Listening script:

So this is my niece. Her name is Yahli. She is nine months old. Her mum is a doctor, and her dad is a lawyer. By the time Yahli goes to college, the jobs her parents do are going to look **dramatically** different.

In 2013, researchers at Oxford University did a study on the future of work. They **concluded** that almost one in every two jobs have a high risk of being **automated** by machines. Machine learning is the technology that's responsible for most of this **disruption**. It's the most powerful branch of **artificial intelligence**. It allows machines to learn from data and **mimic** some of the things that humans can do. My company, Kaggle, **operates** on the cutting edge of machine learning. We bring together hundreds of thousands of experts to solve important problems for **industry** and **academia**. This gives us a unique **perspective** on what machines can do, what they can't do and what jobs they might **automate** or **threaten**.

Machine learning started making its way into **industry** in the early '90s. It started with **relatively** simple tasks. It started with things like **assessing** credit risk from loan applications, sorting the mail by reading handwritten characters from zip codes. Over the past few years, we have made **dramatic breakthroughs**. Machine learning is now capable of far, far more complex tasks. In 2012, Kaggle challenged its community to build an **algorithm** that could grade high-school essays. The winning **algorithms** were able to match the grades given by human teachers. Last year, we issued an even more difficult **challenge**. Can you take images of the eye and **diagnose** an eye disease called diabetic retinopathy? Again, the winning **algorithms** were able to match the **diagnoses** given by human ophthalmologists.

Now, given the right data, machines are going to **outperform** humans at tasks like this. A teacher might read 10,000 essays over a 40-year career. An ophthalmologist might see 50,000 eyes. A machine can read millions of essays or see millions of eyes within minutes. We have no chance of competing against machines on frequent, high-volume tasks.

But there are things we can do that machines can't do. Where machines have made very little progress is in tackling **novel** situations. They can't handle things they haven't seen many times before. The **fundamental limitations** of machine learning is that it needs to learn from large **volumes** of past data. Now, humans don't. We have the ability to connect seemingly **disparate threads** to solve problems we've never seen before.

Percy Spencer was a **physicist** working on **radar** during World War II, when he noticed the magnetron was melting his chocolate bar. He was able to connect his understanding of electromagnetic radiation with his knowledge of cooking in order to invent -- any guesses? -- the microwave oven.

Now, this is a particularly remarkable example of creativity. But this sort of **cross-pollination** happens for each of us in small ways thousands of times per day. Machines cannot compete with us when it comes to **tackling novel** situations, and this puts a **fundamental** limit on the human tasks that machines will **automate**.

So what does this mean for the future of work? The future state of any single job lies in the answer to a single question: To what extent is that job **reducible** to **frequent**, high-**volume** tasks, and to

what extent does it involve **tackling novel** situations? On frequent, high-**volume** tasks, machines are getting smarter and smarter. Today they grade essays. They **diagnose** certain diseases. Over coming years, they're going to **conduct** our audits, and they're going to read **boilerplate from legal contracts**. Accountants and lawyers are still needed. They're going to be needed for complex tax **structuring**, for **pathbreaking litigation**. But machines will shrink their ranks and make these jobs harder to come by.

Now, as mentioned, machines are not making progress on **novel** situations. The copy behind a marketing **campaign** needs to grab consumers' attention. It has to stand out from the crowd. Business **strategy** means finding gaps in the market, things that nobody else is doing. It will be humans that are creating the copy behind our marketing **campaigns**, and it will be humans that are developing our business **strategy**.

So Yahli, whatever you decide to do, let every day bring you a new **challenge**. If it does, then you will stay ahead of the machines.

Thank you.

Vocabulary:

dramatic/dramatically	**concluded**	**automated**	
disruption	**artificial intelligence**	**mimic**	
operates	**industry**	**academia**	
perspective	**automate**	**threaten**	
relatively	**assessing**	**breakthroughs**	
algorithm	**challenge**	**diagnose / diagnoses**	
outperform	**novel**	**fundamental**	
limitations	**volumes**	**disparate**	
threads	**physicist**	**radar**	
cross-pollination	**tackling**	**reducible**	
frequent	**conduct**	**boilerplate**	
legal contracts	**structuring**	**pathbreaking**	
litigation	**campaign**	**strategy**	
soared	**tenfold**	**internationally**	**over reliant**
overrun	**facial expressions**	**quiver**	**artificial intelligence**
donated	**robust**	**beneficial**	

Questions:

Vocabulary word	**Synonym**	**Antonym** (If any)
Frequent		
Conduct		
Strategy		
Campaign		
Assessing		
Threaten		
Dramatic		

- **How old is Yahli? _____**
- **What is Yahli's mother's profession? _____**
- **What is Yahli's father's profession? _____**
- **What did Oxford University research in 2013? _____**
- **Which technology is responsible for jobs being replaced? _____**
- **What does 'artificial intelligence' allow machines to do? _____**
- **What decade did 'artificial intelligence' start making its way into the industry?_____**
- **What was Perry Spencer working on during WW2? _____**
- **What did he accidentally discover? _____**

Writing:

There are many jobs which can be automated, but can you think of a job which could never be automated? Why?

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_____

Do you think machines can be more intelligent than humans? Why?

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_____

Reading:

The technology available to us has **soared** in recent years opening us up a world of opportunity and improving our lives **tenfold**. We now have access to machines and devices that can assist us in our everyday activities, making it possible to do things like to communicate **internationally** in an instant. This has led to many people believing that we are **over reliant** on this technology. Some **sceptics** go even further and say that not only will we become **over reliant** but that machines will in time **overrun** humanity as we know it, and thus control the world.

This raises the question, is there a real chance that machines could take over the world? We were so interested on the divided opinions that we decided to open it up for debate.

Most people are still relatively confident that machines will not become intelligent enough to be able to think for themselves and take over. However, the American Poet, Diane Ackerman, once said, "Artificial intelligence is growing up fast, as are robots whose **facial expressions** can elicit empathy and make your mirror neurons **quiver**." She is not alone in these thoughts with a lot of theorists supporting this view that developing **artificial intelligence** too much could be dangerous. One individual who has stood out in recent years is Tesla CEO Elon Musk. He has **donated** millions of dollars to the future of life institute – an institute that uses money to keep artificial intelligence "**robust** and **beneficial**."

The other side of the argument is that no matter how intelligent machines become, they are created by humans and they can never become as intelligent as their creators. We will leave you with the words of American writer Elbert Hubbard, who claimed that "one machine can do the work of fifty ordinary men but no machine can do the work of one extraordinary man."

What does Diane Ackerman believe about artificial intelligence?

_____

_____

What does Elbert Hubbard believe about artificial intelligence?

_____

_____

What do YOU believe about artificial intelligence? Do you believe it could be dangerous to humanity? Why?

_____

_____

Paraphrasing:

“Almost one in every two jobs have a high risk of being **automated** by machines”

_____

_____

“Over the past few years, we have made **dramatic breakthroughs**. Machine learning is now capable of far, far more complex tasks.”

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“The **fundamental limitations** of machine learning is that it needs to learn from large **volumes** of past data. Now, humans don't.”

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“It will be humans that are creating the copy behind our marketing **campaigns**, and it will be humans that are developing our business **strategy**.”

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“Let every day bring you a new **challenge**. If it does, then you will stay ahead of the machines.”

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