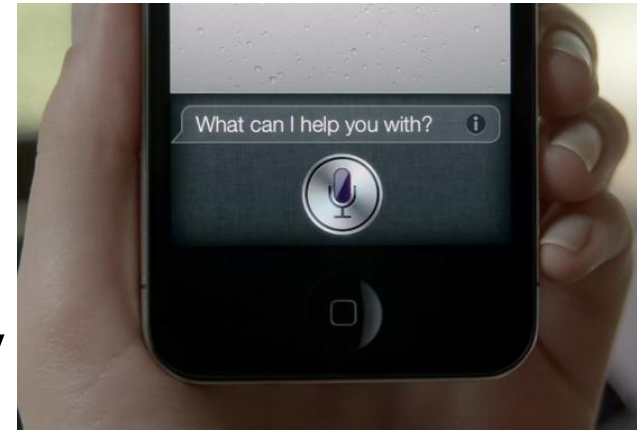
Siri May Forever Change Education

- While many were disappointed with the lack of new features that came standard on Apple's new iPhone 4S, there was one that many are hailing as a breakthrough in technology.

- That feature was **Siri**, the phone's built-in personal assistant.

- While **Siri** might be employed more often to help users find a latte than do anything life-changing, the technology itself is pretty amazing.

- **Siri** can listen, interpret, and respond to user voices, making it a huge leap forward in voice recognition technology.

Siri could Revolutionize Online Learning

- While Siri and other voice recognition tools could be an asset in traditional classrooms, these kinds of programs could also do wonders for online learners.

- Online learning generally requires more independence and self-motivation, but a helpful assistant could be there to help keep you on task, answer questions, and could even facilitate with sending an email to your professor.

Siri makes it simple to Communicate and Collaborate

- With Siri, users can easily email, text, or call without having to lift a finger.

- Easy access to these kinds of communication could make it easier than ever for students to work together, get help from teachers, or just keep in touch.

Students could get help with Math Homework from Siri

- There are few things computers are better at than math, being based entirely on algorithms themselves.

- This makes them an incredibly useful tool for helping students learn about everything from basic addition to calculus.

- With a voice-activated program, students could use their mobile device as a calculator and also as a reference tool for finding help with a particularly troublesome question.

Problems with Homework won't stop Students in their Tracks

- With a personal assistant like Siri, students won't have to stop to get help with homework.

- Instead, they can simply ask Siri how to help them work through an especially puzzling problem.

- Of course, parents would have to watch to make sure the technology wasn't being used to just search for the answers.

What is 3D Printing?

- 3D Printing (3-Dimensional Printing) is a process under development at MIT for the rapid and flexible production of prototype parts, end-use parts, and tools directly from a CAD model.

- 3D printing is a method of manufacturing everything from tools to shoes to jewelery, or even car and aerospace parts using a computer-controlled printer.

- 3-Dimensional Printing has unprecedented flexibility.

- It can create parts of any geometry, and out of any material, including ceramics, metals, polymers and composites.

- It can exercise local control over the material composition, microstructure, and surface texture.
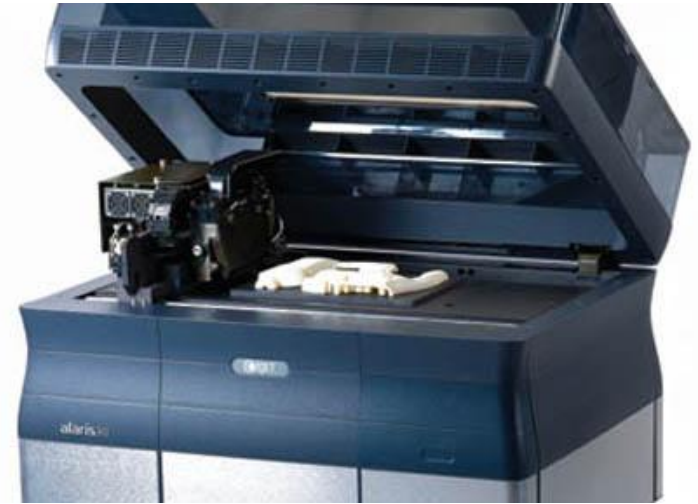
Future of 3-D Priting

- 3D printers can be used to create titanium aircraft parts, human bones, complex, nano-scale machines, and more.

- In the future, it's fairly safe to assume that we'll be able to manufacture almost anything with a 3D printer - and everything we can't make with a printer (clothes, textiles), automated CNC machines, or something like them, will take care of.

- It's important to note that we already have very accurate tools for creating 3D models of existing objects.

- We have the ability to scan a cup, and then create an exact copy using a 3D printer.

Robotics

- Robotics is the branch of technology that deals with the design, construction, operation, structural disposition, manufacture and application of robots and computer systems for their control, sensory feedback, and information processing.

- These technologies deal with automated machines that can take the place of humans, in hazardous or manufacturing processes, or simply just resemble humans.

Cont...

- The concept and creation of machines that could operate autonomously dates back to classical times, but research into the functionality and potential uses of robots did not grow substantially until the 20th century.

- Many robots do jobs that are hazardous to people such as defusing bombs, exploring shipwrecks, and mines.

What is Big Data?

- Every day, we create 2.5 quintillion bytes of data — so much that 90% of the data in the world today has been created in the last two years alone.

- This data comes from everywhere: sensors used to gather climate information, posts to social media sites, digital pictures and videos, purchase transaction records, and cell phone GPS signals to name a few.

- This data is big data.

- Big data spans three dimensions: **Volume**, **Velocity** and **Variety**.

Big Data : Volume

- Enterprises are awash with ever-growing data of all types, easily amassing terabytes—even petabytes—of information.

- Turn 12 terabytes of Tweets created daily into improved product sentiment analysis

- Convert 350 billion meter readings per annum to better predict power consumption.

Big Data: Velocity

- Sometimes 2 minutes is too late. For time-sensitive processes such as catching fraud, big data must be used as it streams into your enterprise in order to maximize its value.

- Scrutinize 5 million trade events per day to identify potential fraud.

- Analyze 500 million call detail records per day in real-time to predict customer churn faster.
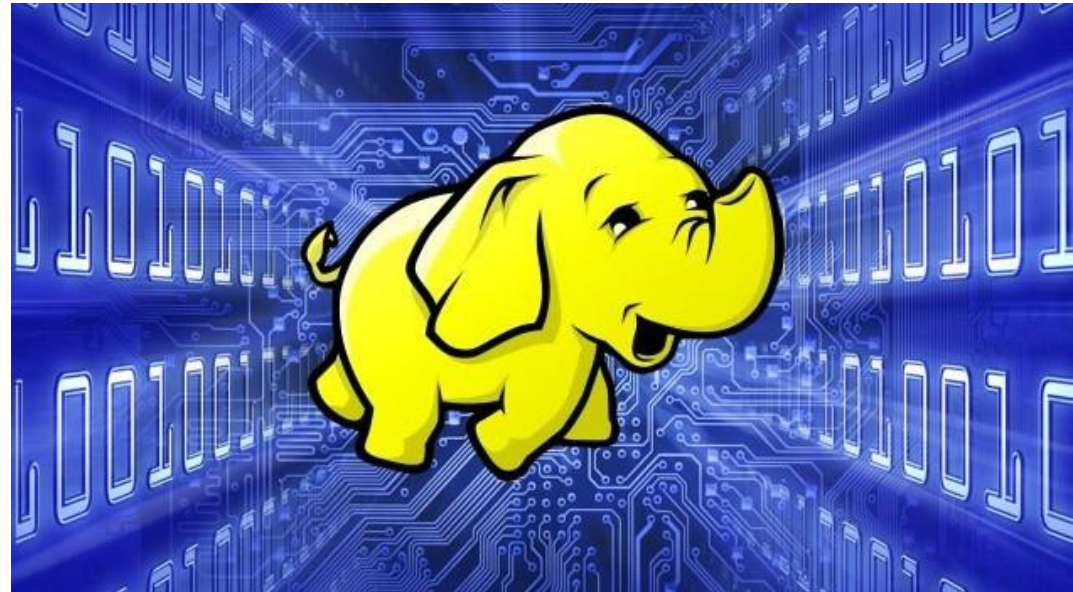
Big Data: Variety

- Big data is any type of data - structured and unstructured data such as text, sensor data, audio, video, click streams, log files and more. New insights are found when analyzing these data types together.

- Use 100's of live video feeds from surveillance cameras to monitor points of interest

- Take advantage of the 80% data growth in images, video and documents to improve customer satisfaction.

IBM Watson

- Watson is an artificial intelligence 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 president, Thomas J. Watson.

- In 2011, as a test of its abilities, Watson competed on the quiz show Jeopardy, in the show's only human-versus-machine match-up to date.

- Watson received the first prize of $1 million, while Ken Jennings and Brad Rutter received $300,000 and $200,000, respectively.
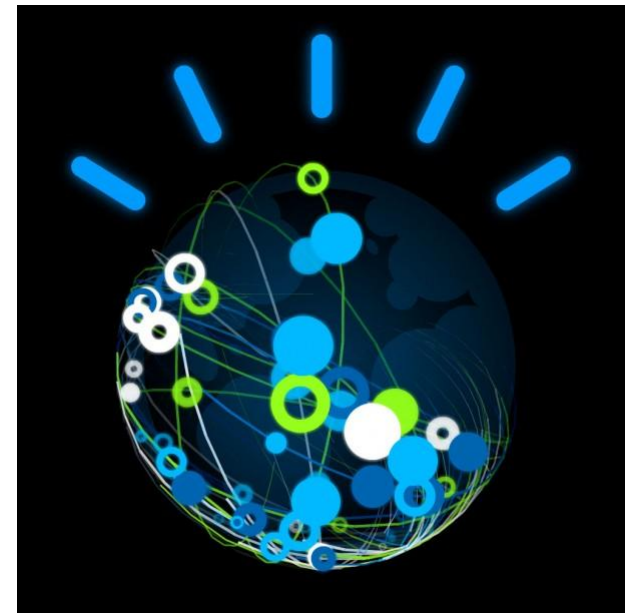
Quantum Computing

- A classical computer has a memory made up of bits, where each bit represents either a one or a zero. A quantum computer maintains a sequence of qubits.

- A single qubit can represent a one, a zero, or, crucially, any quantum superposition of these two qubit states.

- Moreover, a pair of qubits can be in any quantum superposition of 4 states, and three qubits in any superposition of 8.

- In general, a quantum computer with n qubits can be in an arbitrary superposition of up to 2^n different states simultaneously.

Cont...

- Scientists have generated 10 bn bits of quantum entanglement in silicon for the first time.

- The breakthrough in silicon — the basis of the computer chip — has important implications for integration with existing technology, according to a team of international scientists.

- The team, which comprised scientists from Britain, Japan, Canada and Germany, believe that super-fast quantum computers, based on quantum bits called qubits, will be able to test many possible solutions to a problem at once.

Cont...

- Traditional computers are based on binary switches, or bits, and can only perform one task at a time.

- According to scientists, quantum entanglement involves the notion that particles can be connected in such a way that changing the state of one instantly affects the other, even when they are miles apart.

- For this research, the team used high magnetic fields and low temperatures to produce entanglement between the electron and the nucleus of an atom of phosphorous embedded in a silicon crystal.

Some Quotes....

"Creating ten billion entangled pairs in silicon with high fidelity is an important step forward for us."

"We now need to deal with the challenge of coupling these pairs together to build a scalable quantum computer in silicon."

— John Morton, Oxford University

Digital Manufacturing

- The first industrial revolution began in Britain in the late 18th century, with the mechanisation of the textile industry.

- The second industrial revolution came in the early 20th century, when Henry Ford mastered the moving assembly line and ushered in the age of mass production.

- Now, a third revolution is under way. Manufacturing is going digital.

- Digitisation in manufacturing will have a disruptive effect every bit as big as in other industries that have gone digital, such as office equipment, telecoms, photography, music, publishing and films.

- Launching novel products will become easier and cheaper.

Cont...

- It will allow things to be made economically in much smaller numbers, more flexibly and with a much lower input of labour, thanks to new materials, completely new processes such as 3D printing, easy-to-use robots and new collaborative manufacturing services available online.

- The wheel is almost coming full circle, turning away from mass manufacturing and towards much more individualised production.

- And that in turn could bring some of the jobs back to rich countries that long ago lost them to the emerging world.

Brett Ryder

Nano - Technology

- Nanotechnology is the engineering of functional systems at the molecular scale.

- This covers both current work and concepts that are more advanced.

- In its original sense, 'nanotechnology' refers to the projected ability to construct items from the bottom up, using techniques and tools being developed today to make complete, high performance products.

- Nanotechnology not only will allow making many high-quality products at very low cost, but it will allow making new nanofactories at the same low cost and at the same rapid speed.
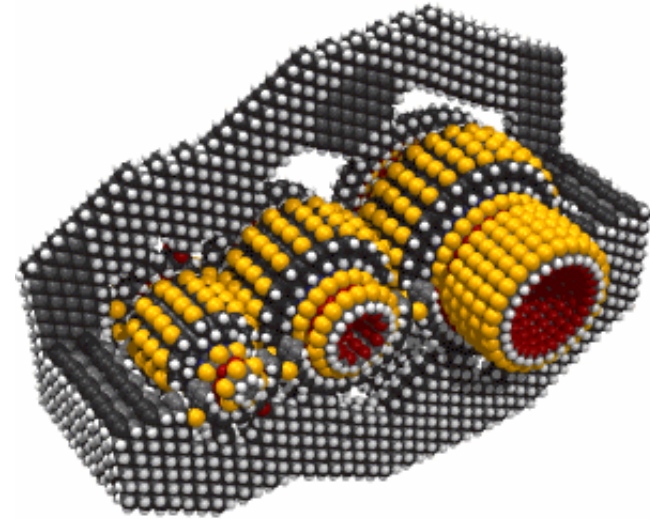
Nano - Technology

- The key idea of Nano-learning is the intersection of a small question with a great small answer.

Bio-Technology

- The term "biotechnology" refers to the use of living organisms or their products to modify human health and the human environment.

- The definition of biotechnology varies, but a simple definition is the use of living organisms by humans.

- Prehistoric biotechnologists did this as they used yeast cells to raise bread dough and to ferment alcoholic beverages, and bacterial cells to make cheeses and yogurts and as they bred their strong, productive animals to make even stronger and more productive offspring.

- Biotechnology is utilizing the sciences of biology, chemistry, physics, engineering, computers, and information technology to develop tools and products that hold great promise.

Thank you !

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