Task A – Natural Language Generation (NLG)

1. Match up these key terms with the correct definition.

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| 1. Natural Language Generation (NLG) |  | 1. The technology that turns your words (written or spoken) into data for the system to understand |
| 1. Natural Language Processing (NLP) |  | 1. This extracts the meaning of and relationships between words before being implemented into a workable system. |
| 1. Natural Language Understanding (NLU) |  | 1. A type of AI that generates natural language from structured data. |

1. Describe how the two NLG technologies listed below work.
2. Voice assistant

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1. Chatbots

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1. Devices such as Amazon Alexa use speech recognition.
2. How does speech recognition work?

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1. Identify some of the potential drawbacks associated with text to speech AI.

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Task B – Smart devices

1. Using the table below, identify how these smart devices help improve the security of a household.

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| **Smart lock** | **Smoke alarm** | **Surveillance (e.g. security cameras)** |
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Task C – Machine learning

1. Match up these key terms with the correct definition.

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| 1. Deep learning |  | 1. Systems that have the ability to automatically learn and improve from experience without being explicitly programmed. |
| 1. Machine learning |  | 1. It’s a computing system made up of interconnected units that processes information by responding to external inputs, relaying information between each unit. |
| 1. Neural networks |  | 1. A system that closely tries to mimic how the human brain works. |

1. Machine learning will use something called ‘training data’

What is meant by ‘training data’?

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1. Complete the machine learning activity found on a separate worksheet.

Task D – Decision making

Volvo launched a fleet of electric vehicles with AI-driven super computers embedded in them.

1. Explain how Volvo is using AI to make vehicles safer and reduce the risk of an accident.

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Task E – Image recognition

1. AI uses classification and tagging for image recognition.

Match up the four key areas with the correct description.

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| 1. Classification |  | 1. This gives use the specific information (at pixel level) |
| 1. Detection |  | 1. Outputs the rectangle, or bounding box, on the image  where the objects are. |
| 1. Segmentation |  | 1. Helps to determine what the object found in the image is most likely to be. |
| 1. Tagging |  | 1. Identify objects found in the image by labelling them. |

1. Use the screenshots below to identify which was demonstrates each area, justify your choice.

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|  | Select one box  Classification 🞏  Segmentation 🞏  Detection 🞏  Tagging 🞏  Why have you selected this option? |  | Select one box  Classification 🞏  Segmentation 🞏  Detection 🞏  Tagging 🞏  Why have you selected this option? |
|  | Select one box  Classification 🞏  Segmentation 🞏  Detection 🞏  Tagging 🞏  Why have you selected this option? |  | Select one box  Classification 🞏  Segmentation 🞏  Detection 🞏  Tagging 🞏  Why have you selected this option? |

1. What happens if there are multiple objects in the same image?

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