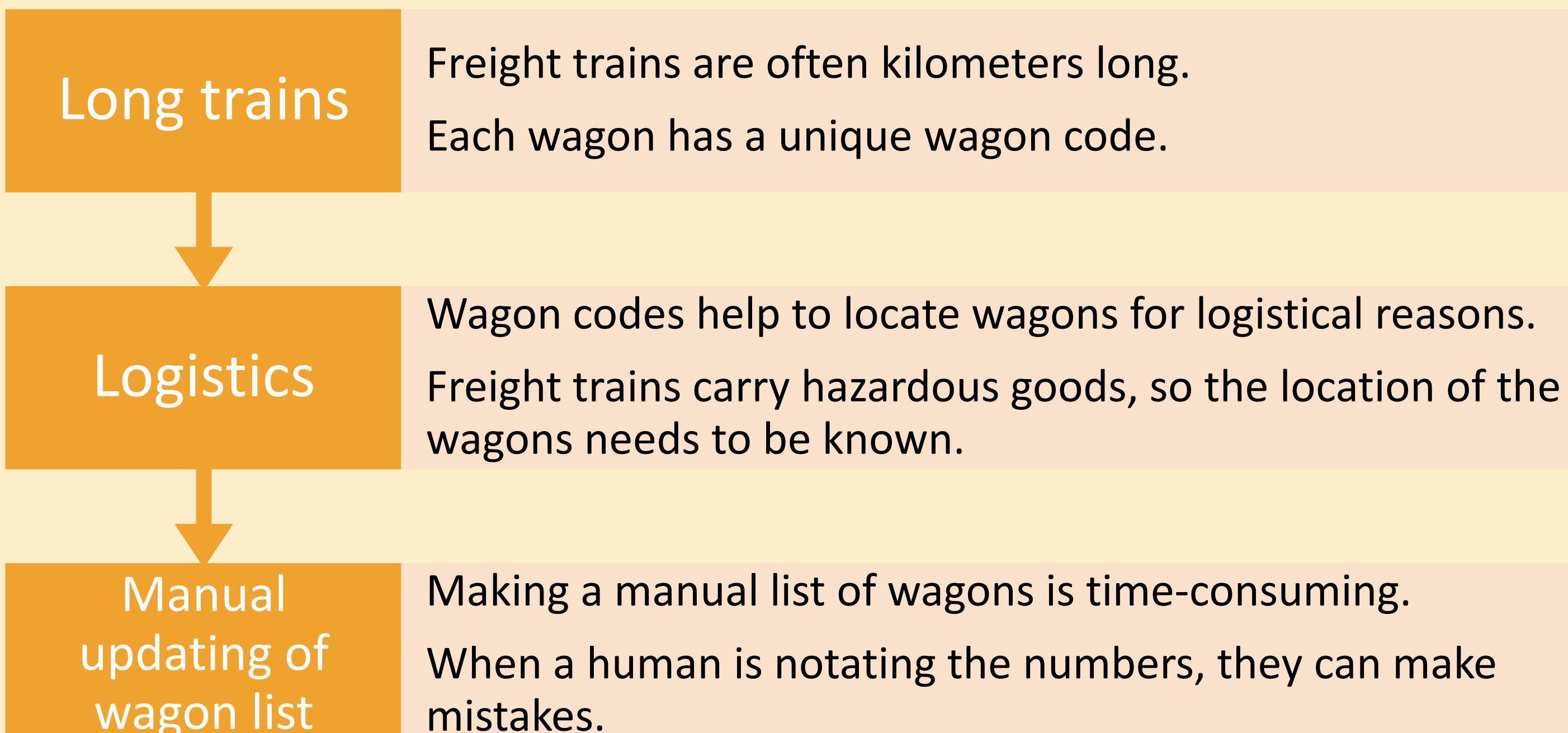


What is the code on this wagon?

Automatic Wagon Code Identification using Computer Vision

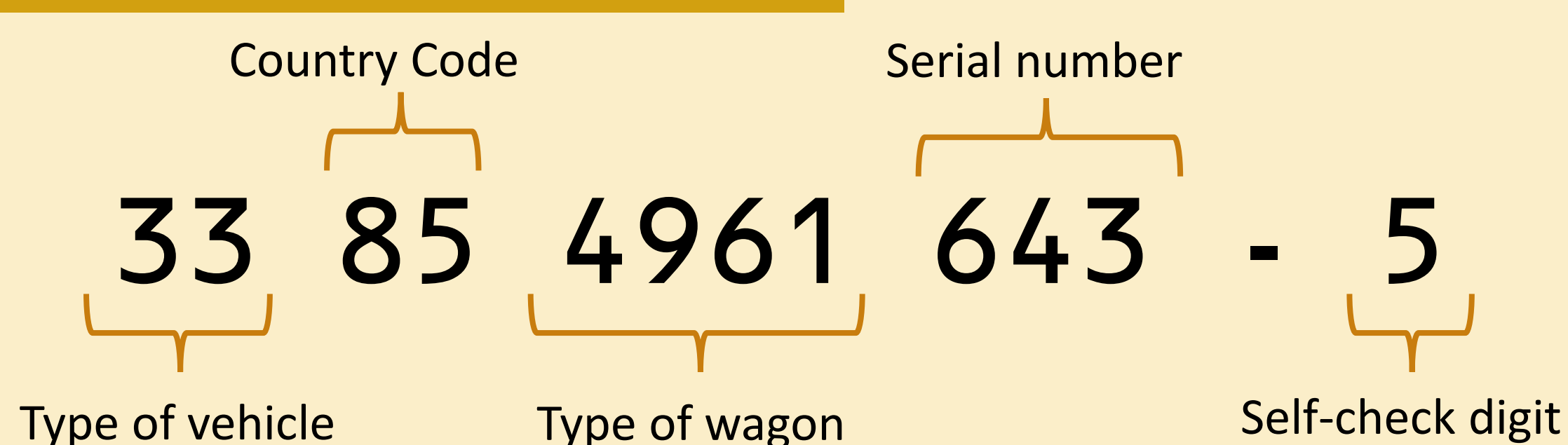
Problem statement



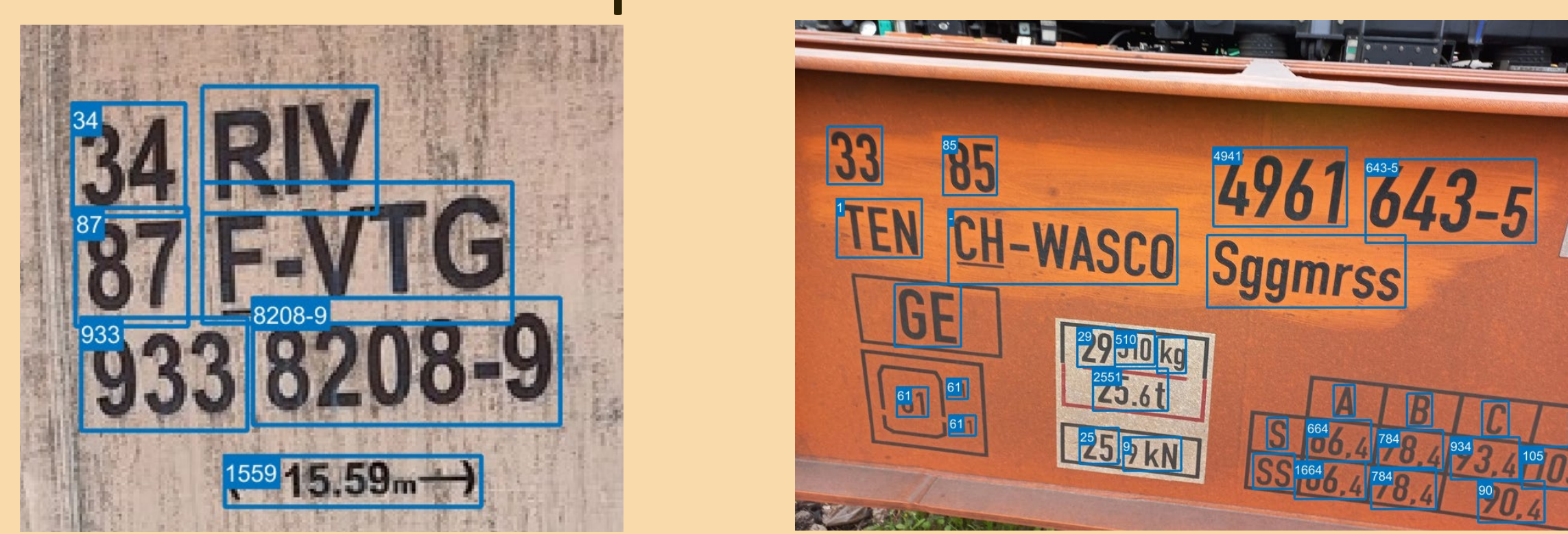
Approach



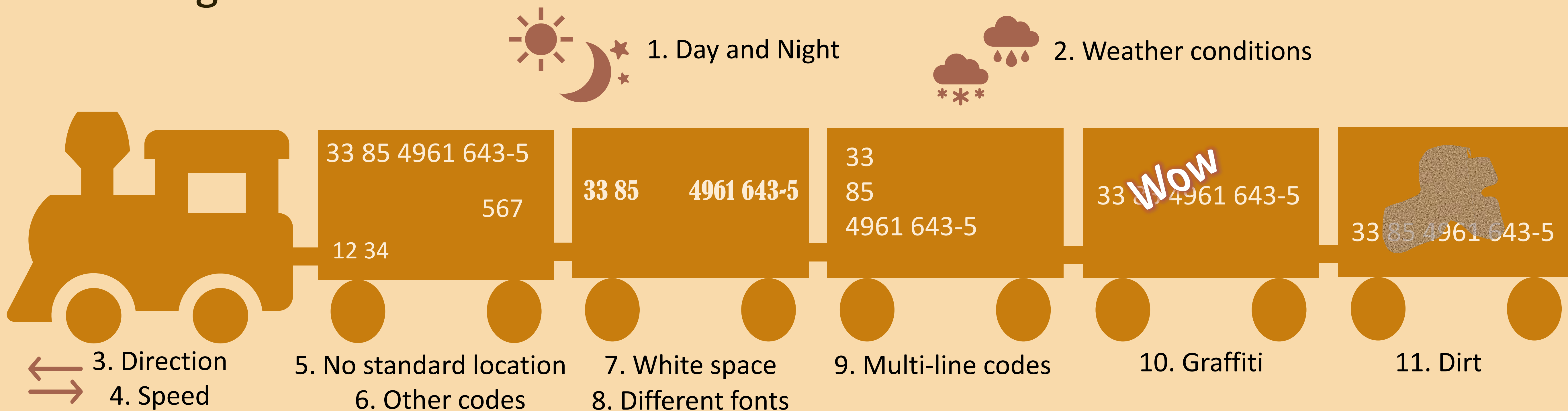
Example of a wagon code



Practical examples



Challenges



Corruptions

We want to mimic corruptions using e.g. **Synthetic Weather** [1], such as rain and fog.

Then we can detect the (synthetic) weather and make the model more robust, by e.g. removing the rain [2].

Models

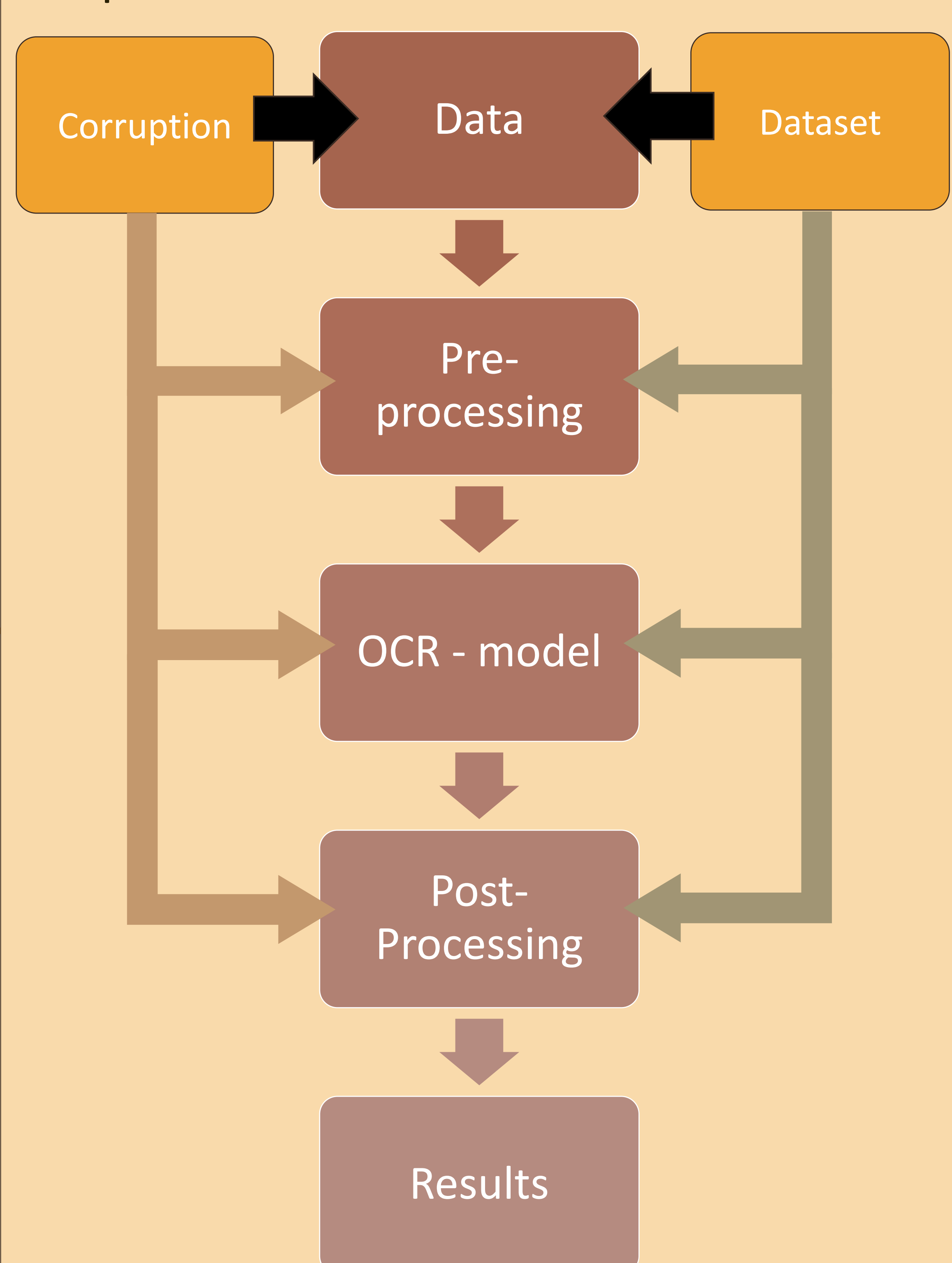
We implement different models for the **Optical Character Reading (OCR)**. A commonly used model is Tesseract [3].

Another option is to use a **Structured Text Spotter Transformer** [4]. This model looks for **structured text** based on regular expressions.

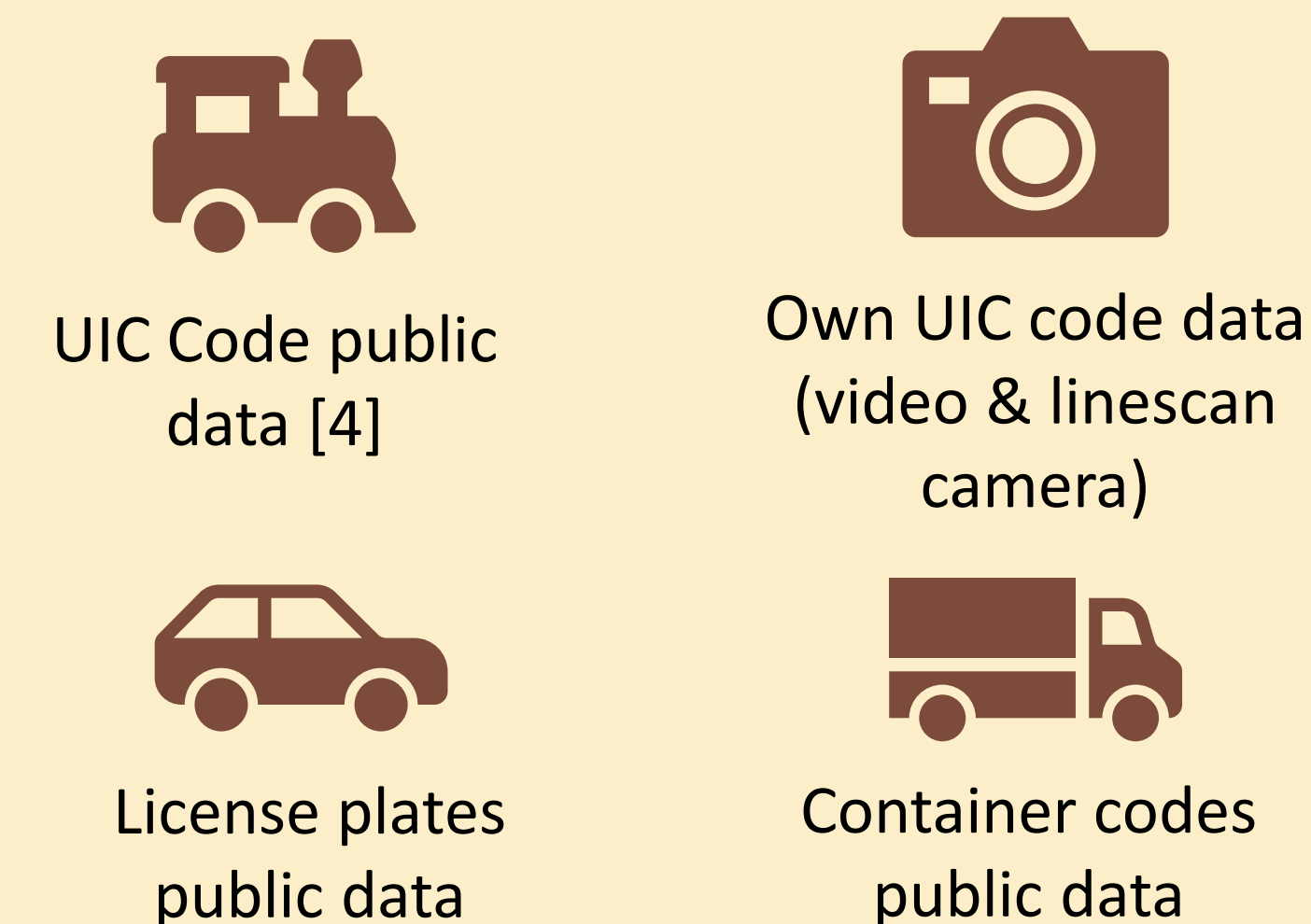
References

- [1] X. Li et al., "Robustness of visual perception system in progressive challenging weather scenarios," *Engineering Applications of Artificial Intelligence*, vol. 119, Mar. 2023, doi: 10.1016/j.engappai.2022.105740.
- [2] T. Yan, M. Li, B. Li, Y. Yang, and R. W. H. Lau, "Rain Removal from Light Field Images with 4D Convolution and Multi-scale Gaussian Process," Aug. 2022, doi: 10.1109/TAP.2022.3218759.
- [3] Ray Smith, "Tesseract OCR," Github. Accessed: Apr. 12, 2024. [Online]. Available: <https://github.com/tesseract-ocr/tesseract>
- [4] S. Garcia-Bordils, D. Karatzas, and M. Rusiñol, "STEP -- Towards Structured Scene-Text Spotting," Sep. 2023.

Pipeline



Datasets



Postprocessing

Using the self-check digit of the wagon code we can verify if we have the correct code.

On the wagon, more information can be found, such as the **country name** in letters, which can be related to the country numbers in the wagon code.

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