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Deep Learning Applications

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The Transformation of the Automotive Industry

Traditional transportation has begun to change, particularly because of the electrification of the automotive industry. Gas powered cars have run the market for years because of the amount of research that has been put into the internal combustion engine. However, this has changed due to the limits of gas as an energy source. This is because gas powered vehicles have a lower efficiency than electric motors. This happens because gas powered vehicles create little explosions to move each of the pistons on an engine to control the movement of the car. The problem with this system is that most of the energy, around 65 percent, is lost as heat due to the nature of the power source. Electric motors can exceed up to 90 percent efficiency so there is more potential to increase the range and horsepower of these vehicles. Note that the rate of transition from gas powered cars to electric cars depends on the increase of energy density of batteries, which is one of the more important problems being tackled in the electrification of the automotive industry.

Traditional carmakers have previously neglected to take the electric vehicle seriously because it was considered to be inferior to gas powered cars due to factors such as the limited range, lower performance, and the overall lack of popularity. This changed once Tesla began to develop high performance electric motors that could compete with some of the best gas-powered cars. Tesla has reinvented the electric car and has made it a luxury vehicle that many consider to be a high-quality vehicle. The automotive industry is also transitioning from traditional vehicle manufacturing because of the self-driving features that many companies are trying to achieve. The industry is being forced to transition because of the disruption that the Tesla electric vehicle company has brought with its reasonably priced EV’s that can compete with many of the specifications of vehicles from other companies. Self-driving is being driven by the advancement of deep learning which uses matrix multiplication to learn patterns from a given dataset. Deep learning has transformed more than just self-driving cars, it has changed many machine learning models because it eliminates the need for the person building the model to tune the hyperparameters. The main problem with deep learning is the amount of time that it takes for a model to train itself to a reasonable accuracy. This problem is being solved by companies like NVIDIA that make specialized hardware that can accelerate the amount of computations the system can perform.

Artificial intelligence is affecting all industries because of its ability to automate processes due to its continuous learning. This has enabled companies like NVIDIA and intel to thrive and provide products that can be used to train the models that companies need to innovate. The products that computer hardware companies have made have increased the amount of data that is created and the speed at which we can collect and use that data. Companies like Uber take advantage of these technologies by redefining the transportation model. Ride hailing services are transforming the transportation model because more consumers are beginning to prefer to use these services rather than own a vehicle. Uber uses big data to make decisions that will make the customer experience better. Electric vehicle companies are taking advantage of the ride hailing model because they know that the transportation is shifting from a product-based industry to a service-based industry.

Traditional auto manufacturers like General Motors and Ford are now in trouble because their company structure is too big to be able to change the way that they have operated for years. The electric vehicle has become too disruptive for them to be able to compete without directly changing up their whole business model. For example, General Motors had 180,000 employees in 2018 and Tesla had 42,000 employees. In 2021, Tesla had a market cap of $783 billion and GM has a market cap of $72 billion. This shows that people are now valuing the electric vehicle more than gas-powered vehicles. AI is helping to drive this innovation because it is now being used in all stages of the car design and manufacturing process, hence why Tesla has less employees. AI is also one of the main reasons as to why there is a lot more people interested in electric vehicles and their self-driving capabilities.