In *Your Guide to Innovation and Design Methods*, Jeremiah Owyang (2017) writes about the most common software design methodologies. The most common design methods are the waterfall method, lean startup, design, agile, design sprint, and rapid prototyping (Owyang 2017). The waterfall method is the most traditional method; everything flows from one step to the next after the previous step has been completed. Owyang says this method is best when the requirements for the program are well defined (2017). The lean startup method is about building a program in cycles where each cycle contains 3 steps; build measure and learn (Owyang 2017). With the fast cycles this programming method allows for, it is easy to fix mistakes and create improvements, since the design will be cycling back to the build cycle anyway. The design methodology focuses on thinking outside of the box and using unconventional methods to build software (Owyang 2017). Owyang says that “design thinking starts with the challenge of defining not just any problem but the right problem”, and like the lean startup method, it is broken down into cycles of 3 steps; understand, explore, materialize (2017). The agile method is about being flexible during the design and programming. Its about breaking a project down into small parts and completing small steps. Design steps are a concept developed by Google Ventures, and they are about programming in 5 days (Owyang 2017). Each day has a development goal, and this method has been found to be a shortcut to solving complex problems (Owyang 2017). Finally there is rapid prototyping, which takes the design concepts of rapid prototyping in manufacturing and applies them to software (Owyang 2017). This accelerated design method allows for more testing of the product once it is designed. In the *Data Mining* video by The Checkout, some examples of how our data is being is used is shown. The video said that an algorithm that analyzed shopping habits at the retailer Target was able to determine that a teenager was pregnant. Her father did not know and was furious at target for sending targeted ads to his daughter, until he later found out that she was actually pregnant (The Checkout 2013). With data mining, companies can infer all sorts of information about people, and the video explains that everything we do online leaves a digital trail. Even getting a club card through a company can show the company all your purchases, which they can use to target ads to you and share your information with others to do the same (The Checkout 2013). The danger of this is that companies can target you when your most vulnerable, such as showing fast food ads when your hungry or trying to lose weight. Data mining can be used in ways other than collecting and using peoples information however. Louise Lintilhac of Backcountry Magazine (2018) writes in *Probing for data* about a group of scientists based out of Oregon State University, University of Washington, and University of Alaska who using data science to gather information about snow depths. Lintilhac says this will be a crowdsourced project, so when skiers or snowshoers head out into the backcountry they can use their probes to take snow-depth readings and then upload that data to an app (2018). This project is funded by NASA’s earth scientist division and will help them interpret aerial data and improve water runoff models (Lintilhac 2018). This information can also help with avalanche forecasting and how much snow melt to expect.

In the video *What is Cyberpsychology?*, cyberpsychology is defined as the intersection between human behavior and technology. Its goal is to see how technology influences behavior and to make future technology improve our lives. The video explained a few different approaches the researches are taking, for example, one of the approaches was using social media data to quantify alcohol consumption of young people, and perform an intervention. With the interference, young people reduced their alcohol consumption for 3 months and longer (UOS 2018). They are interested in using a form of social media to reduce the stigma of mental health for young people, and connect them to people with similar issues and counselors. They are also interested in seeing how VR can help with reducing the effect of phobias and reducing stress in the workplace (UOS 2018). DJ Pangburn writes in *Data artist Paolo Cirio takes on big tech’s social manipulation* about Paolo Cirio’s battle with privacy and patents. Pangburn writes about Cirio’s
website named Sociality, which allows users to browse search and rate patents, and also provides a ban option, which alerts politicians and power players to its existence (2018). The ban option could help with particularly invasive patents, and the end goal of the Sociality website is help regulate information technologies.

Carrie Anne explains the topics of AI and machine learning in her video Machine Learning & Artificial Intelligence: Crash Course Computer Science #34. She uses a classification algorithm between a butterfly and a moth as an example, and explains how a machine learning algorithm would solve the classification. Anne says that first the AI needs data that is already classified, then when working with new data, the machine will compare the features to the already known data and make a decision using a artificial neural network (2017). An artificial neural network is based on the biological neural network; each neuron has inputs that will only fire if it builds up enough charge (or in the case of artificial neural networks, enough weight) to output. The output neuron with the highest value is then the decision (Anne 2017). An algorithm that performs classification is a classifier, and she explains that the job of machine learning at a high level is to maximize classification (Anne 2017). Deep learning is a type of machine learning that involves many variables to be classified, and is so involved that its only recently been feasible due to hardware limitations (Anne 2017). She goes on to explain that there are even different types of AI, strong AI and weak AI. Weak AI is AI that is designed to perform a single task, it can classify a hummingbird, but it cannot go shopping or tell you which book to read next.  Strong AI is AI that is as well rounded as a human, but no one has achieved this level of AI as of yet (Anne 2017).

Mark Sullivan talks about the Section 230 statute and its effects in The 1996 law that made the web is in the crosshairs (2018) both when it was instated in 1996 versus now. Sullivan says that Section 230 of the Communications Decency Act of 1996 was instated to protect smaller internet companies from being liable to content posted on their website (2018). The problem was that many smaller companies were getting sued when they tried to moderate content on their site, it made them legally responsible. Thus when Section 230 was added, it contained “(c) (1) No provider or user of an interactive computer service shall be treated as the publisher or speaker of any information provided by another information content provider” which protected those smaller companies from legal liability (Sullivan 2018). Sullivan argues that the law is now outdated, and many lawmakers feel that large companies like Facebook and Google have used the legal cover provided by § 230 and have been slow to detect and remove harmful content (2018). Sullivan says that if the legal protections in § 230 were removed, then tech companies might be more hasty to moderate their content (2018). How that affects smaller companies is of some concern, so some lawmakers are proposing a revenue cap, say if a company makes more than $100 million per year then it would be exempt from § 230 (Sullivan 2018). This would protect the smaller companies while also making sure that the big companies are encouraged to do something about harmful content.

Annie Athon Heck interviewed Thomas G. Dietterich in a 2018 interview about AI, Promise and Potential Peril, Dietterich defines the difference between AI and machine learning to be that AI is a collection of techniques for programming computers to do things that people do, while machine learning is a technique for programming computers using data sets (Heck 2018). Dietterich says its controversial among AI people how far we could go in complete autonomy such as in self driving cars (Heck 2018). He says if we automate too much then drivers stop paying attention which could lead to accidents when there is an error on the computer side. Dietterich compares self driving cars to the Google search engine; while its great that Google usually gets what the user wants right it doesn’t always, there is sometimes error. With a self driving car that error could be life threatening. Dietterich mentions that there are anomaly detection algorithms being developed, which monitor a system and detect if there is a cybersecurity issue, a system issue etc. That could help with some of the safety issues of trusting a computer in an autonomous vehicle. He says there is
no regulatory body to monitor and audit AI software, and that there should be (Heck 2018). Dietterich closes
the interview with “The most important thing to remember about AI software is that it is software. And we all
know it is very hard to program software so it does what we want it to do” (Heck 2018).

**Reply to another student**

Giving people control of their data seems to be a very ethical goal. In *One Small Step for the Web…*, Tim
Berners-Lee (2018), one of the founders of the World Wide Web explains that Solid is an open source
project “to restore the power and agency of individuals on the web.” Tim says that big companies have used
the internet to further their own agendas, whereas he believes that the internet is for everybody. As you
mentioned about being given an online personal data store, that would be a great way for companies to
show their transparency in what data they collect and use. Solid gives the user a choice on where data is
stored, what is stored and what specific people can access (Berners-Lee 2018). Tim says that in 2009 he
said that we still have not experienced the web the way that he envisioned it; as a read-write web where
people can collaborate and share and be secure Berners-Lee 2018).