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Reece Koe inspired me to pursue data science in college and possibly even as a career. There were several key themes Mr. Koe shared during his interview with Ashlee Floyd that resonated with me— including the types of real-world problems data scientists can solve, the role that a data scientist plays in solving problems, the career journey Mr. Koe has followed, and the opportunities that are available for civilians to join the Navy.

Mr. Koe helped me see the endless opportunities that are available to data scientists to solve real-world problems. Originally when I learned about data science, I did not think of it as being highly interconnected to other fields of study or other industries. As Mr. Koe explained, however, I now understand that data scientists can be embedded in any data-rich industry that needs to support decision making, even sports! Mr. Koe further pointed out that data is broader than numbers and can even include text such as social media posts (i.e., Twitter). After learning about this, I did some internet research and saw that data scientists are able to analyze text using natural language processing (NLP), where unstructured data is transformed into structured data so it can be added to a database for analysis. Simply stated, I am excited about the limitless problems that a data scientist can solve.

The day-to-day role of a data scientist is to ingest large amounts of data in an efficient manner, and transform it into decision-making tools. For example, Mr. Koe described that artificial intelligence is being used to help the Navy do preventative maintenance. As I understand it, improved preventative maintenance would reduce the amount of downtime a ship has by increasing the amount of value-added maintenance the ship undergoes while it is already at port.

Mr. Koe described this problem statement so clearly that I began to wonder how I would go about solving this problem. The first thing I would do is decide what my dependent variable should be: since the Navy wants to predict whether a part is going to fail, I would want to know the age of every part on every ship when it failed. Next I would come up with a list of possible independent variables, which I would test for significance after collecting my data and building a model. Once I have a model in hand, I would identify any parts that are likely to fail in the near-term and ensure that they are maintained or replaced the next time a ship is at port. Finally, I would look for patterns in the findings to see if there are any commonsense actions the Navy could take to reduce the need for preventative maintenance in the first place. For example, if there are certain parts that are prone to fail, then the Navy should consider reengineering them so they are more durable. Alternatively, if there are certain parts that tend to last for a long time, the Navy should study them to understand if there are any design features that could be used to extend the life of other parts.

Possible variables that I can think of that could help predict part failures include: type of ship the part is installed on; manufacturing date of the part; manufacturer of the part; manufacturer of the raw material that was used to make the part; lot number of the part; name and experience level of the technician who installed the part; time elapsed since the part was last serviced (but not replaced); name and experience level of the people who operate the ship; climate and weather conditions the part was

exposed to during operation of the ship; total time the vessel idled without changing position; and total distance traveled since the part was last replaced.

I also found Mr. Koe to be an extremely relatable person. He discussed how he wanted to be an engineer, but after he completed an internship he realized he preferred to focus on data science as a career. Mr. Koe's career journey reminds me of my father's, who studied engineering in college and originally worked as an engineer, but his career evolved over time and he now heads a data science team at a company. In both cases, I see the importance of experience when making decisions about my future. Mr. Koe learned that he was more interested in creative problem solving with big data than working as a professional engineer. I hope that I will also be able to participate in internships so that I can be guided through hands-on experience. It is really exciting to know that the Navy makes internship opportunities available to high schoolers and college students. Having the ability to try my hand at data science in the real-world work environment would be an invaluable opportunity.

What is perhaps most inspirational about Mr. Koe's discussion is that I can see a pathway to someday join the Navy. My grandfather served in the Navy for over two decades as a medical doctor before he retired as a Captain. I have often wondered how I could work in the Navy, but as a civilian. Since Mr. Koe highlighted the importance of data science to the Navy, I see how I can fulfil my ambition of following in my grandfather's footsteps and contribute to the betterment of the armed forces of the United States of America and the safety of our country.

Thinking ahead to 20 years in the future, data science will enable the Navy to greatly expand its ability to manage its operations and complete missions while reducing the risk to service members and civilians alike. Thinking again of the example of preventative maintenance that Mr. Koe articulated, imagine if Navy ships were upgraded to include additional sensory technologies to monitor every key aspect of their operation at the part level, such as motion, vibration, temperature, pressure, leaks and other attributes. This would enable data scientists to conduct real-time monitoring of part performance and to go a step further to implement feedback control loops so that preventative maintenance could also be conducted in real-time. Furthermore, this feedback can also be provided to part manufacturers so they can also improve their manufacturing processes, and even begin to manufacture replacement parts once it is clear ships will need to replace them. The idea is to build data science directly into the design and maintenance of ships. If the vast resources of the Navy were able to figure out how to accomplish this, then these principles could also be used for civilians so they can have better running cars and houses. Imagine if the furnace repair company showed up to fix your furnace before it broke!