What is the first thing that comes to mind when we talk about driverless vehicles? Most people would say cars, but cars are just the tip of the iceberg of autonomous vehicles. Below the surface is where the vast majority of these robots lie.

I consider myself a rather curious person with a very keen interest in tech whether it be automobiles or gadgets. Ever since I was 10, I have always attended many tech advancement events, of which my favorite ones being the Web Summit and the annual events hosted by HUAWEI. Now, the first time I heard about non-car autonomous vehicles was through one of the guest speakers at the T&M Seminar class, Mark Niemeyer. He talked about the breakthroughs Caterpillar had in their line of autonomous vehicles. This really intrigued me because I have heard a lot about autonomous cars and how they are still in the early betas, but I never would have thought how much progress the mining/construction robots have made since their invention, which was over thirty years ago!

My initial thoughts on the matter were mixed, to say the least. I didn't think that these vehicles would be out of testing by now. The operations performed by such vehicles require not only a lot of precision but precedent AI knowledge to get past obstacles that usually require human intervention just like self-driving cars. I was proven completely wrong when I started doing research on the topic. The fact that Caterpillar had managed to cut costs by 20% for the clients and boosted productivity to upwards of 30% with this technology really intrigued me. The statistic that made me want to research this topic more was that all this was done without a single lost time incident. In other words, there were no instances where the technology made a mistake that cost more time than it would've taken a non-autonomous vehicle.

This is all made possible by the Autonomous Hauling Solution used by the company, which is called the command for hauling, and it basically acts as a connected network between all the driverless vehicles. The level of precision and details shared between these vehicles is actually incredible. Every vehicle on a certain mine or a site know the whereabouts of every other vehicle, and they can be controlled remotely by any worker from anywhere.

Although I think that this concept is truly revolutionary have no doubt that it will change how operations are being done in the future, I still couldn't help but think about all the drawbacks the current state of the system has. The most notable one being the unprecedented nature of the environment the vehicle is operating in. In the current state of the system, this nature of vehicles are limited to the native environments they are suited for, but upon digging deeper into this nature of automation, I came across DAWN, which is a small startup company focused on making software that allows industrial vehicles to drive autonomously, in variable weather, on both public and private roads. Due to the digital age we are living in today, I believe that cybersecurity is another major concern. To mitigate the possibility of vehicle systems being hacked, manufacturers must design autonomous vehicles with comprehensive security.

After realizing my new found interest, I talked to Mark once again at the career fair, where he helped me by introducing me to one of his colleagues named Chris Gerth, who was actually in charge of one of the autonomous projects they were working on. Chris in turn helped

me get an interview with the company. I am still waiting on a decision, but I am extremely grateful for the opportunity given to me by not only Mark, but the T&M Seminar class in general.

Lastly, I would say that I really enjoyed researching and finally learning about this emerging technology that has limitless potential. This was all possible because of the T&M Seminar class. Every week, I find myself intrigued and very enthusiastic to learn from the speakers that come to the classroom to share the incredible feats attained by their companies not only in various fields. I believe that the only way to find your true passion is by seeking out and following everything that interests you, and like Steve Pavlina said, “ Passion and purpose go hand in hand.”