**Department of Electrical and Computer Systems Engineering**

**Monash University**

**TRC3500 Sensors and Artificial Perception**

**Decoding an EAN-13 Barcode: Marking Guidelines**

**Part 1: Demonstration (3 marks)**

Submit a maximum 3-minute video of your project demonstrating the following on the picture or in the command/console window (0.5 marks each):

1. Barcode decoding for the **first** barcode – barcode aligns with the camera
2. Barcode decoding for the **first** barcode – barcode alignment is off between +/- 30 to 70°
3. Barcode decoding for the **first** barcode – barcode is upside down
4. Barcode decoding for the **second** barcode – barcode aligns with the camera
5. Barcode decoding for the **second** barcode – barcode alignment is off between +/- 30 to 70°
6. Barcode decoding for the **second** barcode – barcode is upside down

**Use the following images for the first and second barcodes respectively:** IMG\_20240227\_0003.jpg **and** IMG\_20240227\_0004.jpg.

**Part 2: Report (5 marks)**

Submit a two-page (maximum) report that addresses the following questions:

1. (2.0 marks) Identify two (1 mark) plausible (1 mark) kinds of noise or variability that could impact your ability to read the barcode.
2. (2.0 marks) Collect the data required to provide a quantitative and qualitative description of how your algorithm copes with the source of noise or variability. Your answer should include an illustration or photo of the impact of the variability (0.5 marks), measurements of performance under that variability (1 mark), and a graph or schematic illustrating your findings (0.5 marks).
3. (1 mark) Outline something you could change to improve your system's performance and why it would help.

**Part 3: Unmarked, mandatory**

Complete the use of Generative AI declaration and include it with your submission.

**(Total 8 marks)**

Each submission should include:

* .mp4 demo recording (< 500mb, < 3min)
* .pdf/.docx report
* Source code of your program as an ordinary text file (**not** embedded in a Word or PDF document, we should be able to compile it directly)
* .pdf/.docx AI declaration