

Outline for the End of Module Assignment

Being a student in the 21st century and having the possibility to study everywhere makes me feel like I am in the future. I have attained an extensive computer science overview through my study at the University of Essex. I learnt that computer science professionals need to understand the ethics in computer science for handling personal data. Furthermore, I understood the operation and structure of the central processing unit, the ability of the fantastic networks, the power of software development, and the emerging trends in computer science. Due to this reflection, I am convinced that the following units and the sophisticated elaboration of the end module assignment will provide me with the proper knowledge and qualification in computer science.

One of those emerging trends which have awakened my interest is artificial intelligence (AI). With the ability to replace humans in many sectors of society by thinking like a human, AI is the most booming technology in the 21st century (Crandall, 2019: 10). Regarding my past and work experiences in the automotive industry, I will work on the title: The application of AI in automotive manufacturing. The following table provides a brief overview of where AI can be used in manufacturing and its impact:

Field	Ai's impact on the manufacturing
Quality	<ul style="list-style-type: none"> - Inspections by AI will be faster, more efficiently, and precisely - Standardisation inspection systems can redress inequalities among different human inspectors - The quality of the product manufacturing can significantly increase through automated testing systems
Monitoring	<ul style="list-style-type: none"> - AI can control and monitor manufacturing machines precisely to predict future failure of the machines - In this way, AI can prevent a production stop to avoid an enormous amount of costs
Robotics	<ul style="list-style-type: none"> - Through the utilising of AI in robotics, robots can emulate humans and work with them or even replace them for reducing the huge cost
Augmented reality	<ul style="list-style-type: none"> - With the use of Augmented Reality (AR), the required task can be shown to employees before efficiently executing the task in the manufacturing - The performance of the employees can thus increase, and mistakes can be reduced

Table 1: The impact of AI on the manufacturing sector (Crandall, 2019: 14-13)

The brief overview shows the potential of AI for reducing costs and increasing manufacturing productivity; however, this is only the peak of the iceberg (Belton & Olson, 2019: 5-6). The automotive industry is currently experiencing one of the most significant changes due to digital transformation (Llopis-Albert et al., 2021: 1). Hence, automotive companies must remain competitive and continuously optimise productivity for their success (Belton & Olson, 2019: 5).

The Paradigm company that I use for the case study will be Volkswagen due to my work experiences at this company and its power in the automotive industry. I want to discuss which AI technologies Volkswagen applied in manufacturing and the benefits and drawbacks of those technologies. Furthermore, I want to explore which AI technologies are available but not used and why the company struggles or does not want to apply those technologies. Moreover, I will outline the opportunities and risks of future AI technologies for automotive manufacturing.

Referencing:

Belton K., Olson, R. (2019) The Promise of Smart Manufacturing. *Smart Factories: Issues of Information Governance*: 5-9. Available from: <https://policyinstitute.iu.edu/doc/mpi/smart-factories.pdf#page=12>. [Accessed 7 April 2022].

Crandall, D. (2019) Artificial intelligence and manufacturing. *Smart Factories: Issues of Information Governance*: 10-16. Available from: <https://policyinstitute.iu.edu/doc/mpi/smart-factories.pdf#page=12> [Accessed 7 April 2022].

Llopis-Albert, C., Rubio, F., Valero, F. (2021) Impact of digital transformation on the automotive industry. *Technological Forecasting and Social Change* 162(1): 1-9. DOI: <https://doi.org/10.1016/j.techfore.2020.120343>.