

Date	Research	Thoughts
8/24/18	<ul style="list-style-type: none"><li>• Machines that use AI are only capable of doing very specific tasks, and they will fail when given something out of their specific task.</li><li>• Machines lack common sense, or any actual understanding; they can do their specified task better and faster than a human, but a human may understand the results better, and if given a difficult problem outside of a machine's specific task, will do it better</li><li>• It is debated how to determine when computers are intelligent, and if computers would even be considered intelligent if they could be human-like</li></ul> <p>Source: <a href="https://courses.cs.vt.edu/csonline/AI/Lessons/Introduction/index.html">https://courses.cs.vt.edu/csonline/AI/Lessons/Introduction/index.html</a></p>	<ul style="list-style-type: none"><li>• So far, my research is doing well; I found a reliable source that has a table of contents with different pages on its website that explain different aspects of artificial intelligence</li><li>• This research is for general things about Artificial intelligence, briefly going over what current artificial intelligence is capable of, comparing it to humans, and it even briefly goes over philosophical views on what intelligence really is</li></ul>
8/24/18	<ul style="list-style-type: none"><li>• Humans can store more information than computers (the human brain can store about 50 trillion bits while computers can only store about 1 trillion bits)</li><li>• Humans can process more pieces of information at once compared to computers</li><li>• Computers are capable of transferring data faster than humans (due to data being able to transfer through a wire at very fast speeds)</li><li>• Computers are better at some things such as handling direct data in the form of numbers while humans are better when it comes to things such as</li></ul>	<ul style="list-style-type: none"><li>• I feel that my research is now getting more specific, with more examples, which is good</li><li>• I was given specific things that humans are good at, and specific things that computers were good at, as well as an example for each. To get a deeper understanding for each of the example programs, I versed the checkers artificial intelligence that was discussed in this source, and also found the ELIZA program, to see how it did in a conversation. I saw that the checkers easily won, and the ELIZA seemed to repeating questions often, and obviously was</li></ul>

	<p>reasoning or common sense</p> <ul style="list-style-type: none"> <li>• For example, a computer (Chinook) beat the best human player of checkers in the world <ul style="list-style-type: none"> <li>◦ This is because this involves using numbers and making calculations</li> </ul> </li> <li>• Another example, this time showing what computers struggle with, is in the computer program ELIZA <ul style="list-style-type: none"> <li>◦ ELIZA attempts to be in a conversation, which requires a huge amount of information about general facts and experience, as well as understanding of language <ul style="list-style-type: none"> <li>■ Not only do computers not understand language well enough to perform well, but humans can also store more information</li> </ul> </li> </ul> </li> </ul> <p>Source:  <a href="https://courses.cs.vt.edu/csonline/AI/Lessons/HversusC/index.html">https://courses.cs.vt.edu/csonline/AI/Lessons/HversusC/index.html</a></p>	<p>not perfect in conversation</p> <ul style="list-style-type: none"> <li>• Just like discussed in the article, the computer was better at handling numbers (the checkers) and it struggled with reasoning and understanding language (the ELIZA)</li> </ul>
8/25/18	<ul style="list-style-type: none"> <li>• In programming, a phrase always means one thing</li> <li>• In language, a phrase can mean multiple things, making a computer have a harder time to understand the phrase, needing context of the situation</li> <li>• Computer language translation and speech recognition use artificial intelligence to attempt to understand the syntax, the semantics, and the context of the question or phrase</li> </ul> <p>Source:  <a href="https://courses.cs.vt.edu/csonline/AI/Lessons/LangProces">https://courses.cs.vt.edu/csonline/AI/Lessons/LangProces</a></p>	<ul style="list-style-type: none"> <li>• With this research, I am getting to know more about artificial intelligence, and getting to really understand how many things in everyday life use artificial intelligence</li> <li>• I never knew how complex google translate and my amazon echo was</li> <li>• I think it is very interesting that computers are able to understand the syntax, semantics, and context, and using that, they can almost understand any phrase or question</li> </ul>

	<a href="#">sing/index.html</a>	
8/25/18	<ul style="list-style-type: none"> <li>• When trying to solve something such as a puzzle, a computer can use a search tree, where it sees all possible combinations until it reaches the goal</li> <li>• This is better than having all possible combinations already programmed because even for smaller puzzles, it can take many combinations, making it quicker to just set of a search tree</li> <li>• To increase efficiency of a search tree, a computer can search through a whole branch of the tree first before going onto other branches, starting with the most likely branches with a solution</li> <li>• Heuristics, where the computer determines whether the conditions of a specific branch would make the branch worth checking or not can make a computer program more efficient</li> <li>• Heuristics was used to defeat the world's best chess player</li> <li>• The chess program can consider many more moves per second, but almost all the moves are useless</li> </ul> <p>Source:  <a href="https://courses.cs.vt.edu/csonline/AI/Lessons/GamePlaying/index.html">https://courses.cs.vt.edu/csonline/AI/Lessons/GamePlaying/index.html</a></p>	<ul style="list-style-type: none"> <li>• This research will help me understand how artificial intelligence works a bit more, with how it thinks of every possible outcome</li> <li>• It also allowed me to compare humans to artificial intelligence a bit more; computers are capable of thinking much faster, making computers think many more moves ahead, but humans are more efficient when it comes to considering possible outcomes</li> <li>• For example with chess, the former chess champion would think of a few moves every second, and the computer could do many more, but most of the moves that the computer considers makes no sense</li> </ul>
9/6/18	<ul style="list-style-type: none"> <li>• Optical Character Recognition is where a computer can read text from an image</li> <li>• OCR can read many fonts, but struggle with written text</li> <li>• Two types of OCR (Matrix matching and pattern extraction)</li> </ul>	<ul style="list-style-type: none"> <li>• I feel that I am getting a lot of research. I will be able to discuss many examples of artificial intelligence during my presentation</li> <li>• However, I feel that for a 5 minute presentation, I may be getting too specific into types of AI, such as how I now know details of</li> </ul>

	<ul style="list-style-type: none"> <li>○ Matrix matching compares a character to a template of each character. This works best when the characters are all consistent and the template matches the font of the characters</li> <li>○ Pattern extraction looks for specific things in a character that make the character distinct no matter what font is used for the most part. Some letters are more difficult than others to apply this method on</li> <li>○ A combination of these are used in most OCR programs</li> <li>● To improve the accuracy of OCR on handwriting, a sample of the writer's handwriting can be used as a template</li> </ul> <p>Source:  <a href="https://courses.cs.vt.edu/csonline/AI/Lessons/VisualProcessing/index.html">https://courses.cs.vt.edu/csonline/AI/Lessons/VisualProcessing/index.html</a></p>	<p>OCR, and how from previous research, I learned a lot about search trees. I am going to keep researching a bit in depth on how AI works, and once I get a lot of information, I will see what should be presented and what should not. I have to make sure that I give myself enough time though to research the social side of AI and have time to organize my slides as well as practice.</p>
9/6/18	<ul style="list-style-type: none"> <li>● Artificial neural networks is where processors are connected in a way that is based off of neurons. There are many neurons in the brain</li> <li>● The artificial neural network is first given a number of inputs. The output that is correct has already been manually inputted for the machine to know</li> <li>● The correct output is now compared with the output from the network</li> <li>● Now the weight of some or all of the inputs will be changed. Overtime, the machine will make less mistakes</li> <li>● This "learning process" is useful in situations in which the solution cannot be easily solved in a</li> </ul>	<ul style="list-style-type: none"> <li>● I feel that artificial neural networks should be a pretty big part of how artificial intelligence works in my presentation. Although it is probably going to be a bit difficult to explain it in a short enough time to still explain everything else, I feel that if I explain it in simple terms with a picture and to just give the overall concept, I will be able to give a good explanation of it</li> <li>● Artificial neural networks gives a simple explanation on how artificial intelligence can actually learn, so I feel that this should definitely be included.</li> </ul>

	<p>series of steps</p> <ul style="list-style-type: none"> <li>Artificial neural networks work best in situations in which <ul style="list-style-type: none"> <li>there are many examples of the correct solution</li> <li>data exists that can be used for the problem</li> </ul> </li> </ul> <p>Source:  <a href="https://courses.cs.vt.edu/csonline/AI/Lessons/NeuralNetworks/index.html">https://courses.cs.vt.edu/csonline/AI/Lessons/NeuralNetworks/index.html</a></p>	
9/9/18	<p><b>Negative Incidents</b></p> <ul style="list-style-type: none"> <li>Amazon Echo once ordered a child a \$170 doll house by just asking for it</li> <li>A Japanese Insurance company replaced 30 workers with artificial intelligence to increase efficiency</li> <li>An AI car did not identify 6 red lights and completely ignored one</li> </ul> <p>Source:  <a href="https://curious.stratford.edu/2018/01/30/whats-so-great-about-artificial-intelligence">https://curious.stratford.edu/2018/01/30/whats-so-great-about-artificial-intelligence</a></p>	<ul style="list-style-type: none"> <li>I think this research will be helpful for the cons of AI in my presentation. It is interesting to see this negative incidents</li> <li>The Amazon Echo incident, I feel could be solved, and it was mostly just overlooked, by just adding a setting that removed orders by amazon echo or making a password or pin, so that only adults can order</li> <li>The Japanese Insurance company incident is more serious. Artificial intelligence is removing jobs, and it is making it harder for people to get certain jobs. However, artificial intelligence could potentially open up more jobs with AI research and development. It could also create new companies with AI making it easier to own a company</li> <li>The AI car example could probably also be fixed. Bugs like this are the reason it is still being tested. However, it is dangerous to risk</li> </ul>
9/9/18	<p><b>Positive current uses</b></p> <ul style="list-style-type: none"> <li>Music apps use AI</li> </ul>	<ul style="list-style-type: none"> <li>These positives of AI that are used will help my presentation. I will be able to show how AI</li> </ul>

	<ul style="list-style-type: none"> <li>• Siri</li> <li>• Videogame experience is better with AI</li> <li>• Uber uses AI</li> <li>• Email uses AI to determine spam</li> <li>• Netflix uses AI to make recommendations</li> <li>• Ad blockers use AI</li> </ul> <p>Source:  <a href="https://curious.stratford.edu/2018/01/30/whats-so-great-about-artificial-intelligence">https://curious.stratford.edu/2018/01/30/whats-so-great-about-artificial-intelligence</a> </p>	<p>makes life easier by listing some things that people use everyday which have AI</p> <ul style="list-style-type: none"> <li>• A lot of people may not realize how many things they use are made with AI, so this may help show how useful AI is now, and how AI could be even more useful in the future</li> </ul>
9/9/18	<p><b>Pros</b></p> <ul style="list-style-type: none"> <li>• AI makes faster decisions than humans and can complete many tasks faster</li> <li>• With AI making more decisions, bias will not be involved</li> <li>• AI can makes decisions and do tasks without emotions impacting anything</li> <li>• AI can be given the less desirable and boring jobs</li> <li>• Humans make more mistakes than AI in their specific tasks</li> <li>• Machines do not get tired and are consistent</li> </ul> <p>Source:  <a href="https://curious.stratford.edu/2018/01/30/whats-so-great-about-artificial-intelligence">https://curious.stratford.edu/2018/01/30/whats-so-great-about-artificial-intelligence</a> </p>	<ul style="list-style-type: none"> <li>• In my opinion, all of the pros make sense and give reason to make AI. They will increase efficiency and improve society</li> <li>• These will help me list the positives of AI, and I also plan to mention a good amount of positives in my stance near the end</li> <li>• All of these positives show how a machine can do some jobs more efficiently than humans and without some human flaws such as bias, emotions impacting decisions, human mistakes, and getting tired</li> </ul>
9/9/18	<p><b>Cons</b></p> <ul style="list-style-type: none"> <li>• Increase in unemployment with AI taking human jobs</li> <li>• The people making the AI have the power</li> <li>• Cyber attacks could impact important AI jobs</li> </ul>	<ul style="list-style-type: none"> <li>• Most of these seem like good cons to explain in my presentation. The first three are negatives for the future and the rest are current negatives of AI that could possibly be fixed in the future</li> </ul>

- AI can be high cost
- Machines do not think ethically, so they cannot make ethical decisions
- Does not have creativity

Source:

<https://curious.stratford.edu/2018/01/30/whats-so-great-about-artificial-intelligence>

- An increase in unemployment is something that will likely happen because AI will be able to replace many different jobs. However, there will likely be other jobs that open up that are in AI research, or even more leisure time if AI can replace most current work
- I agree that the people making AI will likely have a lot of power. They will be able to give themselves social benefits and other benefits, so it is important for the government to step in once AI advances. Almost everyone will be using AI and the people making it will have a lot of power
- One of the biggest downsides of AI is how they can be hacked to cause harm to others. It is important for AI that could do harm to have a large amount of security to prevent cyber attacks
- AI having high cost is one downside of current AI. However, the price will likely drop for many current AI as AI advances, and it being high cost will only affect companies really, where they would just currently stick to human workers until the price drops
- Not thinking ethically is a downside in current AI, but AI is still great at other specific tasks. It is important to leave important ethical decisions to humans, even maybe if AI advances to think more ethically
- Creativity is also a downside of current AI, but AI is still capable of other tasks that it specializes in, and in the future, AI may be

		able to start thinking more creatively
9/9/18	<ul style="list-style-type: none"> <li>● In health care, AI can give possible conditions and treatments to patients, deliver anesthesia, and helps in certain procedures</li> <li>● AI in finance increases efficiency, lowers expenses, and earns more money. AI also can make predictions in the stock market.</li> </ul> <p>Source:  <a href="https://onlinemasters.ohio.edu/blog/how-ai-will-transform-these-7-key-industries/">https://onlinemasters.ohio.edu/blog/how-ai-will-transform-these-7-key-industries/</a></p>	<ul style="list-style-type: none"> <li>● Health care and hospitals will benefit greatly from AI</li> <li>● AI already helps with figuring out medical information on patients and helps with actual medical procedures, and it will likely continue to get better as time goes on</li> <li>● I will be able to discuss that not only does AI help with everyday things such as recommending music, AI is helping the health of people, and can even possibly save lives</li> <li>● I will also be able to discuss how AI is good at making financial decisions and saves companies a lot of money</li> </ul>
9/9/18	<ul style="list-style-type: none"> <li>● AI can be given management roles to make good decisions based on data. However, if the task does not completely involve numbers, it will leave the job for human management</li> <li>● AI can help in education by tracking how students are doing and helping struggling students through feedback</li> </ul> <p>Source:  <a href="https://onlinemasters.ohio.edu/blog/how-ai-will-transform-these-7-key-industries/">https://onlinemasters.ohio.edu/blog/how-ai-will-transform-these-7-key-industries/</a></p>	<ul style="list-style-type: none"> <li>● It is interesting how AI can actually help manage companies. This is something I will probably want to mention in my presentation</li> <li>● When it comes to data, it is good that AI is making the decisions because that will increase the efficiency without any other factors that human managers may have</li> <li>● It is also good that the AI will give the job to a human when it does not involve numbers because there is a chance of a bad decision if it attempts to decide</li> <li>● AI in education for the future will likely help the school system greatly</li> <li>● AI helping students will likely make students learn more in less time</li> </ul>



9/9/18	<ul style="list-style-type: none"> <li>• AI can be used to help airplanes, cars, and trains</li> <li>• AI can also be used to predict car accidents and then call the ambulance when it is likely. AI could also give drivers information as they drive to increase safety</li> </ul> <p>Source:  <a href="https://onlinemasters.ohio.edu/blog/how-ai-will-transform-these-7-key-industries/">https://onlinemasters.ohio.edu/blog/how-ai-will-transform-these-7-key-industries/</a></p>	<ul style="list-style-type: none"> <li>• This will be helpful in the pros of AI section of my presentation</li> <li>• Although there was a mention on another website about how AI cars are ignoring red lights, as shown in this website, transportation, overall, will be safer in the long term due to AI</li> <li>• There are currently bugs and issues in modern AI that is for transportation that is still being developed, but AI will likely decrease the accidents in the future by a great amount</li> </ul>
9/10/18	<ul style="list-style-type: none"> <li>• As technology is advancing, jobs are being made and taken by artificial intelligence</li> <li>• In years, AI is predicted to be able to do more tasks <ul style="list-style-type: none"> <li>◦ Write original essays, drive, working in retail stores, write original and successful books, surgery, and eventually take over all jobs</li> </ul> </li> <li>• Many people are predicted to lose their jobs</li> </ul> <p>Source:  <a href="https://www.brookings.edu/blog/brookings-now/2018/05/23/artificial-intelligence-will-disrupt-the-future-of-work-are-we-ready/">https://www.brookings.edu/blog/brookings-now/2018/05/23/artificial-intelligence-will-disrupt-the-future-of-work-are-we-ready/</a></p>	<ul style="list-style-type: none"> <li>• This will help me explaining the negatives of AI</li> <li>• Although AI will be able to do many things, that can be considered bad because there will be many losses in jobs</li> <li>• However, at the same time, this is a positive</li> <li>• It could mean that people no longer have to work, or at least not as much, and then there is more leisure time</li> </ul>
9/10/18	<ul style="list-style-type: none"> <li>• Although jobs are very likely to be taken away, the benefits of newer technology outweigh the fact that jobs will be lost</li> <li>• Virtual reality helps in preparing for disasters, gaming, military training, and health issues</li> <li>• Police body cameras increase safety</li> <li>• Online school can be attended by cancer patients</li> </ul>	<ul style="list-style-type: none"> <li>• Although the article just presented a huge possible negative of job losses, after listing all of the good that newer technologies are doing, it seems that these make it worth it for there to be job losses</li> <li>• It would not be worth it for technology, specifically artificial intelligence to be slowed</li> </ul>

	<p>that must receive treatment</p> <ul style="list-style-type: none"> <li>• Medical information can be shared to places in need of it</li> <li>• Costs are being saved</li> </ul> <p>Source:  <a href="https://www.brookings.edu/blog/brookings-now/2018/05/23/artificial-intelligence-will-disrupt-the-future-of-work-are-we-ready/">https://www.brookings.edu/blog/brookings-now/2018/05/23/artificial-intelligence-will-disrupt-the-future-of-work-are-we-ready/</a></p>	<p>down because of all of the good that it can do</p> <ul style="list-style-type: none"> <li>• If artificial intelligence really does come to the point in which most people do not have jobs, there will likely be solutions so that society can overall, improve with all of the new technologies and benefits</li> </ul>
9/10/18	<ul style="list-style-type: none"> <li>• When it comes to the point that there are little jobs because of AI, it may be necessary to give benefits for things such as volunteering, parenting, and mentoring</li> <li>• The government may also need to provide incomes for everyone and other basic benefits for everyone</li> </ul> <p>Source:  <a href="https://www.brookings.edu/blog/brookings-now/2018/05/23/artificial-intelligence-will-disrupt-the-future-of-work-are-we-ready/">https://www.brookings.edu/blog/brookings-now/2018/05/23/artificial-intelligence-will-disrupt-the-future-of-work-are-we-ready/</a></p>	<ul style="list-style-type: none"> <li>• This will likely help me explain my stance on AI</li> <li>• I plan to say that AI should be continued to be worked on and explain how some of the negatives can be fixed</li> <li>• If there are little jobs, benefits and wages can be given to every person as it will cost less to implement AI to do work than to pay workers</li> </ul>
9/11/18	<ul style="list-style-type: none"> <li>• A robot has been created that learns to complete tasks by trial and error</li> <li>• The robot can learn to do many tasks without having programmed the specific task or having programmed details on its surroundings</li> <li>• It adapts to its environment and does not need to have everything be in specific locations</li> </ul> <p>Source:</p>	<ul style="list-style-type: none"> <li>• This will be a good advanced use of AI to discuss near the start of my presentation</li> <li>• It will get to show a good application of modern AI, and it will also lead me into introducing artificial neural nets in a few slides</li> </ul>

	<a href="http://news.berkeley.edu/2015/05/21/deep-learning-robot-masters-skills-via-trial-and-error/">http://news.berkeley.edu/2015/05/21/deep-learning-robot-masters-skills-via-trial-and-error/</a>	
9/11/18	<ul style="list-style-type: none"> <li>• One way to make a robot like this is to program all of the tasks of the robot and put the location of every object</li> <li>• It is much more efficient to use deep learning with artificial neural networks</li> <li>• Similar to humans, the robot will not know how to do everything when it is first made, but it must learn everything</li> <li>• Neural nets can be used for pixels and sound waves to find patterns</li> </ul> <p>Source:  <a href="http://news.berkeley.edu/2015/05/21/deep-learning-robot-masters-skills-via-trial-and-error/">http://news.berkeley.edu/2015/05/21/deep-learning-robot-masters-skills-via-trial-and-error/</a> </p>	<ul style="list-style-type: none"> <li>• It is interesting how the robot is able to adapt to its environment and learns to complete tasks without being pre programmed for it</li> <li>• Technology like this is what will allow for more AI technologies to become advanced in the future; where the robot is actually learning</li> <li>• This uses some of the concepts that I will be discussing after the start of the presentation, so I can give a brief introduction to AI with explaining this robot, and maybe connect back to it when I get to more advanced parts like artificial neural networks</li> </ul>
9/11/18	<ul style="list-style-type: none"> <li>• The name of the robot is BRETT</li> <li>• Whenever it was doing something correctly, it would be “rewarded” where it would eventually learn the task that it was being rewarded for</li> <li>• It takes about 10 minutes to complete a task when coordinates are given</li> <li>• It takes about 3 hours to complete a task when no coordinates are given and needs to learn vision and control</li> </ul> <p>Source:  <a href="http://news.berkeley.edu/2015/05/21/deep-learning-robot-masters-skills-via-trial-and-error/">http://news.berkeley.edu/2015/05/21/deep-learning-robot-masters-skills-via-trial-and-error/</a> </p>	<ul style="list-style-type: none"> <li>• It is interesting how this robot learns</li> <li>• After being told that it is doing a task correctly or close to correct, it starts to learn how to do a task</li> <li>• It is also interesting how fast BRETT can learn a task without any information, only in 3 hours</li> <li>• Knowing how fast technology develops, in the future, machines like this will be able to learn how to do more complex tasks in less time</li> </ul>

Sources:

- <https://courses.cs.vt.edu/csonline/AI/Lessons/index.html> (How AI works / Limitations / AI vs Humans)
- <https://curious.stratford.edu/2018/01/30/whats-so-great-about-artificial-intelligence/> (pros and cons of AI)
- <https://onlinemasters.ohio.edu/blog/how-ai-will-transform-these-7-key-industries/> (pros of AI)
- <https://www.brookings.edu/blog/brookings-now/2018/05/23/artificial-intelligence-will-disrupt-the-future-of-work-are-we-ready/> (Future of work)
- <http://news.berkeley.edu/2015/05/21/deep-learning-robot-masters-skills-via-trial-and-error/> (Brett the robot)